VERMONT JOURNAL OF ENVIRONMENTAL LAW
VERMONT LAW SCHOOL

Volume 15, Issue 2  Spring 2014

ARTICLES

Sunshine for Sale: Environmental Contractors and the Freedom of Information Act
Sarah Shik Lamdan .................................................................227

Climate Change and the Decline of the Federal Range: Is Adaptive Management the Solution?
Hillary M. Hoffmann ..............................................................262

Water for Whom? Improving Water Governance in Yunnan China Through Environmental Customary Law
Carissa Michelle Wong and Wu Guo ......................................290

Understanding the Failure to Reduce Phosphorous Loading in Lake Champlain: Lessons for Governance
Gail Osherenko ........................................................................323

All Aboard: Navigating the Course for Universal Adoption of the Public Trust Doctrine
James Olson ...........................................................................361

NOTE

Back on the (Supply) Chain-Gang: Whether the SEC Final Rule for Supply Chain Disclosure is the Beginning of Purely Social and Environmental Disclosure
Christopher M.F. Smith .........................................................418
EDITORIAL BOARD 2013–2014

EDITOR-IN-CHIEF
Emily Remmel

ADMINISTRATIVE EDITOR
Casey Ryder

SENIOR MANAGING EDITOR
Megan K. McLaurin

SENIOR ARTICLES EDITOR
Jacqueline Goodrum

SENIOR NOTES EDITOR
Emily Migliaccio

WEB OUTREACH EDITOR
Lara Maierhofer

SYMPOSIUM EDITOR
Molly Gray

WEB EDITOR
Marissa Meredyth

MANAGING EDITORS
William Bittinger
Jonathan Blansfield
Andrew Fowler

EVENTS EDITOR
Kalika Elofson

HEAD NOTES EDITORS
Jordan Asch
William Labate
Christine Mertens
Scott Seigal

ARTICLES EDITORS
Kate Durost
Bob Harper
Christopher Keach
Eric Mortenson-Nemore

PRODUCTION EDITORS
Emily Burgis
Molly Armus
Colin Beckman
Jared Schroder
Christopher Smith
Noah Streblor
Sam Weiman

EDITORIAL STAFF
Crystal Abbey
Megan Backsen
Robert Batten
Jacob Beckstrom
Thomas Belli
Libby Bowker
Caroline Casey
Lisa Franceware
Allison Gabala
Elijah Gleason
Thea Graybill
Benjamin Gustafson
Jack Hornnickel
David Keagle
Will Kirk
Scott Lake
Andrew Minikowski
Kelly Nokes
Michael Ozaeta
Dan Schreiber
David Scott
Katherine Stinson
Ashley Welsch
Phoebe Youhanna
Sarah Zelcer

FACULTY ADVISOR
Rebecca Purdom
Introduction ................................................................................................................................. 228

I. FOIA’s Vital Role in Environmental Health and Human Safety .......... 232
   A. FOIA: America’s Transparency Guarantee ................................................................. 232
   B. Agency Capture ............................................................................................................. 234
   C. Regulatory Slippage ................................................................................................. 237
   D. Market Failure ........................................................................................................... 239

II. A Proliferation of Contractors Obscures FOIA’s Reach and Thwarts Its Purpose ................................................................................................................................. 240
   A. Increasing Reliance on Contractors ......................................................................... 240
   B. Proliferation of Contractors Doing Environmental Work ....................................... 242
   C. Contractors Carry out an Array of Environmental Tasks ......................................... 243
   D. Contractor Documents are not Agency Records ....................................................... 244
   E. Contractors Do Not Have to Keep Records ............................................................... 246
   F. Contractors Do Not Have Transparency Requirements ........................................ 246

III. Improving Environmental Transparency with Clauses in Government Contracts ................................................................................................................................. 248
   A. Contract Clauses Requiring Information Waivers for Government Contractors .... 250
   B. Contract Clauses Requiring Public Participation in Government Contractors’ Activities ......................................................................................................................... 251
   C. Contractor Incentives for Information Disclosure .................................................... 252

IV. Critiques of Transparency Clauses .............................................................................. 253
   A. Increased Obligations May Turn Off Contractors ..................................................... 253
   B. Contractor Disclosure Conflicts with FOIA Protections ......................................... 254
   C. Public Participation Burdens the System for Little Gain ....................................... 258

* Associate Professor and Legal Reference Librarian, The City University of New York School of Law. The author wishes to thank Eyal, Benjamin, and Evelyn Lamdan. She would also like to thank the Duke/UNC Workshop for Scholarship on Legal Information and Information Law and Policy attendees for their invaluable feedback and Dick Danner and Anne Klinefelter for organizing the workshop. Finally, Sarah would like to thank the CUNY School of Law library staff, director Julie Lim, and colleagues Douglas Cox, Raquel Gabriel, Yasmin Sokkar Harker, Alex Berrio Matamoros, and Jonathan Saxon for their support, and Keith Szczepanski for his assistance.
D. Contracts May Not Be Enough .......................................................... 259

Conclusion ................................................................................................. 260


INTRODUCTION

In the bright blue waters off of Miami’s sun-bleached coast, trouble is brewing. In May 2013, Great Lakes Dredge & Dock (Great Lakes) announced its $122 million contract with the U.S. Army Corps of Engineers (Army Corps). The Army Corps will pay Great Lakes, America’s largest dredging corporation, to deepen Miami Harbor’s entrance channel. The project is happening in an environmentally sensitive waterway, where seagrass and a coral reef supply lifelines to sea life, and the coastline is a recreation site for millions of people. Press releases report that the Army Corps will supervise Great Lakes, but it is well documented that most government contractors are largely self-monitored and left to their own devices by agencies that do not have the time or resources to oversee every project. As Great Lakes’ tugs and dredging boats gather off of Miami’s shores, Miami locals and ocean lovers everywhere may have reason to worry about this project.

Unfortunately, based on Great Lakes’ prior projects, there is cause for concern. Previously, the Army Corps, in nearby Delray Beach, Florida, hired Great Lakes to dredge an inlet and sand-settling basin. A Great Lakes barge left a stretch of beach littered with rocks and coral rubble threatening the annual moonlight process of sea turtle nesting. According to reports, the barge dragged cables across coral and sponge formations in the Flower

3. Jody Freeman, The Contracting State, 28 FLA. ST. U. L. REV. 155, 171–72 (2000); see also Nina A. Mendelson, Six Simple Steps to Increase Contractor Accountability, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 241, 241 (Jody Freeman & Martha Minow eds., 2009) (describing that in addition to bearing responsibility over contracted border security plans, contractors also have oversight of the plan itself).
In 2002, the Department of Justice ordered Great Lakes to pay almost $1 million for destroying the ecosystem of the Florida Bay with a dredging pipe and creating a hole in the ground the size of one and a half football fields. The accident affected the flora and fauna in the Florida Keys National Marine Sanctuary, including seagrass meadows and finger coral that are critical to fish and other marine life populations as well as necessary to stabilize sediments and create clear waters. The same company paid the United States a $20,000 settlement in 2004 after its dredged waste spilled from barges into a marine sanctuary in California’s Richmond Harbor.

Although Great Lakes Dredge and Dock sounds like it could be a smaller business in the Great Lakes region of the country, the company is actually a gigantic corporation that conducts business worldwide. Great Lakes benefits from the Jones Act, which protects it from international competition. As a result of this protection, Great Lakes is the largest dredging company in the United States, and it receives continuous workflow from the federal government. Because Great Lakes does so much of America’s coastal development work, their spotty environmental record should be open to public scrutiny. But, like other government contractors, Great Lakes cannot be easily scrutinized. Where the Freedom of Information Act (FOIA) requires government agencies to be transparent, government contractors do not have to provide information to the public, so Great Lakes’ operation records, pollution data, and procedural documents remain private.

Government contractors, like Great Lakes, perform work all over the country. Great Lakes performs a variety of environmental projects, like the Great Lakes dredging operation in Miami to post-tornado waterway cleanup

6. Id.
and environmental analysis for mountaintop mining. Contractors do much of the hazardous waste disposal and remediation projects in the nation and gather much of the data and analysis about the toxins in our air, ground, and waterways. More and more, contractors do the work of government, to the point where some say that the traditional requirement that only the government should do work that is “inherently governmental: is no longer applied in practice.\(^\text{10}\)

The more government work is taken over by private contractors, the less accessible project information is to the public. Government contractors are not subject to FOIA, which requires federal agencies to provide information to the public.\(^\text{11}\) As contractors complete more “inherently governmental” work, less is known about the contractors and their projects. Those concerned with environmental hazards find it hard to advocate against these private entities cloaked in secrecy. Information plays a key role in educating people about environmental threats and assuring that an informed public can rally for or against activities that affect their environment. Access to information is vital for environmental progress in the United States, and citizens must be able to learn about environmental risks that may harm them.\(^\text{12}\)

The international community recognizes that information access is imperative to environmental safety,\(^\text{13}\) and the United States Congress designs environmental laws that provide for public participation.\(^\text{14}\)

---

10. Paul R. Verkuil points out the futility of expecting the government to cull the inherently governmental tasks from competitive sourcing by quoting legal philosopher Leslie Green, “The idea that our leaders might have a fundamental duty to govern and to bear responsibility for doing so seems quaint.” Paul R. Verkuil, Outsourcing and the Duty to Govern, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 310, 334 (Jody Freeman & Martha Minow eds., 2009).


13. United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT, 31 I.L.M. 874, 878 (June 14, 1992). This 1992 declaration was reaffirmed at the 2012 Rio Conference. Principle 10 says, “Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.” Id.

14. David Sarokin and Jay Schulkin demonstrated that government accountability leads to an expansion of the government’s right to know, using the Clean Water Act and the Emergency
those laws, FOIA remains the main tool for gaining access to government information. The public often utilizes FOIA to obtain information on potentially harmful environmental activities. For instance, farmers recently used FOIA to uncover hydrogen sulfide contamination of water systems caused by factory farms,15 concerned local residents made FOIA requests to examine the oil dispersants used to clean up the BP oil spill,16 and wildlife advocates used FOIA to get details of a mining project planned for a forest near Mount St. Helens.17

FOIA reaches its transparency limits when the government increasingly outsources projects to non-governmental entities outside of FOIA’s scope. While contractors are integral to complex and large-scale environmental work in the United States, the contractors’ status as private entities complicates public access to environmental information. America’s laws give more privacy leeway to private entities. Even when performing government tasks, “private entities are not treated simply as part of the state.”18 This remains true even if the government uses these contractors to perform important state or state-like functions.19 The opacity of contractors’ information impedes many environmental laws designed to improve oversight of shared resources.

This article proposes using contract clauses in the government contracting process to improve the transparency of information among federal government contractors involved in environmental tasks. Part I of this paper explores FOIA, government contracting in the United States, and the dangers posed by limiting access to environmental information in contractors’ work. Part II looks at the proliferation of environmental contractors and the damaging effects of increased contracting on the transparency goals of FOIA. Part III proposes contractual solutions to provide FOIA-like transparency requirements for projects undertaken by

Planning and Community Right-to-Know Act of 1986 as examples of the federal government using the public’s access to information as a tool of environmental policy. See David Sarokin & Jay Schulkin, Environmentalism and the Right to Know: Expanding the Practice of Democracy, 4 ECOLOGICAL ECON. 175, 180–84 (1991).


19. Id.
federal government contractors. Part IV addresses critiques of utilizing contract clauses to address environmental transparency. By requiring contractors to sign contracts that include clauses requiring disclosure of environmentally sensitive information, requiring public participation and reporting, and providing incentives for information disclosures, the federal government will assure that the public has access to information vital for preserving human health and environmental safety. When contractors participate in agency undertakings, environmental advocates should be treated more like consumers or shareholders whose taxes pay the bills and less like market competitors deprived of information in order to protect corporate interests.20

Contractors, when tasked with a government assignment, should be required to provide transparency so the public can be assured the contractor does not deviate from the public interest. Great Lakes and other private entities performing government tasks fail to protect the best interests of the public thereby putting people and communities at risk.21 A lack of transparency makes corruption, a disregard for rules and regulations, and overall mistreatment of people and their environment possible behind walls of secrecy.22 Although the United States need not eliminate contracting or make things unduly difficult for contractors, whose work is integral to America’s growth and progress, it should adopt contracting policies that assure public access to information.

I: FOIA’S VITAL ROLE IN ENVIRONMENTAL HEALTH AND HUMAN SAFETY

A. FOIA: America’s Transparency Guarantee

“A popular Government, without popular information, or the means of acquiring it, is but a Prologue to a Farce or a Tragedy; or, perhaps both. Knowledge will forever govern ignorance: And a people who mean to be their own Governors, must arm themselves with the power which knowledge gives.”23

---

21. See, e.g., Laura A. Dickinson, Public Values/Private Contract, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 335, 335 (Jody Freeman & Martha Minow eds., 2009).
Freedom of information is vital to a successful democracy. FOIA facilitates the watchdog function of the public over the government to ensure that government officials act in the public interest.\(^{24}\) The law creates a judicially enforceable public right of access to the information compiled by federal agencies.\(^{25}\)

Justice Brandeis wrote, “[p]ublicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman.”\(^{26}\) Environmental protection hinges on the public’s “right to know” about environmental threats.\(^{27}\) According to the EPA, citizen groups use environmental data collected by the government to help educate communities, identify environmental issues, and engage in negotiation for regulation of environmental undertakings.\(^{28}\)

FOIA is the nation’s main tool for prying environmental information from the sometimes-reluctant government. Signed into law in 1966, FOIA requires federal agencies to disclose their activities to the public.\(^{29}\) The law assures that anyone in the United States, including Miami citizens, can look into business conducted by federal agencies, like plans to dredge the earth beneath their coastlines. Under FOIA, any person has an enforceable right to obtain agency records about projects affecting the environment or anything else.\(^{30}\) FOIA is America’s major transparency law, opening the government for public view. International environmental organizations tout

\begin{footnotes}
\item[28] In a report about its Toxics Release Inventory program, the EPA listed many specific examples where citizen activists and community organizations educated their citizens or residents about toxic chemicals, “often combining education with a call to action.” ENVTL. PROT. AGENCY, OFFICE OF INFO. ANALYSIS & ACCESS, EPA-260-R-002-004, HOW ARE THE TOXICS RELEASE INVENTORY DATA USED?—GOVERNMENT, BUSINESS, ACADEMIC & CITIZEN USES 3–9 (2003). See also Chekouras, supra note 27, at 125 (discussing how citizens use TRI data to educate communities, identify environmental concerns, and work to reduce pollution).
\end{footnotes}
FOIA as a model for the transparency needed to foster progress in the environmental protection movement. FOIA is supposed to prevent government secrecy and allow people to know “what their government is up to.”

States have also enacted Freedom of Information (FOI) laws for state agencies.

FOIA’s importance has increased over the last few decades as environmental and public safety regulatory schemes have grown. Some argue this growth gives too much power to federal environmental agencies. The regulatory growth conditions the assurance that the FOIA would keep the agencies accountable for the consequences of their new environmental and public safety regulatory responsibilities. FOIA, which far pre-dates the new regulations and serves as a fundamental transparency commandment for federal agencies, was a precondition for the extra regulatory power given to the agencies. As these agencies give more power to contractors, the quid pro quo promise of transparency is thwarted, and FOIA’s information access dissolves.

The federal FOIA and state FOI laws are an integral part of the interplay between government agendas and the public’s voice on important national undertakings. This interplay is vital to staving off common governmental ailments that lead to iniquities. We need sunlight to prevent agency capture and regulatory slippage and to monitor for market failures that could lead to environmental detriment. Each of these can lead to environmental failures in the United States.

B. Agency Capture

Shining transparency’s light onto agency dealings with contractors is necessary to “disinfect” the relationships from undue influence. Agency capture, the undue influence of private industry on agencies’ processes and actions, can lead to regulatory deviation from the public interest. Because

33. Many websites contain links to every state’s FOI law. For example, the National Freedom of Information Coalition provides links to all states’ and the District of Columbia’s FOI and open meetings laws. See Freedom of Information Laws, NAT’L FREEDOM OF INFO. COAL., http://www.nfoic.org/state-freedom-of-information-laws (last visited Nov. 5, 2013) (providing links to information on various State Freedom of Information laws).
35. Id.
36. See supra, note 26 accompanying text.
contractors are often large, highly structured organizations, they can monitor agencies more closely and react to agency challenges more rapidly than can most citizens or public interest organizations. Private entities can use monitoring to deter agency behavior that benefits the public and instead encourage agency behaviors that benefit private enterprise. Ordinarily, individual citizens and public interest groups lack the funding, resources, and industry to similarly affect agency views and to assure that agencies act in the public interest.  

For example, in Paducah, Kentucky, in the late 1990’s, workers at a uranium enrichment plant were told by Union Carbide, a Department of Energy contractor running the plant, that the plant was not releasing a toxic level of radiation even as workers suffered cancer and other radiation-related illnesses. 38 Physicians for Social Responsibility, cites the “incestuous relationship between the US Government . . . and the large corporations doing most of the contracted work” for contamination exposure at nuclear sites like Paducah and the Hanford Site in Washington. 39 Only after FOIA allowed the public to review Hanford documents from the 1940s and 1950s were citizens able to see documentary evidence of “the incredible contamination of the environment and exposure of large numbers of citizens to dangerous amounts of radioactive nuclides [from] Hanford’s earlier years.” 40 The contractors’ influence on the government led to an information cover-up that harmed plant workers. This cover-up could only be discovered through information transparency and public whistleblowing.

When contractors regularly perform government functions, they can assert improper influence on those functions. 41 Regulatory capture can lead to catastrophic failures—BP’s disastrous 2010 Gulf oil spill is perhaps the clearest example of how this kind of agency capture can destroy regulatory function. 42 In 2008, the New York Times described one example of capture

---

40. Id.
by contractors in an environmental context. The article depicts a “culture of ethical failure” pervasive in the Mineral Management Service (MMS), the arm of the Department of the Interior that collects oil and gas royalties. In several instances, former MMS employees returned to the MMS as consultants, creating overlaps between government functions and the private interests advanced by the former employees through close relationships. Additionally, MMS’s leasing and revenue collection operations were not separate from the public safety and environmental enforcement side of the MMS. Staff biologists were often pressured by agency officials to change the findings of their studies if they predicted that an accident would likely occur. Scientists’ findings were routinely overruled. One scientist said, “You simply are not allowed to conclude that the drilling will have an impact,” or the MMS would rewrite the document. The indiscretions and unethical behavior described in the article foreshadowed what would happen two years later. In 2010, the Center for Biological Diversity accused MMS of mismanaging the contractors that caused the Deepwater Horizon Oil Spill in the Louisiana Gulf.

Sometimes, capture occurs systemically through regulatory schemes. For example, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires the government to hire contractors to carry out Superfund site cleanups. Private engineering firms carry out the site investigation, assessment of remedial alternatives, and remedial action. “No sites would be cleaned up by America’s Superfund system if it were not for the army of contractors willing to profit from the work of planning and executing cleanups.” In 1989, an Office of Technology Assessment (OTA) study found evidence that contractors captured the

44. Id.
47. Id.
48. Urbina, supra note 45.
51. Id.
Superfund program. The OTA revealed that pollution cleanup duties are often awarded to the very firms that polluted the land. In short, the same firms that pollute get paid to clean up their self-made messes. This is especially worrisome because the law requires CERCLA contractors to self-police. Professor Bradford Mank describes the dependent relationship between agencies and private contractors in Superfund cleanups as a symbiotic relationship where Superfund contractors prosper by taking advantage of the federal government.

C. Regulatory Slippage

Another reason that transparency is necessary in environmental activities conducted through government contract is to prevent regulatory slippage. The attenuation of government activities from government direction can lead to inadequate oversight and quality control. Inadequate oversight flourishes because contractors lack the central focus and workforce dedicated to regulatory compliance of federal agencies. Contractors disregard environmental compliance and other legal obligations, creating risks for national security, human health, and the environment. Sunlight allows the public to monitor environmental processes to assure accountability where government oversight is lacking.

Miriam Seifter defines regulatory slippage as “a failure to take regulatory action or a decision to take action less rigorous than promulgated requirements mandate.” In a study of CERCLA contractors working in Massachusetts, Seifter discovered widespread regulatory slippage. She reported that contractors cut corners, failed to properly manage procedures and oversight, and did not discipline personnel to prevent malpractice or


53. Id.


55. Id.


57. Mendelson, supra note 3, at 242.

58. Miriam Seifter, Rent-a-Regulator: Design and Innovation in Environmental Decision Making, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 93, 95 (Jody Freeman & Martha Minow eds., 2009).

59. Id. at 94–95.
incentivize good behavior. Seifter used the example of contracting out hazardous waste remediation on an abandoned lot containing toxic pollutants in preparation for building a school on the grounds.60 She found that in these cleanup situations, contractors were motivated to “underenforce” federal regulations because they had an interest in cost-cutting and convenience, and little fear of getting caught violating the rules.61

Contractors’ disregard for regulatory controls is a result of monitoring failures that allow environmental safeguards to fall through the cracks. According to Seifter, the Massachusetts Department of Environmental Protection hardly even monitors the contractors, and the agency is unable to perceive the sources or extent of regulatory slippage.62 The lack of structured rules and regulations governing contractors’ activities protects their bad habits. “At best, the current laws governing contractors amount to a makeshift legal framework.”63 While agencies, like contractors, can also suffer slippage if left to their own devices, strict disclosure requirements and legal accountability measures keep agencies on track.64 Contractors can bypass the transparency and accountability requirements controlling government agencies, allowing the contractors’ slippage to go unchecked.65

As Gillian E. Metzger explains, the current policy for privatization involves completely separate rules to govern private and government entities.66 Private entities are given a lot of leeway, making their own day-to-day decisions, getting trade secret and business information privacy, and implementing plans in the manner they select.67 Conversely, government entities are highly regulated and controlled by legislative, executive, and judicial powers, as well as subject to public participation.68 The laws of the United States treat non-governmental entities like contractors differently than government entities. Despite the growing role of private entities in government work, government contractors are rarely held to the standards

60. Id. at 96–97.
61. Id. at 95.
62. Id. at 105.
63. Mendelson, supra note 3, at 242.
65. Silveira, supra note 64.
67. Id. at 293.
68. Id.
of “state actors.” Metzger describes the separate legal requirements for private and government entities as parallel binary systems that give private companies room for slippage.

D. Market Failure

Transparency is also necessary so the public can assure that federal agencies try to minimize market failures in contractor situations that bring private market players into governmental roles. All sorts of failures occur in the free market; regulatory agencies have a duty to correct these failures and infuse the public’s best interests into market processes. In the government contractor setting, externalities (the failure of the market to ascribe value to social costs), such as environmental detriment, are particularly insidious and easy to miss without oversight. Most free market enterprises do not calculate a price for pollution and environmental damage, like the costs of a destroyed coral reef to environmental welfare. If not properly observed and regulated, contractors can choose economic prosperity over environmental protection without any negative consequences to their bottom line.

Additionally, environmental resources are easy to exploit in the free market because they cannot advocate for themselves and are often a necessary scapegoat for advancement. One can discount the importance of a healthy environment when the natural resources on which we depend have a high market value and appear to be in ample supply. For example, while clean air is just as important as more tangible resources, the open market puts a price on coal and timber but not clean air.

Because the free market lacks a moral imperative for stewardship of the environment, many development operations pollute surrounding air and nearby waterways, leaving the cleanup costs with municipalities and their citizens who suffer the economic consequences. This is especially true in environmental situations where projects are often carried out near vulnerable populations. “Children, the elderly, the poor, and those in confinement for reasons of health or imprisonment—are largely excluded from participation in the market . . .” For example, toxic smoke released

69. Id. at 292–93. Metzger says that this disparate treatment leads to a gap in oversight and government power, which works to the detriment of the public interest.
70. Id. at 291.
72. Alfred C. Aman, Jr., Privatization and Democracy: Resources in Administrative Law, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 261, 262 (Jody Freeman & Martha Minow eds., 2009).
from prospering factories, runoff released from animal waste from successful factory farms, and the destruction of fish populations caused when a dam builder finishes his work, all create negative effects on people who live nearby. Fishermen, the poor families living in the factory-adjacent building lot, and retired farm families on neighboring acreage will suffer economic difficulties and diminished quality of life.

Sometimes, the populace needs government intervention to save it from market failures. When the market fails to account for human suffering or imminent harm to society, the state often triggers responses for those failures. If the free market goes too far afoul of human safety the government intervenes, as it did during the 1970s with the development of environmental protection legislation. This type of government intervention is important for protecting the environment, as businesses often exploit natural resources to drive market successes. Without transparency, government contractors can sacrifice human health and safety for market gain without the public knowing. Public advocacy for the silent, but important, natural resources requires public knowledge of contractors and their operations. Environmental advocates need contractors’ information to advance environmental protection causes.

II: A PROLIFERATION OF CONTRACTORS OBSCURES FOIA’S REACH AND THwarts ITS PURPOSE

A. Increasing Reliance on Contractors

Throughout American history, the government has used contractors to carry out many regulatory functions. Private enterprise has brought about some of the greatest innovations in history, and private contractors have allowed the United States to reach otherwise unattainable goals. On many fronts, our nation’s success is due to the work and expertise of the government’s contracted assistants.

For example, imagine NASA operations without the help of contracted scientists and engineers to design shuttles, arrange projects, and track

---

73. Id. at 268.
NASA missions. War efforts rely on contractor designed-and-constructed tanks, armored vehicles, and tools of combat. Contractors have created the plans, provided the tools, supplied the brute force, and lent their intellect to some of our nation’s greatest challenges. “In many instances, there are genuine advantages to relying on the private sector, including for-profit and non-profit organizations, for expertise, innovation, energy, and flexibility.”

Federal government contractors have proliferated in recent decades. Beyond launching space shuttles and fighting wars, a growing number of “mundane” government tasks are being outsourced. Since 1945, the amount of public government work conducted by private contractors has been growing, and the division between public and private workforces has steadily declined. Now, contractors do “the basic work of government.” Contractors write regulations and budgets, produce reports, interpret laws, deliver social services, manage nuclear weapons sites, and other functions that were once wholly conducted by government officers. The amount of research and development spending by the United States government dropped from 67% in 1960 to 26% in 2000, as the private sector took over the “development and provision of public infrastructure.”

Not only has outsourcing increased and expanded to cover “mundane” tasks, but the amount of responsibility granted to non-governmental entities has also grown. The term “public-private partnership” was coined in the last

76. For example, NASA’s Space Flight Operations Contract with its contractor, United Space Alliance, provided the company $10 billion to handle virtually every aspect of a shuttle mission from astronaut training and system assembly to operations management during flight. See John D. Donahue, The Transformation of Government Work: Causes, Consequences, and Distortions, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 41, 58–61 (Jody Freeman & Martha Minow eds., 2009).

77. Contractors play major roles in many national undertakings, including serving in paramilitary CIA units and preparing surveillance and targeting plans in Afghanistan and restoring the site of the 9/11 terrorist attacks, cleaning up following Hurricane Katrina, and helping to repair the Gulf Coast environments damaged by the BP oil spill. See Christina M. Blyth, Minding the Liability Gap: American Contractors, Iraq, and the Outsourcing of Impunity, 62 U. MIAMI L. REV. 651, 656–57 (2008); Trade Group Praises Legislation Limiting Contractor Litigation Risk from Katrina Efforts, 47 GOV’T CONTRACTOR 423 (2005), available at Westlaw 47 No. 37 Gov’t Contractor 423 (describing the valuable role of private contractors in disaster relief following Hurricane Katrina and 9/11).

78. Freeman & Minow, supra note 76, at 15.
80. Freeman & Minow, supra note 76, at 2.
81. Id.
82. Levine, supra note 20, at 142. Also, in 2005, the U.S. General Accounting Office’s Department of Acquisition and Sourcing Management reported that there was an 86% increase in government private sector goods and services spending between 2000 and 2005. MINORITY STAFF SPECIAL INVESTIGATIONS DIV., U.S. HOUSE OF REPRESENTATIVES COMM. ON GOV’T REFORM, DOLLARS, NOT SENSE: GOVERNMENT CONTRACTING UNDER THE BUSH ADMINISTRATION i (2006).
two decades to denote “government contracts in which the private contractor takes on more responsibility than has been customary in the past for the delivery of the services contracted for.”

Through public-private partnerships, the government shifts much of the financing, maintenance, and operation of public infrastructure to private contractors. The increased use of public-private partnerships reflects a new enthusiasm for privatizing government functions.

The lines between “public” and “private” influences on government undertakings blur, despite the fact that the laws are still quite “binary” in separating rules governing public entities and those guiding the government. Transparency guarantees, like FOIA, have no power over private entities and no similar laws exist to require contracted companies to be transparent.

B. Proliferation of Contractors Doing Environmental Work

More than ever, federal agencies are using contractors to carry out work that affects the environment. A 1992 report stated that EPA contract obligations increased from $600 million in 1986 to approximately $1.4 billion in 1992. In 2010, the EPA spent $413 million on private contractors for Superfund alone. EPA contractors lend specific technical expertise for short-term projects. External contractors are also easier to hire and fund than long-term internal employees.

Not only has outsourcing increased, contractors now perform tasks once reserved for internal agency officials. “As early as 1989, it was uncovered during Senate hearings that EPA contractors were drafting budget documents, overseeing field investigators, drafting responses to public comments during the rulemaking process and writing regulation preambles, and organizing and conducting public hearings.”

83. Custos & Reitz, supra note 79, at 555.
84. Aman, supra note 72, at 269–70.
85. See generally ENVT. PROT. AGENCY, supra note 53 (describing EPA’s increasing reliance on private contractors). Also see statistics like “The Department of Energy spends over 90 percent of its budget on contracts, including contracts to operate research laboratories, maintain nuclear weapons stockpiles, and clean up radioactive and hazardous wastes resulting from weapons production.” Mendelson, supra note 3, at 242.
87. ENVT. PROT. AGENCY, OFFICE OF INSPECTOR GEN., REPORT No. 12-P-0360, EPA SUPERFUND CONTRACT INITIATIVES & CONTROLS TO REDUCE FRAUD, WASTE, AND ABUSE 2 (2012).
88. ENVT. PROT. AGENCY, supra note 53.
89. Id.
90. Steven J. Kelman, Achieving Contracting Goals and Recognizing Public Concerns: A Contracting Management Perspective, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN
C. Contractors Carry Out an Array of Environmental Tasks

The EPA Office of Acquisition Management (OAM) uses Federal Acquisition Regulation (FAR) Subpart 37.101 to describe the role of their service contractors. A service contract “directly engages the time and effort of a contractor whose primary purpose is to perform an identifiable task rather than to furnish an end item of supply.” These tasks include maintenance, operations services, technical support, and management support services. The EPA hires contractors for consulting, regulatory enforcement, auditing, managing, preparing analysis and reports, and other administrative operations. Ecologists, engineers, chemists, and suppliers of manpower, as well as scholars and managers, are just some of the people hired by the EPA in a contractor capacity.

The only tasks that contractors cannot perform are “inherently governmental functions,” which are activities “so intimately related to the public interest as to mandate performance by Government employees.” The EPA defines “inherently governmental functions” as activities requiring “the exercise of value judgment in making decisions for the government.” This definition seems like it would include many of the agency’s functions. However, upon closer inspection, many activities fall outside of the “inherent government function” parameters, and most activities can be outsourced. This is especially true as government budgets grow sparser and agencies face cutbacks and aim to increase their cost effectiveness.

DEMOCRACY 153, 177 (Jody Freeman & Martha Minow eds., 2009). See also id. at 204–06 (quoting PAUL C. LIGHT, TRUE SIZE OF GOVERNMENT 13–14 (1999)).


92. Id. at 1.

93. See Burka v. Dep’t of Health & Human Servs., 87 F.3d 508, 515 (D.C. Cir. 1996) (finding data tapes created and possessed by contractor were under “constructive control” of agency because of agency’s extensive supervision).

94. OFFICE OF ACQUISITION MGMT., supra note 90, at 1–2.

95. Id. at 1.

96. Id. at 2.

97. Id.

98. Id.
D. Contractor Documents Are Not Agency Records

Citizens cannot use FOIA to obtain contractor materials because FOIA only applies to “agency records.”\(^9\) In 1980, the Supreme Court decided in *Forsham v. Harris* that federal participation in, and funding of, the generation of information by a privately controlled organization does not render that information an “agency record” under FOIA.\(^10\) Nine years after the *Forsham* decision, the Supreme Court developed a two-part test for “agency records” in *United States Department of Justice v. Tax Analysts*.\(^11\) Under this test, a document is an agency record only if it is (1) created or obtained by an agency and (2) under agency control at the time of FOIA request.

The Supreme Court has, in limited instances, defined some contractor-generated documents as “agency records.”\(^12\) In *Hercules, Inc. v. Marsh*, the court held that a telephone directory, created for an Army ammunition plant by a contractor at government expense, was an agency record.\(^13\) Also, the D.C. Circuit Court found that contractor recordings created under agency supervision are “agency records.”\(^14\) The District of New Mexico has held that, where agencies express that they intend to retain control over records created by contractors, the records are “agency records.”\(^15\) In contrast, other federal courts have found that computer tapes maintained by contractors outside of agency control are not “agency records”, nor are records not possessed or controlled by an agency.\(^16\) Overall, there is no decisive rule governing whether contractor creations and holdings are

\(^12\) *Procedural Requirements*, supra note 98, at 75.
\(^13\) *Hercules, Inc. v. Marsh*, 839 F.2d 1027, 1029 (4th Cir. 1988).
\(^15\) See Los Alamos Study Grp. v. Dep’t of Energy, No. 97–1412, slip op. at 4 (D. N.M. July 22, 1998) (finding records created by contractor are agency records because the contract established agency intent to retain control over records). See also *Procedural Requirements*, supra note 98, at 35–36 nn.67–68.
\(^16\) See U.S. DEP’T OF JUSTICE, GUIDE TO THE FREEDOM OF INFORMATION ACT 36 (2009), available at http://www.justice.gov/oip/foia_guide09.htm for a discussion of Rush Franklin Pub’g, Inc. v. NASA, No. 90-CV-2855, slip op. at 10 (E.D.N.Y. Apr. 13, 1993) (holding that computer tape maintained by contractor is not an agency record when there is no agency control); See also Sangre de Cristo Animal Prot., Inc. v. U.S. Dep’t of Energy, No. 96–1059, slip op. at 4–6 (D. N.M. Mar. 10, 1998) (holding that records not possessed or controlled by an agency but created by entity under contract with agency are not agency records, but are accessible under agency regulation requiring public availability of some Dep’t. of Energy contractor records).
“agency records,” and the majority of decisions give deference to contractors’ privacy.

Congress has never moved to increase contractor transparency in a meaningful way. In 2007, Congress slightly expanded the definition of “agency record” to cover records kept by government contractors performing recordkeeping functions for the purposes of records management.\(^{107}\) This expansion does apply to contractors’ materials, but it merely covers distinct situations where agencies relinquish possession of their records to a contractor “for the purposes of records management.”\(^{108}\) The amendment keeps agency records within FOIA’s parameters—“even though they are no longer in the physical custody of the agency”—but it does not reach further to encompass contractor-created materials.\(^{109}\) Situations where contractors serve “recordkeeping” functions include those where contractors are hired to “store, organize, or manage” agency records.\(^{110}\) Beyond that, Congress has not extended FOIA to contractor materials.

FOIA practitioner guides similarly identify “agency records” as documents in an agency’s possession or otherwise under the agency’s exclusive control.\(^{111}\) Materials outside of agency walls are not likely to fall under FOIA. Documents from the actual contracting procurement process are one of the few exceptions to this rule and are readily available to the public.\(^{112}\) However, documents from the procurement process do not greatly enhance contractor transparency, as they do not offer information about the actual performance of the government contract (like pollution data, outlines of project plans, evidence of project oversight, etc.). Documentation of the contract’s performance, not the procurement process, contain the information needed to protect public safety and health.

Not only do contractors escape FOIA requirements, there are also exemptions built into FOIA that are especially suited to protect private company information. Trade secrets, business information, and privileged


\(^{109}\) Id.

\(^{110}\) Id.

\(^{111}\) Id.


work product are just a few of the exemptions contractors can use to squirrel away information from public view. Contractors can also file reverse-FOIA lawsuits to protect requested documents from release to the public.

E. Contractors Do Not Have to Keep Records

Private contractors are free to work without much public disclosure. Contractors are not tasked with documenting their activities for the purposes of public oversight. There are not recordkeeping laws or regulations that require contractors to keep records or provide all of their documents to agencies. Unless there is a complaint entered into a court that demands review of a final agency action—and that action involves contractor records—there is never a time where records have to be handed over to anyone.113

Even if there is a complaint that calls for agency review, by the time litigation has commenced, compiling a paper trail may be nearly impossible. Craig D. Galli, a litigator advising contractors preparing environmental impact statements, says that it is nearly impossible to gather materials for judicial review and this “virtually guarantees” that the record will be haphazard and incomplete.114 Even if contractors create paper trails and the government does successfully oversee their activities, the lack of transparency rules leave contractors’ activities largely inaccessible, especially by the time litigation arises.115

F. Contractors Do Not Have Transparency Requirements

Even if contractors choose to keep thorough records, they do not have to share them. FOIA, the federal government’s most important and far-reaching transparency law, does not apply to government contractors.116 Nothing in FOIA accounts for third parties carrying out government work, and most of FOIA’s policy relating to contractors protects information in contractor bids (during the acquisition process) from other potential contractors. The government’s interest in attracting quality contractors and its national policy of promoting corporate privacy to stimulate development (such as protecting trade secrets and financial information) prevents the

114. Id.
115. Freeman & Minow, supra note 75, at 3, 5.
116. Id. at 10.
government from implementing transparency measures for its contractors. The procurement process focuses on the issues facing potential contractors, not on public welfare or the transparency of contractors after they are awarded the contract.\textsuperscript{117}

Transparency disparities between the government and its contractors arise from the different goals of private enterprise and democratic government. Government and private businesses operate from opposing perspectives. The private sector is guarded, protecting its precious trade secrets and maintaining financial opacity.\textsuperscript{118} Conversely, government benefits from open democracy and the dissemination of information.\textsuperscript{119}

The divergence of contractor treatment versus government treatment is built into the foundation of the United States government. The federal government and the laws that regulate its behavior were not designed for commercial venues. Government commercial activity is notably absent from both our traditional view of government and core democratic values, and it is in that absence that the conflict between trade secrecy and democratic values resides.\textsuperscript{120} Although contractors are private entities, they should not be exempt from adherence to public values when they are performing government functions.\textsuperscript{121} Other nations have recognized the need for equal transparency measures for government contractors. In Hungary “the transparency and controllability of the privatization processes, as public interest, takes precedence over the private interest of protection of business secrets.”\textsuperscript{122}

As government contracting increases, the web of governmental and corporate forces working together to complete government tasks as a single workforce makes transparency all the more complicated.\textsuperscript{123} Combining government and private activity obscures the boundaries of government

\begin{thebibliography}{1}
\bibitem{117} Kelman, supra note 90, at 153.
\bibitem{118} SEC Disclosure Laws and Regulations, Inc., http://www.inc.com/encyclopedia/sec-disclosure-laws-and-regulations.html (last visited Oct. 28, 2013) (stating that the SEC forces some revelations through public disclosure and reporting laws, but information excluded from those mandates are tightly held and not released).
\bibitem{119} Levine, supra note 20, at 157.
\bibitem{120} Id. at 164.
\bibitem{121} See Martha Minow, Partners, Not Rivals?: Redrawing the Lines Between Public and Private, Non-Profit and Profit, and Secular and Religious, 80 B.U. L. REV. 1061, 1091 (2000) (explaining that contracting should not exempt the resulting activities from adherence to public values).
\bibitem{122} Levine, supra note 20, at 165.
\bibitem{123} Mark Fenster explains that the government’s organizational complexity increases when it delegates its authority to private entities, which decreases visibility to the public. He writes that, “to the extent that current law limits the FOIA’s applicability to new governance efforts, then the new governance approach appears significantly less than perfectly transparent.” Fenster, supra note 18, at 649–50.
\end{thebibliography}
activity when drafting and enforcing rules to govern functions that “appear governmental.”

Under current laws, citizens cannot use FOIA to find out how government contractors are exercising their discretion.\textsuperscript{124} Private companies do not have to comply with FOIA, which is only meant to ensure access to government information.\textsuperscript{125} Because no comprehensive legislative scheme governs contractors, they “function under a patchwork of laws and doctrines, many of which were designed primarily for other purposes. At best, the current laws governing contractors amount to a makeshift legal framework.”\textsuperscript{126}

III: IMPROVING ENVIRONMENTAL TRANSPARENCY WITH CLAUSES IN GOVERNMENT CONTRACTS

Many solutions have been suggested to increase the transparency of government contractors. National security contracting has been analyzed at length, exposing the types of contractor practices that turn companies like Blackwater and Halliburton into household names that demonstrate the ugly underworld of government outsourcing. National security scholars have determined that contractor oversight is an “inherently governmental function that, by law, should not be outsourced.”\textsuperscript{127} Governmental oversight requires information access.

Experts also suggest that government favor transparency, as there is little value in obscuring information from the public. These experts claim that full disclosure of chemical hazard information would enhance national security, rather than diminish it, because it would allow communities to prepare for attacks, accidents, and other catastrophes through proper planning and preparation.\textsuperscript{128}

Some legislative changes have been suggested to reach oversight and transparency ideals. Although legislative changes may be useful, this paper focuses on contractual changes. Utilizing the very document that binds government and contractor provides both parties with obligations that are easier to implement and enforce than a complex legislative scheme. New

\textsuperscript{124} Custos & Reitz, supra note 79, at 578.
\textsuperscript{125} Martha Minow, Outsourcing Power: Privatizing Military Efforts and the Risks to Accountability, Professionalism, and Democracy, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 110, 122 (Jody Freeman & Martha Minow eds., 2009).
\textsuperscript{126} Mendelson, supra note 3, at 242.
laws would create new layers of responsibility on an already stressed legislative and regulatory system, which may result in a toothless, ineffective set of time consuming rules that fail to truly change the government contractor relationship. Experts are quick to point out that placing additional legislative rules on contractors may be ineffective, working only to “mar the system with red tape.”

When Washington State attempted to beef up its contractor transparency requirements by including government contractors into its freedom of information law (the Public Records Act), agencies had to scramble to set up new disclosure systems to determine what documents were “critical” and to properly deliver those documents. Because agencies do not have the staff to properly administer the new layer of procedures assigned by the disclosure law, contractors and agencies often decide what is “critical” without any oversight. As a result, there is no way to assure that all of the important material actually ends up in agency control.

In addition to preventing bureaucratic issues, contractual mandates also avoid the slow response time of legislatures, which often stalls statutory change indefinitely. Contracts work around disconnects between legislation and the free market world of contractors by reaching out directly to contractors and imposing obligations on them. Giving free market participants real-life, free market requirements fits in the flow of the contracting process.

Changing government contract terms to increase transparency incentives or requirements is the best way to assure access to environmental information. The three possible contract clauses discussed below require information disclosure for government contractors, offer contractual incentives for environmental information disclosure, or require public participation at certain points in the contracting process.

129. Kelman, supra note 90, at 165.
130. Jeffrey A. Ware, Clarke v. Tri-Cities Animal Care & Control Shelter: How Did Private Business Become Government “Agencies” Under the Washington Public Records Act?, 33 SEATTLE U. L. REV. 741, 741–42 (2010). According to the court, the Public Records Act requires quasi-governmental agencies, or private entities that worked in the functional equivalency of government agencies to follow the state disclosure law so that contractors cannot “hide the details of their activities behind the smokescreen of ‘contracting out’ government services.” The judicial test for determining functional equivalency is called the “Telford Test”. Id.
A. Contract Clauses Requiring Information Waivers for Government Contractors

Scholars have recognized the value of contractual mechanisms mandating accountability in other contexts. Laura Dickinson suggests including accountability mechanisms into government contracts to create court enforceable standards of behavior.131 She writes, “it is essential that, at the very least, the contracts themselves incorporate public values,”132 so the public interest does not get lost in layers of contractor secrecy.133 Including contractual provisions requiring contractors to provide public access to information on environmental issues would force contractors to comply with FOIA-like standards that would otherwise be unenforceable against the private entities.134

Steven J. Kelman suggests that government contract clauses could simply be a direct application of FOIA for “FOIA-type issues” that are considered to be important.135 This direct inclusion of FOIA principles in government contracts would be an efficient solution to the opacity of contractors’ tasks. Alfred Aman suggests including modified FOIA request requirements that allow the public to make inquiries about contractors’ operations while the contract is in place.136

This type of clause would most directly apply “private-FOIA” obligations on contractors. While FOIA transparency would be optimal for gaining access to contractors’ information, it may also prove quite burdensome for contractors. Critics of imposing FOIA requirements on private entities worry that “productive and innovative private organizations may choose not to pursue government contracts to avoid the invasion of privacy, the added work, and the expense required to comply.”137 They call the use of FOIA provisions for government contract work a “devastating policy that would almost certainly cause the wholesale withdrawal of firms not completely dependent on government business from the government marketplace.”138

---

131. Dickinson, supra note 21, at 336.
132. Id. at 337.
133. See id. at 338 (recognizing that contracts can “be a tool to “publicize” the privatization relationship”).
135. Kelman, supra note 90, at 185.
136. Aman, supra note 72, at 284.
137. Ware, supra note 129, at 766.
138. Kelman, supra note 90, at 185.
While these concerns may have some merit, the information gleaned from private-FOIA transparency would allow those concerned with the Great Lakes operations in Miami’s reefs and seagrass beds to obtain records of work done, outlines of plans, and any information about pollution studies done before, during, and after the dredging project. The amount of information available to environmental advocates would be unparalleled by current contractor documentation, and, for the first time, the general public could actively track Great Lakes operations and have a real stake in the environmental outcomes of the port deepening.

B. Contract Clauses Requiring Public Participation in Government Contractors’ Activities

Another type of contractual mandate could increase public participation in the activities of private contractors doing government work. In normal agency processes, public notice and comment periods guarantee public participation opportunities. The same opportunity to know about and comment on agency activities is missing in situations where contractors carry out government functions. Contract clauses infusing the contracting process with periods where interested citizens can actively engage government contractors would increase transparency in government contracting.

Aman urges maximizing public participation as early as possible in the contracting process, as contracts are often hard to terminate and sometimes become “immutable.”\(^{139}\) The “early and often” approach to public participation in government contracts would be especially helpful in situations where environmental safety is at risk, as once something harms the environment it is often irreversible or very difficult to repair. Aman suggests that contract clauses could be made to treat the contract more like an agency rule than a contract negotiated between two parties, so that it must be placed on the agency’s website with a call for public comments, suggestions, alternative language, and ways to achieve its substantive goals from anyone wishing to comment, including affected parties.\(^{140}\) Continued participation in contractor activities, not just at the outset of contracts, but throughout the performance of contractual terms, would assure that the contractors do not fall outside of initial guarantees to utilize environmental safeguard as the process unfolds. Continued public participation would help safeguard contractor practices from regulatory

\(^{139}\) Dickinson, supra note 21, at 353 (citing Aman, supra note 71).

\(^{140}\) Aman, supra note 72, at 284.
slippage, and it would prevent agencies from falling prey to capture by forcing discussion and communication, which is important to democratic procedure.\footnote{141}

In lieu of direct public participation, contracts could require contractors to enlist an ombudsman or designated person acting on behalf of the public. This system is utilized in New Zealand, where an ombudsman considers a particular set of rules when the government denies information disclosures to the public on the basis of commercial confidentiality.\footnote{142} The ombudsman weighs the activity being protected against the market forces that may harm the contractor should the information be released against the public interest.\footnote{143}

Another possibility would be creating opportunities for open discourse between government contractors and the beneficiaries of the contracts. On a state level, Wisconsin has successfully opened up its contracts with managed care organizations supplying Medicare and Medicaid recipients to community group participation.\footnote{144} This limited engagement provides increased transparency without the burden of a highly particularized notice and comment scheme.

\begin{quote}
\textit{C. Contractor Incentives for Information Disclosure}
\end{quote}

The federal government and state governments offer incentives for some of their contractors’ commitments. Contractor incentives include U.S. based business incentives, economic development incentives to companies willing to stimulate the national economy, and relocation incentives to business centers in a particular city or state. These practices could be used to urge contractors to waive information disclosure for environmentally relevant materials. Incentivizing contracts containing disclosure commitments would fit within the current contract-bidding scheme, as that scheme already contains incentives for other assurances.

The federal government and state governments have utilized incentivized contracts to encourage environmental contractors to take extra steps to assure that the public interest is not forgotten in the outsourcing process. For instance, the EPA has employed Superfund contractors under cost-plus-award-fee contracts, which reimburse for costs and provide an

\begin{footnotesize}
\footmatter{141. Id.}\\
\footmatter{142. David S. Levine, \textit{The People’s Trade Secrets?}, 18 MICH. TELECOMM. TECH. L. REV. 61, 111 (2011).}\\
\footmatter{143. Id. at 111–12.}\\
\footmatter{144. Dickinson, supra note 21, at 353.}
\end{footnotesize}
“award fee” to motivate “exceptional performance” where the contractors have to expend extra costs to assume extra benefits that help the public.\textsuperscript{145}

Transparency incentives could benefit the contractor as much as the government itself, as more transparency and public participation can improve the plans of private institutions.\textsuperscript{146} Using contract language to incentivize public participation is less burdensome on contractors than a private-FOIA mandate or public participation requirement, as it rewards good transparency behavior but does not force it. Federal Acquisition Regulation (FAR) permits incentives that motivate contractor efforts that might not otherwise be emphasized and incentives that discourages contractor inefficiency and waste.\textsuperscript{147} If contractors were financially rewarded for providing environmentally relevant information about their projects, such a reward may compel Great Lakes to release data on its dredging progress or proactively provide progress reports to the public.

IV. CRITIQUES OF TRANSPARENCY CLAUSES

Transparency clauses in government contracts would increase desperately needed access to environmental information. Despite the ease of amending contracts and the great benefit the clauses would provide to environmental advocacy and environmental safety, critics would point out some possible negative outcomes from including those clauses into government contracts. Some possible issues with transparency clauses include concerns that they may dissuade private entities from contracting, may controvert FOIA’s protection of private entities, and may be insufficient to create transparency.

A. Increased Contract Obligations May Turn Off Contractors

Imposing “FOIA-like” procedures on government contractors may increase contract prices and frighten away potential contractors who prefer to work without heavy bureaucracy.\textsuperscript{148} Federal agencies dedicate many resources to satisfying FOIA requirements, including FOIA officers, staff to process requests, and an infrastructure that properly stores information for

\textsuperscript{145} Mank, \textit{supra} note 56, at 78.
\textsuperscript{146} Levine, \textit{supra} note 20, at 175.
\textsuperscript{147} See 48 C.F.R. § 16.403 (2013) (discussing how contract incentives can have a “meaningful impact on the contractors’ management of the work”).
\textsuperscript{148} See Kelman, \textit{supra} note 90, at 186 (discussing how some contractors may find FOIA-like clauses undesirable).
Most federal agencies have entire offices dedicated to fulfilling FOIA requirements and requests. Hypothetically, contractors would have to supply a similar set of resources if they were subject to “FOIA-like” requirements. Whether the government would require contractors to supply this workforce and infrastructure themselves, or whether the government would create an intra-governmental system for contractor accountability, the undertaking would certainly require money, infrastructure, and manpower.

In a cost-benefit analysis, increased public access to information about environmental threats trumps contractors’ concerns about potential costs of environmental transparency requirements. Public health is more valuable than money saved by not disseminating information to the public. Contractors acting for the government should presume that they might be subject to public disclosure requirements. “We can and should expect such public disclosure when companies step out of the purely private commercial world and seek to reap the financial benefits of providing essential public infrastructure.”

Dickinson suggests that allocating contract resources to oversight would not create financial hardship for either the government or its contractors. She explains that, because of the “huge amounts of money flowing to these contracts,” the government could ensure that a small percentage of each contractual fee gets allocated to monitoring measures such as increasing transparency, thus financial interests would not be unduly burdened.

B. Contractor Disclosure Conflicts with FOIA Protections

Despite an obvious need to gain access to some types of contractor information (including the information that reflects potential environmental issues that could affect public health and welfare), FOIA itself protects a lot of corporate information. Thus, there is a chance that private contract clauses could contradict the legislative intent of FOIA. For instance,

---


151. Levine, supra note 20, at 140.

152. See Dickinson, supra note 21, at 335 (discussing various contract accountability mechanisms).

153. Id. at 345.
FOIA’s fourth exemption protects commercial trade secrets and business information. Although these exemptions are geared more towards protecting the profitability of private entities rather than withholding information of use to the public for health and safety reasons, there is little legislative history to clarify that intention, and the courts have read the trade secret exemption broadly. Court opinions continue to expand the definitions of “secrecy” and “commercial use” to protect more information.

Using FOIA’s fourth exemption, federal courts permit companies to keep their documents hidden from the public. The D.C. Circuit Court held that any “commercial or financial matter” is confidential under the fourth exemption if disclosing the information might (1) impair the government’s ability to obtain necessary information in the future or (2) harm the competitive position of the entity from which the information was obtained. This test usually favors non-disclosure and is used despite the fact that it requires complicated economic analyses. According to the D.C. Circuit, if contractors voluntarily provide agencies with information that would “customarily not be released to the public” by a corporation, then the agency also cannot release it.

Courts read the fourth exemption so liberally in favor of corporations one commenter argued that the fourth exemption essentially offers “veto power” to government contractors so that contractors can hide whatever they want from government watchdogs. Courts have interpreted the fourth exemption in favor of corporate secrecy over the public interest and Congress has not stepped in to curb this trend. Thus, FOIA’s fourth exemption has become a “shelter,” protecting the private industry’s damaging or embarrassing information from public disclosure.

155. Dembling et al., supra note 111.
156. Levine, supra note 20, at 150.
Along with procurement policies that explain to contractors how their confidential business information (CBI) will be protected, several statutes dealing with environmental information also clarify whether certain information is CBI. The Clean Air Act (CAA) specifies that emission data is not CBI. However, it is not clear whether the data that goes into emissions calculations (raw material used, production volume, etc.) are CBI, so while contractors must disclose emissions data, they may not be obligated to offer any more than that.

The amount of CBI privacy granted to contractors has spurred clashes between environmental advocates trying to get information and the federal government. When the Environmental Integrity Project sought data on coal ash disposal practices from power plants, some of the plants claimed their data was “confidential business information” (CBI) and did not turn over the information. In 2006, environmentalists had to turn to the courts to attempt to get data on existing bromide stockpiles that the EPA refused to open to the public under the shield of CBI. In addition, in 2005, a court upheld the public’s right to obtain documents regarding genetically modified crops after the EPA refused to disseminate them using the CBI exemption. In San Jose, California, citizens seeking information about the government’s proposed purchase of industrial land in the South Bay

---

163. For example, Andrew J. Moran, general counsel for the EPA, drafted Class Determination I-95: Confidentiality of Certain Business Information Submitted by Contractors and Prospective Contractors, explaining, “Every year, EPA receives numerous requests under the FOIA for release of information submitted to the Agency by its contractors and prospective contractors. Such documents include contract proposals, awarded contracts and contract modifications, invoices, accounting and financial reports, and an array of other documents that trace the contracting process. In almost all cases, the businesses that submit these documents to the Agency claim at least portions of the information contained in them as confidential business information.” See ANDREW J. MORAN, U.S. EPA, OFFICE OF GEN. COUNSEL, CLASS DETERMINATION I-95, at 1 (1995), available at www.epa.gov/oam/foia/i95.pdf (discussing the frequent requests under FOIA for release of information submitted by its contractors and prospective contractors).


were rebuffed by the U.S. Fish and Wildlife department, which claimed that the information was CBI belonging to Cargill.\textsuperscript{169}

In 2007, Congresswoman Barbara Boxer criticized the EPA for hiding documents regarding CERCLA cleanup fund shortages as “privileged” under CBI even though they actually did not contain CBI information.\textsuperscript{170} She said they should be available to the public automatically.\textsuperscript{171} Environmentalists wanted the information in order to assess the agency’s ability to meet cleanup goals.\textsuperscript{172} Disclosure clauses in contracts may resolve these types of battles, but the piles of court precedent stacked in favor of corporate privacy in the face of disclosure requirements may be tough to override if government contractors choose to fight the contractual obligations.

Some sources of hope for the success of contractual transparency requirements are the statutes that explicitly require transparency in environmentally sensitive situations. Some environmental legislation requires certain public disclosures, making it clear that in situations where public health and safety are at risk, the public’s right to know overrides corporate secrecy.

For example, the Emergency Planning and Community Right to Know Act (EPCRA), a law created in 1986 to prepare communities for emergencies, requires public notifications when potential chemical hazards exist.\textsuperscript{173} Under EPCRA, owners and operators of some types of facilities must publish material safety data sheets and chemical inventories that exceed Occupational Safety and Health Administration (OSHA) thresholds.

Furthermore, the CAA provides for “community oversight and public dissemination of information on the consequences of potential accidental releases of dangerous compounds from private and public chemical facilities.”\textsuperscript{174} The Act requires stationary chemical emission sources to give Risk Management Plans (RMP) to the EPA and the public, as well as a five-year release history, emergency prevention and response plans, and an “Off-Site-Consequence Analysis” summarizing the worst-case scenario for a facility.\textsuperscript{175} These RMPs are technically publicly available, however, they

\begin{itemize}
\item \textsuperscript{169} Paul Rogers, \textit{Federal Officials Remain Secretive on Plan to Buy $300 Million Bay Habitat}, SAN JOSE MERCURY NEWS, Jul. 20, 2001, available at Infotrac Newstand.
\item \textsuperscript{170} Hill Oversight Prompts Activists to Hold Off on EPA Superfund Inquiry, \textit{INSIDE THE EPA} (Dec. 7, 2007), available at Westlaw 2007 WLNR 24076819.
\item \textsuperscript{171} Id.
\item \textsuperscript{172} Id.
\item \textsuperscript{173} Barkas, \textit{supra} note 162, at 205.
\item \textsuperscript{174} See \textit{id.} at 206 (discussing 42 U.S.C. \textsection 7604 (2006) \textit{et seq.} and specifically \textsection 7412(r)(7)(B)(ii) (2006)).
\item \textsuperscript{175} 42 U.S.C. \textsection 7412(r)(7)(B)(ii) (2006); Chekouras, \textit{supra} note 27, at 113–14.
\end{itemize}
can only be viewed (no copying allowed) in on-site reading rooms.\textsuperscript{176} Sean Moulton, an analyst with OMBWatch, a government watchdog organization, says that RMPs are light on details and cannot be relied upon as a sole source of environmental information.\textsuperscript{177}

The National Environmental Policy Act (NEPA) requires federal agencies to draft Environmental Impact Statements (EISs) and release them to the public before engaging in activities that significantly affect the quality of the human environment.\textsuperscript{178} EISs are open to public review, and the agency must include any comments and responses in the final draft of the EIS.\textsuperscript{179}

The disclosure provisions found in EPCRA, CAA, and NEPA demonstrate that the government does not intend to shield environmental information from public view. These statutory disclosure requirements share the same purpose as environmental information transparency clauses in government contracts: to inform the public about environmental issues that may affect their safety. Because of this shared purpose, it is unlikely that courts would apply traditional FOIA exemptions to contractors unwilling to provide environmentally relevant information.

\textit{C. Public Participation Burden the System for Little Gain}

Although increased public participation would theoretically increase environmental transparency, adding additional processes to government contracting threatens to bog down an efficient contracting system with layers of process. Public participation may also delay projects if there are debates between the public and the contracted entity. Such debate is useful in a legislative forum, and in fact, is an integral part of our federal system’s checks and balances. However, it could be argued that the administrative system must move more fluidly and with less external intervention so that contracts get fulfilled and projects do not stall, holding contractors in perpetually unresolved discourse.

Additionally, public participation has not always proven to be the most effective way to guarantee transparency. For example, when the World Bank financed private contractors to build an oil pipeline in Chad, they

\begin{itemize}
\item \textsuperscript{176} Id. at 115.
\item \textsuperscript{178} Barkas, \textit{supra} note 162, at 207 (citing the National Environmental Policy Act, 42 U.S.C. § 4332(C) (2006)).
\item \textsuperscript{179} 40 C.F.R. § 1506.6 (2012).
\end{itemize}
included provisions requiring local public participation throughout the contract’s performance.\textsuperscript{180} As a result of the public participation clauses, Exxon, the leading oil company on the project, “engaged in extensive consultations with local groups” and sent experts and consultants, including sociologists and ethnologists, to the region affected by the project.\textsuperscript{181} In the end, the huge amount of public participation did not alleviate the concerns of non-governmental environmental organizations that, to this day, condemn the negative environmental impacts of the pipeline project.\textsuperscript{182} Although there are many reasons for this, including political differences and the intricacies of international law, the example raises the possibility that public participation may be a lot of talk with far less action.

In the Miami port scenario, direct and open conversations among Great Lakes, the local and federal government entities, and members of the public would increase awareness and allow for debate. Whether public participation would actually change operations or sway the will of the contractor is unknown, at least the public would have a glimpse into a major project affecting their local environment. Even if a public participation clause does not have the full force of a “private-FOIA” requirement, it is a less burdensome approach and would bridge an important information gap. Cooperation between contractors and the public provides public deliberation, which forces determinations that are less partial and are more aligned with the public’s interests. Public participation provides corporate activities with an audience, which “keeps the corporations honest” by making sure contractors satisfy the public’s judgment on the merits of their goods and services.\textsuperscript{183}

\textit{D. Contracts May Not Be Enough}

Critics of enhancing public policies through private contracts are quick to point out that a contract is not an infallible document. Adequately specifying contractual terms in order to meet the needs of the public can be a daunting task.\textsuperscript{184} Agencies drafting contracts often struggle with “defining requirements, establishing expected outcomes, and assessing contractor performance.”\textsuperscript{185} Even if the perfect contractual language properly holds government contractors to higher transparency standards, there is a proven

\textsuperscript{180} DICKINSON, supra note 41, at 134.
\textsuperscript{181} Id. at 135.
\textsuperscript{182} Id. at 136.
\textsuperscript{183} Levine, supra note 20, at 175.
\textsuperscript{184} Mendelson, supra note 3, at 243.
\textsuperscript{185} See id. (quoting U.S. GEN. ACCT. OFFICE, CONTRACTING FOR BETTER OUTCOMES 15 (2006)).
lack of supervision over federal government contractors that increases the chances of poor contract performance.\textsuperscript{186} The failures of government oversight could undermine the contractual FOIA language, making the inclusion of environmental transparency clauses nothing more than inserting toothless suggestions instead of well-enforced terms of agreement.

In addition to the inability of contracts to bind parties to best practices, incentives placed in contracts are not guaranteed to work. Gregory Garrett, an acquisitions expert specializing in federal government contracts, reports that contract incentives have had mixed results: “Sometimes they have worked very successfully and other times they have failed to motivate the contractor to achieve excellent results.”\textsuperscript{187} Even with an incentive, there is no guarantee that the contractor will provide any additional information. Thus, this is the weakest transparency provision of the three contract clauses. Despite the offer of an incentive, Great Lakes, like other contractors, could choose to eschew the reward in favor of keeping its business affairs away from public view.

With the infallibility of contract clauses in mind, it is important to remember that in the current contracting scheme there are hardly any requirements that government contractors keep the public informed about any aspect of their operations. This is true even if they are engaged in activities that could greatly harm the public environment. Companies can easily bypass statutory transparency obligations by hiding behind trade secrets and business information protections. Corporations must be made accountable for keeping the public informed when they do things that affect the environment. Contract clauses are an efficient, fast, and comfortable mechanism through which the government can engage its contractors and compel them to be environmentally transparent. While contracts are rarely perfect, they do offer an opportunity to create enforceable transparency assurances and access to otherwise private information held by government contractors.

CONCLUSION

In 2007, David S. Levine said that contractor secrecy and “its attendant goals of pecuniary gain and commercial competition” conflicts with the goals of transparent and accountable democratic governance.\textsuperscript{188} He warned

\begin{itemize}
  \item \textsuperscript{186} \textit{Id.}
  \item \textsuperscript{188} Levine, supra note 20, at 138.
\end{itemize}
that if we do not improve contractor transparency, then contractor-created infrastructure will direct public law instead of the democratic legislative and regulatory processes designed to safeguard the public interest.\(^\text{189}\)

To shed sunlight on agency activities FOIA fails to reach, the United States must create transparency obligations for private contractors working on environmental projects. Government contracting does not protect public health and environmental interests as outsourcing does not account for market failures, reign in regulatory slippage, or prevent agency capture. Public citizens are not mere “clients” in the government contracting process, and private entities should not be able to sidestep democratic safeguards carefully embedded in the federal government’s practices.\(^\text{190}\) In the environmental context, where individual citizens cannot control the environmental effects of government projects, it is important that people have access to information vital to protecting public health. This is especially true in situations where private entities engage in cost-cutting, efficiency-maximizing behaviors that do not honor environmental protection and endanger land, air, and water.\(^\text{191}\)

Thus, government contractors should comply with the same democratic norms as the government agencies that hire them.\(^\text{192}\) Compliance with democratic, FOIA-like transparency measures should be written into contracts between federal agencies and third-party contractors. Clauses requiring information waivers for environmental activities and data, clauses requiring public participation and regular reporting for contractor activities, and contractual incentives for disclosure would force public openness and information accessibility for projects carried out by government contractors. In projects that involve the health and safety of millions of United States citizens, like the dredging project off Miami’s coast, contractors should be obligated to provide information and satisfy the public’s “right-to-know.”

\(^{189}\). Id. at 140.

\(^{190}\). Aman, supra note 72, at 279.

\(^{191}\). See S. Res. 469, 151st Gen. Assemb., Reg. Sess. (Ga. 2005) (demonstrating a state’s attempt to balance competing interests); See also Aman, supra note 71, at 281 (discussing the recent Georgia bill).

\(^{192}\). Freeman & Minow, supra note 75, at 18.
CLIMATE CHANGE AND THE DECLINE OF THE FEDERAL RANGE:
IS ADAPTIVE MANAGEMENT THE SOLUTION?

By Hillary M. Hoffmann*

Introduction .................................................................................................................. 262
I. Adaptive Management: Theory and Practice .............................................. 265
   A. The Birth of Adaptive Management Theory: a New Approach to Understanding and Managing Ecosystems .............................................. 265
   B. Adaptive Management in Practice: A Story of Mixed Results .......... 267
   C. Adaptive Management Successes and Failures ................................ 271
II. Livestock Grazing on Public Lands: Relevant Statutes, Regulations, and Agency Policy ................................................................................................................. 275
   A. Pre-1930s Federal Grazing Policy ............................................................... 275
   B. Management of Livestock Grazing on Bureau of Land Management Lands ............................................................................................................... 276
   C. Management of Livestock Grazing on National Forests Lands ....... 281
III. Climate Change and Resource Management ......................................... 281
IV. Adaptive Management of the Federal Range in Light of Climate Change Impacts .......................................................................................................................... 286
Conclusion .................................................................................................................... 289

INTRODUCTION

Livestock grazing impacts over 160 million acres of federal public lands under Bureau of Land Management ("BLM") management and ninety-five million acres of National Forest lands. It is widely

* Hillary M. Hoffmann is a Professor of Law in the Environmental Law Center and a Faculty Fellow in the Center for Agriculture and Food Systems at Vermont Law School. The author would like to thank Melissa Scanlan, John Echeverria, and Chad Barnaby for their support and encouragement.

acknowledged as the single most extractive use of all federal public lands.\(^2\)
Despite the destructive history of grazing on federal lands, as reflected in
decades of remedial legislation,\(^3\) scholarly criticism,\(^4\) and extensive
litigation,\(^5\) the legal structure governing livestock grazing has remained
essentially unchanged for over eighty years.\(^6\) In essence, this structure
allows as many cows, sheep, and horses to graze the public range as when
range conditions and forage yields were at their greatest, despite evidence
of increasing temperatures across the most arid regions of the United States
and climate change data predicting the overall water supply in the western
United States has begun to decline and will continue to do so for the
foreseeable future.\(^7\)

In the face of scholarly urging, neither Congress nor the administrative
agencies charged with managing the federal range resource have adopted
any statutory or regulatory responses to the climate change data.\(^8\) Neither
new legislation nor new regulation appears likely in the foreseeable future.
For these reasons, adaptive management may be the only solution already
built into the agencies’ decision-making framework that will allow the
flexibility in range management decisions that climate change data require.

Adaptive management allows federal agencies, and individual land
managers within those agencies, much-needed flexibility to make quick
decisions when circumstances demand, based on a scientific method
involving hypotheses, monitoring, and outcomes assessments.\(^9\) Moreover,
where the traditional model of resource management centered on discrete
natural resource topics—effectively organizing the natural environment into
disconnected parts, such as air, trees, water, and wildlife—adaptive
management, in theory, allows land managers to make decisions for an
entire ecological system, as conditions warrant.\(^10\)

---

2010); FOREST SERV. RANGE MGMT., U.S. DEP’T OF AGRIC., GRAZING STATISTICAL SUMMARY 2009 at
iii (2011).
2. John D. Leshy & Molly McUsic, Where’s the Beef? Facilitating Voluntary Retirement
4. Debra L. Donahue, Western Grazing: The Capture of Grass, Ground, and Government,
7. Brad Udall, Presentation at the Sixteenth Institute for Natural Resources Law Teachers
(May 31, 2013) [hereinafter Udall Presentation].
8. Marya Torrez, Cows, Congress, and Climate Change: Authority and Responsibility for
Federal Agencies to End Grazing on Public Lands, 14 VT. J. ENVT’L L. 1, 16 (2012).
9. J.B. Ruhl & Robert L. Fischman, Adaptive Management in the Courts, 95 MINN. L.
REV. 424, 428 (2010); Nell Green Nylen, To Achieve Biodiversity Goals, the New Forest Planning Rule
Needs Effective Mandates for Best Available Science and Adaptive Management, 38 ECOL. L.Q. 241,
10. Ruhl & Fischman, supra note 9, at 428.
The primary statutes governing livestock grazing on federal lands use past behavior and use patterns to gauge permissible future uses.\(^1\) In an attempt to modernize this ineffective legal structure, the Forest Service and BLM have taken incremental steps toward using adaptive management to make some management decisions; however, they have largely failed to realize the potential of this management model, particularly in light of climate change data.\(^2\) Given the climate change predictions and the changed environmental circumstances that federal range managers will inevitably face\(^3\)—such as forage loss and prolonged droughts—changes in management approaches are inevitable. This is particularly true in the context of livestock grazing, which, as mentioned above, has retrospective statutory mechanisms for determining not only permissible, but required future use.\(^4\) Currently, the relevant statutes and regulations require the Forest Service and BLM to continually renew grazing permit applications if the permittee has complied with the terms of the previous permits, despite new information regarding water scarcity or forage depletion on the allotment in question.

The Forest Service and BLM have missed the opportunity to use adaptive management as a means to avoid legal challenges under statutes such as the National Environmental Policy Act (NEPA) related to livestock grazing permit renewals on Forest Service lands, to manage the range resource in line with climate change predictions, and allow the flexibility in decision making regarding livestock grazing that climate change predictions require.\(^5\) Part I of this article discusses adaptive management in theory and practice; explaining the various models scientists and policy makers use to incorporate adaptive management into natural resource planning decisions, providing examples of how some federal agencies have used adaptive management over the past decade to varying degrees of success. Part II explains the statutory and regulatory structure governing livestock grazing on federal lands managed by the Forest Service and the BLM, as well as the individual management decisions regarding permitting and annual operating instructions. Part III discusses climate change, on a global and

\(^{11}\) E.g., 43 U.S.C. § 315(b).
\(^{13}\) Carolyn Brickey et al., How to Take Climate Change Into Account: A Guidance Document for Judges Adjudicating Water Disputes, 40 ENVTL. L. REP. NEWS & ANALYSIS 11215, 11215 (2010).
national level, and explores the specific predictions regarding climate change’s effect on the federal range. Part IV explores the potential for adaptive management to allow agencies to manage for a changed climate as it relates to livestock grazing. This article concludes that the Forest Service and BLM must incorporate adaptive management into current grazing management decision-making processes to accommodate the certainty that climate change will impact the federal rangeland.

I. ADAPTIVE MANAGEMENT: THEORY AND PRACTICE

A. The Birth of Adaptive Management Theory: A New Approach to Understanding and Managing Ecosystems

The concept of adaptive management originated in the late 1970s, first appearing in a book by ecologist C. S. “Buzz” Holling, entitled *Adaptive Environmental Assessment and Management*. Holling’s central premise was that the statutory regime governing natural resource management and use was flawed because of its “divide and regulate” structure—parts of an ecosystem were broken out and regulated independently, sometimes by different agencies under separate statutes and regulatory regimes. While “divide and regulate” made sense to Congress in theory, and organized natural resources well on paper; in practice, it forced resource managers to make decisions impacting entire ecosystems in a piecemeal fashion, without considering the greater impacts of those decisions on the entire regional ecosystem and at times, in spite of them.

This structure also belied the scientific approach to resource planning, making it difficult for resource managers to implement measures recommended by the scientific community in a comprehensive way. Under NEPA, for example, agencies determined whether to allow major federal actions in certain areas based on the discrete impacts of those decisions on one sector of the ecosystem and on how the development would violate resource-specific standards. Likewise, under the traditional management model, a BLM official considering whether to close a grazing...
allotment as part of a revision to a Resource Management Plan might consider erosion impacts, which is what the statutes require, but not the impact that closing the allotment would have on the overall water supply in the watershed. This approach misses the proverbial forest for the trees, given that erosion and other impacts noted in the statutes are often a symptom of changes in the water table, and possibly, of changes in the global climate. The water table, in turn, is a vital component of any ecosystem; thus, making decisions using erosion as a barometer misses the critical importance of the available water resource.

In the 1970s, Holling argued that ecosystems’ dynamic tendencies require resource planners to use a more holistic, interdisciplinary approach to natural resource management. Ideally, the process would constitute an informed “feedback loop,” wherein resource managers would make decisions, understanding that the information upon which they based those decisions was incomplete. They would then implement the decisions and measure their results through ecosystem-wide assessments, and determine whether changes were required to meet conservation mandates in the relevant statutes and regulations. The process would then begin again, and continue to accommodate both discrete and global resource allocation challenges as they arose, ad infinitum. This “feedback loop” would operate within a margin of uncertainty, but Holling and others posited that the incomplete information is not necessary to make sound resource management decisions. All that is required, in theory, is a certain comfort level with an iterative process and the capability to quickly respond to changes in circumstance.

When fully implemented, adaptive management would incorporate testable hypotheses, measure their validity, and incorporate the results on both a small discrete scale and within a larger ecosystem. From its birth in Holling’s book, the theory of adaptive management and its myriad forms of implementation, have received extensive support from the scientific and legal academies, as well as from the administrative agency officials tasked with implementing statutory mandates. It is the implementation of this

22. Udall Presentation, supra note 7.
23. HOLLING ET AL., supra note 16, at x.
25. Gardner, supra note 17 at 234.
26. Id.
27. Ruhl & Fischman, supra note 9, at 429.
28. See Ronald D. Brunner & Tim W. Clark, A Practice-based Approach to Ecosystem Management, 11 CONSERVATION BIOLOGY 48, 56 (1997); Anne E. Heissenbuttel, Ecosystem Management-Principles for Practical Application, 6 ECOLOGICAL APPLICATIONS 730, 732 (1996); Paul
theory that causes most of the disagreement over its value as a resource management technique.

**B. Adaptive Management in Practice: A Story of Mixed Results**

When implemented, adaptive management may take any of several forms, and it may encompass different components depending on the discipline in which it is used. Various federal agencies have adopted formal definitions of adaptive management in their regulatory schemes. The Department of the Interior, for example, has defined it as “a systematic approach for improving resource management by learning from management outcomes.” This approach “involves exploring alternative ways to meet management objectives, predicting the outcomes of alternatives based on the current state of knowledge, implementing one or more of these alternatives, monitoring to learn about the impacts of management actions, and then using the results to update knowledge and adjust management actions.”

The United States Fish and Wildlife Service (“FWS”) defines “adaptive management” for the purposes of endangered species management as:

> an integrated method for addressing uncertainty in natural resource management. It also refers to a structured process for learning by doing . . . . Passive adaptation is where information obtained is used to determine a single best course of action. Active adaptation is developing and testing a range of alternative strategies. The Services believe that both of these types of adaptive management are appropriate to consider when developing a strategy to address uncertainty. Therefore, we are defining adaptive management broadly as a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future

---

29. Id.
31. Id.

L. Ringold et al., Adaptive Monitoring Design for Ecosystem Management, 6 ECOLOGICAL APPLICATIONS 745, 745–46 (1996) (Indeed, the Ecological Society of America’s comprehensive study of ecosystem management treats the use of adaptive management methods as a given).
conservation management actions according to what is learned.\textsuperscript{32}

In turn, the United States Army Corps of Engineers defines it in the context of project mitigation as:

the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance. It includes the selection of appropriate measures that will ensure that the aquatic resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification and implementation of measures to rectify those problems.\textsuperscript{33}

Finally, the Forest Service included the following definition of adaptive management in its 2008 Forest Planning Rule:

Adaptive management: A system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes; and, if not, to facilitate management changes that will best ensure that outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain.\textsuperscript{34}

The scientific definition is somewhat similar to the regulatory definitions above. According to the National Research Council, adaptive management “promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other

\textsuperscript{32} Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, 65 Fed. Reg. 35,242, 35,252 (June 1, 2000).
\textsuperscript{33} 33 C.F.R. § 332.2 (2008).
\textsuperscript{34} 36 C.F.R. § 219.16 (2008).
events become better understood." Subsequently, “[c]areful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process.” Moreover, “[a]daptive management . . . recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a ‘trial and error’ process, but rather emphasizes learning while doing.” In the scientific context, “[a]daptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits.” In theory, “its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions” among interested parties.

There are three general forms of adaptive management: evolutionary, passive, and active. Evolutionary adaptive management is a formal version of the “trial by error” approach, wherein scientists make decisions based on the available knowledge, gather information from “random” experiments, and make future decisions based on that randomly collected evidence. As with the other forms of adaptive management, the theory underlying the evolutionary approach is that “future decisions evolve in response to past performance,” but past performance is extrapolated from a randomly chosen data set.

The second form—passive adaptive management—is the most common form of resource management. One significant example is the Environmental Impact Statement (EIS) process under NEPA. Under this approach, land managers use the “best-known practice” as of the point when they make resource management decisions. Land managers do so by using the “historical data then available” to predict future outcomes. This approach assumes that both the historical data are accurate and the best-known practice is the sole option. In addition, both evolutionary and passive adaptive management methods assume that ecosystems are fairly static.

36. Id.
37. Id.
38. Id. at 446–47.
39. Id. at 447.
40. TECHNICAL GUIDE, supra note 30, at 59.
41. Id. at 2.
42. Id.
43. Schultz, supra note 35, at 449.
44. TECHNICAL GUIDE, supra note 31, at 46.
45. See generally id. (explaining how land managers use adaptive management).
46. Thrower, supra note 29, at 874.
The third approach, active adaptive management, involves a more complex process at the outset, whereby decision-makers develop hypotheses based on the assumption that ecosystems are ever-changing, complex entities. Then, they test the hypotheses through the land management decisions and subsequent monitoring. Because this method requires discrete, incremental decisions, it allows agencies and land managers to make more precise adjustments in management techniques as they gather data from the monitoring and testing. The active adaptive management model assumes that ecosystems are constantly evolving, that ecosystem evolution is an inherent quality, and that resource management decisions must be made more frequently than under the passive or evolutionary approaches to account for this change.

Regardless of the approach taken, adaptive management is an inherently complex decision-making process involving multiple steps. First, a team of managers and scientists must “predict the outcomes of potential management alternatives.” Then, they “implement a management action based on the predictions;” assess the results of the action over time; and finally, “reevaluate and adjust future management actions to take these results into account.” Some agencies have expanded the process into sub-steps, fleshing out each of the above processes more fully. Incorporation of adaptive management practices is therefore time-consuming, resource consumptive, and depends heavily on the willingness of agency decision-makers to implement it completely.

If done completely, adaptive management has unlimited potential as an effective management strategy; even if resource managers err in their hypotheses or execution, they can rectify those errors as testing reveals their flaws. If done only partially, or poorly, adaptive management as a strategy can be “dangerously dysfunctional,” voraciously consuming agency resources and bringing entire planning processes to a standstill. Adaptive management can also be used as an administrative “excuse” for excessive delays in decision-making and implementation.
Moreover, as the Department of the Interior has recognized, “[a]daptive management as described . . . is infrequently implemented, even though many resource planning documents call for it and numerous resource managers refer to it.”

Perhaps this is reflected by a lack of understanding of how to fully implement the theory—“[i]t is thought by many that merely by monitoring activities and occasionally changing them, one is doing adaptive management. Contrary to this commonly held belief, adaptive management is much more than simply tracking and changing management direction in the face of failed policies, and, in fact, such a tactic could actually be maladaptive.”

In short, if management objectives “are not clear and measurable, the adaptive framework is undermined.” There are two specific reasons for making them clear: “first, so progress toward their achievement can be assessed; second, so performance that deviates from objectives may trigger a change in management direction.”

Second, “[e]xplicit articulation of measurable objectives helps to separate adaptive management from trial and error, because the exploration of management options over time is directed and justified by the use of objectives.” Without clear objectives, dedicated monitoring, and outcomes assessments, resource management is merely “management,” as opposed to “adaptive management.”

C. Adaptive Management Successes and Failures

Federal agencies have incorporated adaptive management techniques successfully in some contexts, and poorly in others. The National Park Service and the United States Forest Service have used adaptive management to manage the bison population in the Yellowstone area in a manner that protects their health and promotes the wellbeing of the bison and nearby livestock populations.

Historically, and particularly “at the end of the 19th Century, following years of hunting and illegal poaching in Yellowstone Park, the mountain bison (Bison bison athabasca) herd dwindled down to just twenty-three bison by actual count in 1902.” To save the herd, the National Park Service imported a small number of bison from two captive herds in Texas and Montana and bred them with the

57. Schultz, supra note 35, at 447.
58. Id. at 447–48.
59. Id. at 449.
60. Id.
61. Id.
63. Id. at 1101.
native herd. By the 1920s, the bison population had grown so large that the Park Service began donating bison to private ranchers to cull the herd. Congress formally authorized this practice in 1923.

The Yellowstone bison population continued to grow for the next fifty years, and by the 1980s, the Park Service decided to take a hands-off approach to managing it, allowing bison to roam freely within and without the park boundaries. During the 1980s and 1990s, outbreaks of brucellosis, a toxic and contagious disease capable of transmission to humans and domestic livestock, were traced to the Yellowstone bison. To address the contagion issues, the Department of Interior and the managing agencies drafted an Interagency Bison Management Plan (IBMP), which required separation between the bison and livestock herds, to control the brucellosis spread. The agency modified the plan in 2005 to allow bison hunting in the park by private hunters and Native Americans with treaty-based hunting rights. After a 2007 report by the General Accounting Office (GAO) revealed that the agencies had failed to make much progress in moving from step one to step two (of a three-step plan to mitigate brucellosis spread), the agencies prepared an Adaptive Management Plan in 2008 to correct the problems in the GAO report and add necessary metrics to evaluate future progress.

Under the Adaptive Management Plan, the agencies “planned to track the number of bison slaughtered by ‘document[ing] the number, age, sex, and sero-status of bison sent to slaughter.’” The agencies needed this evidence “to further one of the goals of the IBMP, which is to reduce the need for lethal removals of bison.” Instead of “lethal removals,” the Adaptive Management Plan suggested “increased hazing, state and treaty hunting, quarantine, and sending bison to alternate areas.” Finally, “[t]he three main goals of the Adaptive Management Plan [we]re to increase tolerance for bison outside the Park to the north and west, to conserve a wild, free-ranging bison population, and to prevent the transmission of brucellosis from bison to cattle.” In 2009, an ecological study concluded

64. Id.
65. Id.
66. Id. at 1101–02.
67. Id. at 1102.
68. Id. at 1103.
69. Id. at 1105.
70. Id.
71. Id.
72. Id.
73. Id.
74. Id.
75. Id.
that the Adaptive Management Plan had worked, and that the risk of transmission of brucellosis from bison to neighboring livestock herds had dropped to “near zero.”\textsuperscript{76} Therefore, the agencies survived the legal challenge to their decision to adopt the Adaptive Management Plan and avoided the administrative burden of further NEPA analysis of potential impacts to the bison population.\textsuperscript{77}

Some agencies have interpreted and implemented adaptive management “in a way that emphasizes those aspects of the paradigm that promote flexibility, discretion, and expedited decision-making, while emphasizing less the aspects that allow for knowledge generation and favor precautionous decision-making.”\textsuperscript{78} The challenge though, is that while “adaptive management is necessitated by the uncertainty inherent in science and management, . . . natural resource politics is driven by the pursuit of certainty and stability.”\textsuperscript{79}

Other agencies have implemented adaptive management in more of a theoretical manner. As mentioned above, the Forest Service included adaptive management as a goal in its most recent planning regulations in 2005 and 2008.\textsuperscript{80} Calling it a “paradigm shift in land management planning,” the regulations “embraced the language and some of the core principles of adaptive management.”\textsuperscript{81} Yet, despite emphasizing a “need for flexibility and adaptability of plans,” the agency categorically excluded all National Forest management plans from NEPA analysis;\textsuperscript{82} claiming that “[t]o be truly adaptive, [it] wanted to respond to new science, information, and problems more quickly” than every ten years, as contemplated by the formal planning process.\textsuperscript{83} Thus, according to the Forest Service, forest plans would be “strategic and aspirational” in nature, and more of a “tentative step in a more adaptive planning process,” rather than a document setting substantive management policy and containing real “meat.”\textsuperscript{84} Taking the agency at its word in these regulations, it seemed that adaptive management might hold true potential to revolutionize the resource planning process. The fact that the process lacked any substantive mandates in the planning rules, combined with exemptions from NEPA


\textsuperscript{78} Schultz, \textit{supra} note 35, at 450.

\textsuperscript{79} \textit{Id.} at 452.

\textsuperscript{80} \textit{Id.} at 450.

\textsuperscript{81} \textit{Id.}

\textsuperscript{82} \textit{Id.}

\textsuperscript{83} \textit{Id.}

\textsuperscript{84} \textit{Id.}
review, meant that there was no “backstop” should the adaptive management process fail. Environmental groups, in particular, objected to the 2005 and 2008 planning rules, and federal courts enjoined them based on these flaws.\footnote{85}{Id. at 451; Citizens for Better Forestry v. U.S. Dep’t of Agric., 481 F. Supp. 2d 1059, 1100–01 (N.D. Cal. 2007).}

The FWS also attempted to use adaptive management techniques to comply with the Endangered Species Act, with mixed results. When the Army drafted the ten-year operating plan for Fort Huachuca, the FWS issued a “biological opinion” finding that “the Fort's planned actions were likely to adversely affect several species and outlined specific requirements for water savings and for monitoring of species status.”\footnote{86}{Schultz, supra note 35, at 460.} According to the Army,

the requirements were beyond [its] authority to implement, so it proposed a collaborative approach to water conservation in the watershed. The final biological opinion did not include specific requirements, though, and instead relied on a memorandum of agreement indicating that the Army would undertake development of collaboratively designed mitigation measures within the broader watershed. The opinion gave the Army three years to prepare the regional plan and identify potential conservation measures, but specific requirements were not included and were to be developed over the subsequent three years.

In short, “the no jeopardy opinion was reliant upon the future, successful development of a water conservation strategy, for lands outside of the control of the Army in the larger sub-basin.” According to the court, “until such a collaborative approach was in place and mitigation measures had been identified, the Army still had an obligation to show that it was meeting substantive requirements of the ESA.” Thus, FWS’s attempts to adaptively manage under the Endangered Species Act failed.\footnote{87}{Id.}

\section*{II. LIVESTOCK GRAZING ON PUBLIC LANDS: RELEVANT STATUTES, REGULATIONS, AND AGENCY POLICY}
Currently, grazing on the federal range is based on use patterns that arose in the late nineteenth century. In that era, ranchers freely grazed their livestock on the vast grasslands that stretched from Texas to the eastern slope of the Sierra Nevada mountain range in California. Soon after the Civil War ended, the westward moving population started to compete for forage and water on the public range. Until the 1930s, the western federal range was essentially open to all who sought grazing lands for their livestock. In theory, it was a “public domain.” However, because the grazing land was typically arid, ranchers required more acreage per head than eastern farmers and ranchers—in some cases, vastly more.

The cattle industry experienced a “boom” in the 1880s, when interest in ranching grew and the total number of livestock grazing the public range reached seven million. Around 1967, large sheep ranching operations began cropping up as well. As more livestock grazed the public range in the latter part of the nineteenth century, forage and available water dwindled, and the fights over these resources became “mini-wars.” Ranchers physically tried to block others from grazing their cattle—sometimes by threat of force or by actual acts of violence—by fencing off portions of the range, and by cutting their competition’s fences when they blocked travel to water or rail yards.

Calls to regulate the federal range began as early as 1878, when the legendary southwestern explorer, Major John Wesley Powell, fearing water monopoly, wrote that ordinary homesteading laws would not work and pressed Congress to enact “a general law . . . to provide for the organization of pasturage districts.” In 1885, Congress passed the Unlawful Enclosures Act, a half-measure intended to stem the private attempts at appropriating public property. This Act provided that “any inclosures of public land in any State or Territory of the United States” were “declared to be unlawful” and the “maintenance, erection, construction, or control of any such inclosure” was “prohibited.”

---

88. *PLC*, 529 U.S. at 728, 731.
89. *Id.*
91. *PLC*, 529 U.S. at 731.
92. *Id.*
93. *Id.* at 732.
94. *Id.*
95. See *Id.* (citing Report on the Lands of the Arid Region of the United States, H. Exec. Doc. No. 73, 45th Cong., 2d Sess., 28 (1878)).
97. *Id.*
Similarly, the Act provided that the “assertion of a right to the exclusive use and occupancy of any part of the public lands of the United States . . . is likewise declared unlawful and hereby prohibited.”98 Yet, a “[l]ack of oversight, ‘[p]opulation growth, forage competition, and inadequate range control all began to have consequences both serious and apparent’ for the western rangelands.”99 Because it was “[o]ver-grazed and suffering from a terrible drought, the range was swept by dust storms [,] and ‘[t]he devastating storms . . . were in the words of one Senator ‘the most tragic, the most impressive lobbyist, that ha[s] ever come to this Capitol.’”100 Within twenty years of Congress passing the Unlawful Enclosures Act, it became apparent that increased federal regulation of livestock grazing on the public range was necessary. Congress responded, and President Franklin Roosevelt signed the Taylor Grazing Act into law in 1934.101 This statute is, to this day, the primary legislation governing management of the range resource.

B. Management of Livestock Grazing on Bureau of Land Management Lands

Grazing on lands managed by BLM is governed by the Taylor Grazing Act (“TGA”),102 Federal Land Policy and Management Act (“FLPMA”),103 the Public Rangelands Improvement Act (“PRIA”), and agency regulations adopted pursuant to these statutes.104 The TGA was passed to improve rangeland conditions and “stabilize the western livestock industry” after many years of overgrazing and lack of centralized federal oversight.105 The TGA authorizes the Secretary of the Interior, and by extension, the Bureau of Land Management, to issue ten-year term grazing permits on public lands not within National Forest boundaries, in exchange “for a reasonable fee.”106 The TGA permits convey no “right, title, interest, or estate in or to” the federal rangelands, but the statute incorporates a preference system allowing those who have historically grazed federal allotments to receive renewal permits as long as they have complied with

98. Id.
100. Id. (quoting 79 Cong. Rec. 6013 (1935)) (alteration in original).
101. PLC, 529 U.S. at 733.
102. 43 U.S.C. § 315(b).
103. Id. § 1752(a) (2006).
104. Id. § 1901(a)(1) (2006).
the terms and conditions of the permit and any applicable federal regulations.\textsuperscript{107} The TGA is considered by many to have “closed” the public range, bringing the administration and management of grazing on BLM lands within the sole discretion of the Secretary of the Interior.\textsuperscript{108}

Pursuant to the TGA, the Secretary of the Interior can “make provision for the protection, administration, regulation, and improvement of [all] grazing districts,” and do any and all things necessary to accomplish the purposes of this subchapter and to insure the objects of such grazing districts, namely, to regulate their occupancy and use, to preserve the land and its resources from destruction or unnecessary injury, to provide for the orderly use, improvement, and development of the range; and the Secretary of the Interior is authorized to continue the study of erosion and flood control and to perform such work as may be necessary amply to protect and rehabilitate the areas subject to the provisions of this subchapter.\textsuperscript{109}

As of 1937, the Department of Interior promulgated the first set of “basic rules for allocation of grazing privileges.”\textsuperscript{110} The rules expressly “recognized that many ranchers had long maintained herds on their own private lands during part of the year, while allowing their herds to graze farther afield on public land at other times.”\textsuperscript{111} Thus, the rules “gave a first preference to owners of stock who also owned ‘base property,’ i.e., private land (or water rights) sufficient to support their herds, and who had grazed the public range during the five years just prior to the Taylor Act’s enactment.”\textsuperscript{112} The rules awarded “a second preference to other owners of nearby ‘base’ property lacking prior use,”\textsuperscript{113} and “a third preference to stock owners without base property, like the nomadic sheep herder.”\textsuperscript{114} Because “lower preference categories divided capacity left over after satisfaction of

\begin{thebibliography}{9}
\bibitem{107}43 U.S.C. § 315(b).
\bibitem{108}Hodel, 618 F. Supp. at 855.
\bibitem{109}43 U.S.C. § 315(a).
\bibitem{110}PLC, 529 U.S. at 734.
\bibitem{111}Id.
\bibitem{112}Id. (citing 2 App. 818–819 (Rules for Administration of Grazing Districts) (June 14, 1937)).
\bibitem{113}Id. at 734–35 (quoting 2 App. 818–19).
\bibitem{114}Id. at 735.
\end{thebibliography}
all higher preference claims, this system, in effect, awarded grazing privileges to owners of land or water.”

Yet, the TGA did not accomplish its purposes of improving range conditions, and “[n]early three decades after [its] enactment, however, the Department of Interior had failed to achieve the first of the Act’s stated goals, namely, to halt the degradation of the public grasslands.” By 1962, according to a BLM survey, “83.4 percent of the public grasslands remained in fair or poor condition.”

Moreover, according to a 1975 BLM study, only “19% of the acres under its control were ‘improving,’ while 65% were ‘static,’ and 16% were admittedly ‘declining.’” The agency admitted these estimates were conservative. By 1976, Congress felt pressure to enact further legislation to improve environmental conditions on all public lands, including the federal range, which resulted in the passage of the Federal Lands Policy Management Act (“FLPMA”) of 1976.

In FLPMA, Congress denounced past BLM grazing management practices, stating that “a substantial amount of the Federal range lands is deteriorating in quality,” and noted that “additional range improvements could arrest much of the continuing deterioration and could lead to substantial betterment of forage conditions with resulting benefits to wildlife, watershed protection, and livestock production.” Thus, in FLPMA, Congress instructed BLM to manage federal public lands:

- in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy use.

---

115.  Id.
117.  Id.
119.  Id.
121.  Id. § 1751(b).
122.  Id. § 1751(b).
BLM grazing permits must comply with FLPMA, which requires the agency to develop and implement “land use plans for the public lands it administers with a goal of improving resource conditions and avoiding ‘undue degradation’ of the land.” To comply with these mandates, BLM must design its resource management plans to strike “a balance among the many competing uses to which land can be put.” Yet, while FLPMA reaffirms the statutory regime set forth in the TGA, it allows the BLM to “cancel, suspend, or modify” a permit “in whole or in part” if the permittee violates any of the provisions of applicable law or the terms of the permit itself, such as grazing too many or too few animals, pasturing during an impermissible time of year, and constructing or maintaining improvements without agency approval.

A few years after passing FLPMA, Congress acted again in response to further reports of federal rangeland degradation caused by livestock grazing, passing the Public Rangeland Improvements Act ("PRIA") of 1978. PRIA was yet another reminder to BLM that “vast sections” of the public rangeland were in “an unsatisfactory condition,” and “producing less than their full potential.” Specifically, Congress noted that continuing past management practices would:

- present a high risk of soil loss, desertification, and a resultant underproductivity for large acreages of the public lands; contribute significantly to unacceptable levels of siltation and salinity in major western watersheds including the Colorado River; negatively impact the quality and availability of scarce western water supplies; threaten important and frequently critical fish and wildlife habitat; prevent expansion of the forage resource and resulting benefits to livestock and wildlife production; increase surface runoff and flood danger; reduce the value of such lands for recreational and esthetic purposes; and may ultimately lead to unpredictable and undesirable long-term local and regional climatic and economic changes.

---

123. W. Watersheds Project v. BLM, 721 F.3d 1264, 1268 (10th Cir. 2013) (citing 43 U.S.C. §§ 1712(a), 1732(b)).
124. New Mexico ex rel. Richardson v. BLM, 565 F.3d 683, 690 n.3 (10th Cir. 2009).
127. Id.
On a more localized level, the BLM has the authority to develop allotment management plans for each individual grazing allotment under its management authority.\(^{129}\) In addition to prescribing “(1) the number, (2) kind, (3) and class of livestock, (4) the allotment to be grazed, and (5) the period of use,” allotment management plans may also contain other terms the BLM deems necessary, as long as they are “tailored to the specific range condition of the area.”\(^{130}\) However, the BLM may issue permits when there is no allotment management plan in place, if the permit itself includes: (1) “the number of animals to be grazed” by the permittee; (2) “the seasons of use” for livestock grazing; and (3) a provision that the Secretary “may reexamine the condition of the range at any time” and, if necessary, “readjust” the livestock grazing prescription for the allotment.\(^{131}\) Individual management decisions can be incorporated into the permit itself, or into the BLM’s annual grazing authorization.\(^{132}\) The annual grazing authorization “sets the parameters for the upcoming grazing season.”\(^{133}\)

The regulations governing allotment management plans and annual operating instructions include several specific mandates related to the ecological health of the federal range.\(^{134}\) First, they require that:

> Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.\(^{135}\)

Second, the regulations require that: “[e]cological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.”\(^{136}\) Third, water quality must “compl[y] with State water quality standards and achieves, or . . . mak[e] significant progress toward achieving, established BLM management

\(^{129}\) Hodel, 618 F. Supp. at 859.

\(^{130}\) McKeen v. U.S. Forest Serv., 615 F.3d 1244, 1247 (10th Cir. 2010); 43 U.S.C. §§ 1702(k), 1752(d).

\(^{131}\) Hodel, 618 F. Supp. at 860.


\(^{133}\) Id. at 971 (quoting ONDA v. U.S. Forest Serv., 465 F.3d 977, 983 (9th Cir. 2006)).

\(^{134}\) Kraayenbrink, 632 F.3d at 480 (citing 43 C.F.R. § 4180.1, 4180.2(c)).


\(^{136}\) Id.
objectives such as meeting wildlife needs.” Finally, the regulations require that decisions related to habitats must result in habitats that are “or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal proposed or candidate threatened and endangered species, and other special status species.” Thus, any allotment management plan, or permit issued in the absence of an allotment management plan, must contain some criteria related to any of the relevance benchmarks in the Fundamentals of Rangeland Health regulations.

C. Management of Livestock Grazing on National Forest Lands

Within national forests, the United States Forest Service regulates grazing under three primary statutes: the National Forest Management Act (“NFMA”), the Granger-Thye Act, and the Federal Lands Policy and Management Act (“FLPMA”). Originally, Congress authorized livestock grazing on allotments within national forests in section 19 of the Granger-Thye Act of 1950. The Forest Service must also comply with NFMA’s requirements of forest-wide planning, as well as FLPMA’s requirements regarding Allotment Management Plans, individual grazing permits, and Annual Operating Instructions. Each step of this decision-making process must also comply with FLPMA’s “multiple use” and “sustained yield” mandates. An examination of the potential role of adaptive management as a tool for managing grazing in national forests requires a detailed understanding of each type and level of management decision.

A Forest Plan is a “broad, programmatic document, accompanied by an Environmental Impact Statement and public review process conducted in accordance with the National Environmental Policy Act.” Each Forest Plan must accommodate multiple and different uses, and “coordinate the management of outdoor recreation, range, timber, watershed, wildlife and

137. Id.
138. Id.
140. Id. § 5801 (2006).
142. 16 U.S.C. § 5801.
143. Id. § 1604(a) (2006).
144. 43 U.S.C. § 1752(d).
145. Id. § 1752(a).
146. McKeen v. U. S. Forest Serv., 615 F.3d 1244, 1246–47 (10th Cir. 2010).
147. Buckingham v. Sec’y of U.S. Dep’t of Agric., 603 F.3d 1073, 1076–77 (9th Cir. 2010).
fish, and wilderness.”149 In a Forest Plan, large areas of National Forest are
designated for one or more of these uses, limited only by a general mandate
that the agency “provide for diversity of plant and animal communities
based on the suitability and capability of the specific land area in order to
meet overall multiple-use objectives.”150

The regulations governing grazing use on Forest Service allotments
also provide that “each allotment will be analyzed and with careful and
considered consultation and cooperation with the affected permittees,
landowners, and grazing advisory boards involved, as well as the State
having land within the area covered, and an allotment management plan
developed.”151 An Allotment Management Plan (“AMP”) “prescribes the
manner in and extent to which livestock operations will be conducted in
order to meet the multiple-use, sustained yield, economic, and other needs
and objectives as determined” for each allotment of a National Forest.152 An
AMP must be “consistent with the Forest Plan for the forest in which the
allotment sits.”153 Moreover, the Plan “relates the directives of the
applicable Forest Plan to the individual grazing allotment.”154

In addition to the agency planning documents, each allotment carries an
individual permit, which a party must obtain before grazing any Forest
Service allotment.155 The permit terms must comply with the pertinent
Forest Plan and AMP.156 According to the applicable regulations, grazing
permits must specify the “(1) the number, (2) kind, (3) and class of
livestock, (4) the allotment to be grazed, and (5) the period of use.”157
Grazing permits have a term of ten years, and once a permit is granted,
the permittee has a statutory right of first refusal to renew it when the permits
term ends, as long as no permit terms were violated during the preceding
term. 158

Finally, the Forest Service issues Annual Operating Instructions
(“AOI”) to “set forth the parameters of the permit holder’s license for the
upcoming year.”159 Because AOIs are issued every year, they are

149. McKeen, 615 F.3d at 1247 (quoting 16 U.S.C. § 1604(e)(1)).
150. Id. (quoting 16 U.S.C. § 1604(g)(3)(B)).
151. 36 C.F.R. § 222.2 (2013).
152. Id. § 222.1(b)(2)(i)(2013).
153. McKeen, 615 F.3d at 1247.
154. Id. (quoting Or. Nat. Desert Ass’n v. U.S. Forest Serv. (ONDA), 465 F.3d 977, 980
(9th Cir. 2006)).
156. McKeen, 615 F.3d at 1247 (quoting 36 C.F.R. § 222.3(c)(1)).
157. Id. (quoting ONDA, 465 F.3d at 980).
158. 43 U.S.C. §§ 1752(a), 1752(c); 36 C.F.R. § 222.3(c)(1) (2013).
159. McKeen, 615 F.3d at 1247.
responsive to conditions that the Forest Service could not or may not have anticipated and planned for in the AMP or grazing permit, such as drought conditions, timing and duration of rainfall over the grazing season, success or failure of habitat restoration projects, water quality, or degree of risk to threatened or endangered species affected by grazing.\footnote{160}

At each of the four levels of its planning process, the Forest Service can make adjustments to range use consistent with environmental conditions, but the AOIs provide the best opportunity for an immediate response to changed environmental conditions on any given allotment or within any larger ecosystem.

III. CLIMATE CHANGE AND NATURAL RESOURCE MANAGEMENT

Climate change “confronts natural resource managers . . . with ecological disturbance on a massive scale.”\footnote{161} The concept of global warming and its potential effects on natural resource management have been part of the federal regulatory dialogue since the 1970s.\footnote{162} The current scientific perspective is that climate change will likely shift “temperature regimes” and “hydrological cycles,” alter ecosystems in uncertain ways, and possibly create the largest global extinction “event” in 65 million years.\footnote{163} According to scientists, climate change will inexorably alter local and regional forage patterns, rendering currently arid locations even drier, and causing desertification on a massive scale.\footnote{164} Even currently forested areas may be at risk of becoming arid savannah.\footnote{165}

Since the 1970s, the federal government has been grappling with how to manage natural resources with the certainty that the climate in the western United States will change, but not knowing exactly to what degree or the rate at which this change will occur. In the latter part of that decade, “the Federal Government began devoting serious attention to the possibility that carbon dioxide emissions associated with human activity could provoke climate change.”\footnote{166} In 1978, Congress passed the National Climate Program Act, authorizing a program to “assist the Nation and the world to

\footnotesize{\begin{itemize}
  \item \footnote{160} Id. at 1248 (quoting ONDA, 465 F.3d at 980–81).
  \item \footnote{161} Daniel Schramm & Akiva Fishman, Legal Frameworks for Adaptive Natural Resource Management in a Changing Climate, 22 GEO. INT’L ENVTL. L. REV. 491, 491 (2010).
  \item \footnote{162} Massachusetts v. EPA, 549 U.S. 497, 507–08 (2007).
  \item \footnote{163} Schramm & Fishman, supra note 162, at 492.
  \item \footnote{164} Id. at 493.
  \item \footnote{165} Id.
  \item \footnote{166} Mass. v. EPA, 549 U.S. at 507.
\end{itemize}}
understand and respond to natural and man-induced climate processes and their implications.”167 In 1979, the National Academy of Sciences issued a report stating: “[i]f carbon dioxide continues to increase, the study group finds no reason to doubt that climate changes will result and no reason to believe that these changes will be negligible . . . A wait-and-see policy may mean waiting until it is too late.”168

In 1987, Congress passed the Global Climate Protection Act, “finding that ‘manmade pollution—the release of carbon dioxide, chlorofluorocarbons, methane, and other trace gases into the atmosphere—may be producing a long-term and substantial increase in the average temperature on Earth.’”169 In the Act, Congress instructed the EPA to develop a “‘coordinated national policy on global climate change,’ and ordered the Secretary of State to work ‘through the channels of multilateral diplomacy’ and coordinate diplomatic efforts to combat global warming.”170 Moreover, Congress noted that “ongoing pollution and deforestation may be contributing now to an irreversible process” and that “[n]ecessary actions must be identified and implemented in time to protect the climate.”171

In 1992, President George H.W. Bush attended the first Earth Summit in Rio de Janeiro, Brazil and signed the United Nations Framework on Climate Change (UNFCC), “a nonbinding agreement among 154 nations to reduce atmospheric concentrations of carbon dioxide and other greenhouse gases for the purpose of ‘preventing dangerous anthropogenic interference with the [Earth’s] climate system.’”172 Five years later, “after the IPCC [Intergovernmental Panel on Climate Change] issued a second comprehensive report in 1995 concluding that ‘[t]he balance of evidence suggests there is a discernible human influence on global climate,’ the UNFCC signatories met in Kyoto, Japan, and adopted a protocol that assigned mandatory targets for industrialized nations to reduce greenhouse gas emissions.”173 The Kyoto Protocol, as it became known, was eventually signed by 192 countries, including most of Europe and the United States.174

167. Id. at 507–08.
168. Id. at 508 (quoting CLIMATE RESEARCH BOARD, CARBON DIOXIDE AND CLIMATE: A SCIENTIFIC ASSESSMENT, viii (1979)).
170. Id. (quoting 15 U.S.C. §§ 1143(b), 1103(c)).
In 2001, the National Research Council issued a report, concluding that “[g]reenhouse gases are accumulating in Earth’s atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise. Temperatures are, in fact, rising.”175. The impacts of this rise in global temperatures will affect various geographical areas differently, and in ways that are somewhat uncertain. Scientists monitoring the impacts of climate change in the western United States have determined that climate change will affect western ecosystems in a variety of ways, “including decreased snowpack, earlier snow melt, increased winter rain, peak winter flows and flooding, and reduced summer flows.”176

Moreover, the Global Climate Models, which are “highly sophisticated computer representations of the global climate system—the atmosphere, the oceans, ice sheets and sea ice, and the land surface”—indicate the Intermountain West “will warm by 2.5 [degrees] by 2025,” and “4 degrees . . . by 2050.”177 It is less certain how climate change will impact the overall water supply in the western United States, but scientists agree there will likely be increased precipitation in the winter months and decreased precipitation in the summer months.178 The increased ambient air temperatures will also likely result in increased evaporation of surface water.179

Studies also show precipitation patterns will change across the United States as well, with the west and southwest experiencing less rainfall and the east and northeast experiencing more.180 As the west and southwest continue to warm and dry out, the possibility of mega-droughts unrelated to climate change may also increase, and the models predict that the total surface water supply will decline.181 There will also be peripheral impacts to western rangelands, such as increased fires, pests, increased dust loads on

175. COMM. ON THE SCL OF CLIMATE CHANGE, NAT’L RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 1 (2001).
179. Id. at 5.
180. Udall Presentation, supra note 7.
181. Id.
snowpack, and other unknowns. Meanwhile, as populations increase in western cities, the total available water supply will decline.

Finally, although scientists have reached consensus on these general changes, they agree it is difficult to predict precisely how they will impact a given area over the short or long term, in light of all of the variables. So, while scientists can tell range managers there will be less precipitation in the western United States than there will be in the eastern United States, and temperatures in the western United States will warm consistently by a few degrees over the next fifty years; they cannot predict, at this point, how those changes will affect forage patterns or water supply on a localized level. The temperature changes might cause increased precipitation during certain months of the year, and decreased precipitation during others, and the impacts of some changes spurred by a drier climate (such as increased dust load on mountain snow fields or increased spruce beetle populations) are difficult to predict given the lack of historical evidence about what results to expect.

IV. ADAPTIVE MANAGEMENT OF THE FEDERAL RANGE IN LIGHT OF CLIMATE CHANGE IMPACTS

Given the certainty that climate change will alter the federal range resource itself, as well as resources like water, on which the use of the federal range heavily depends, federal agencies will soon be faced with the prospect of having to make management decisions to account for climate change impacts, or to recover from them. These decisions, and the agencies’ overall management strategy, must be iterative, rather than closed, because of the scale of climate change impacts and the uncertainty involved. The only existing iterative resource management strategy is adaptive management, which agencies have already begun to use, albeit in more discrete circumstances.

The BLM for instance, has used adaptive management for the past two decades in various contexts, such as endangered species management and water allocation. The BLM has also used adaptive management in some districts to manage grazing, cultural resources, and endangered species habitat on the federal range. Courts have generally been supportive of this

182. Id.
183. Id.
184. Id.
185. Id.
186. Feller, supra note 55, at 898.
effort, particularly as it relates to challenges under NEPA. Typically, the agency will incorporate adaptive management at the level of the Resource Management Plan, the Allotment Management Plan, and the Annual Operating Instructions. The Resource Management Plan will set forth the overall goal, and establish parameters for measuring the validity of agency hypotheses regarding rangeland impacts, which the agency can then monitor, or test, and implement changes through the individual Allotment Management Plan or the Annual Operating Instructions. Should the agency fail to conduct monitoring to test the effectiveness of the initial management decision, or implement strategies that are inadequate to address changed circumstances, interested parties can petition the courts to review those decisions under NEPA.

The courts have generally given BLM a fair amount of latitude in developing and implementing adaptive management strategies on the federal range. For example, in Oregon, BLM has used adaptive management to set grazing levels in various grazing districts throughout the state, at the Resource Management Plan level, which the federal courts have respected. Courts have protected BLM from litigation regarding how it incorporates adaptive management techniques, as long as the agency appears to be following the general guidelines set in the Resource Management Plan. If however, the agency declines to adjust its management decisions at the individual Allotment Management Plan level, or in the Annual Operating Instructions, despite monitoring data indicating a need to do so, the agency’s actions would be subject to judicial review under NEPA. Moreover, courts have indicated that the BLM’s adaptive management strategy cannot be “so amorphous and ill-defined” that it is “unable to determine” environmental consequences of its actions, or it could be held to violate NEPA’s “hard look” requirement.

In light of the broad discretion courts give the agencies to incorporate adaptive management, agencies can and should utilize it on a much broader scale to address the uncertainties posed by climate change. For instance,

189. See generally id. at 1128 (holding that BLM failed to conduct effective testing under NEPA).
190. Id.
193. Id. at 2.
194. Id.
agencies like the BLM and Forest Service know that temperatures will warm by several degrees in the southwestern states, which will impact forage and water availability in somewhat predictable ways (less forage and less surface water). Thus, when revising land or resource management plans under FLPMA, the agencies could use that outcome to lower the Animal Unit Month (“AUM”) levels on all allotments in the southwestern states, to a degree that might maintain adequate forage. Then, the agencies can develop plans to monitor forage availability in light of temperatures and water supply to determine if the across-the-board decision to lower AUMs was effective, conduct the monitoring, and make any necessary adjustments in AUMs based on the results. This can be done for an individual allotment in an Allotment Management Plan or Annual Operating Instructions, or region-wide, in a Resource Management Plan or Forest Management Plan, depending on the type of allotment.

Similarly, the scientific community has predicted that the overall water supply (including precipitation and groundwater) will decline in the southwestern United States, as it increases in the northeastern United States. This will also impact allotment grazing patterns and AUM levels, given that forage growth is dependent on the atmospheric water supply and livestock survival is dependent on privately held water rights used in connection with federal allotments. While it is difficult to regulate based on the latter concern, given that individual ranchers could simply acquire water rights to offset any losses to existing water sources, for the purposes of stock water, the decline in atmospheric water and its impact on forage growth cannot be privately mitigated. The agencies will have to manage forage allocation, through pasture rotation or decreased overall AUMs, because of the climate model predictions, regardless of private water right holdings by individual permittees. These changes can also be incorporated immediately, through the Annual Operating Instructions, or on a longer-term basis by way of the Allotment Management Plan, Resource Management Plan, or Forest Plan.

The potential roadblocks facing the Forest Service and BLM in their use of adaptive management are fairly certain, given the historical record as reflected in judicial opinions. Under NEPA, for example, if an agency incorporates adaptive management into one of the planning stages, the planning document must be specific as to monitoring and performance goals, as well as contain detailed mitigation methods; otherwise a court may

196. Udall Presentation, supra note 7.
197. Id.
However, the mitigation methods need not be fixed, and courts have held they can be “adaptable” over time. Similarly, a court might invalidate an Adaptive Management Plan that does not comply with NFMA’s disclosure requirement, which requires transparency in an agency’s record of decision. If these known problems are avoided, adaptive management provides a sound basis for managing natural resource use in a constantly changing climate.

CONCLUSION

At first glance, the retrospective nature of federal grazing law seems like an unlikely fit for the forward-looking theory of adaptive management. However, Congress has left adequate gaps in the statutes governing livestock grazing on the federal range for the Forest Service and BLM to use adaptive management strategies to manage this resource for a changing global climate. Given that Congress is unlikely to modify the basic statutory structure governing livestock grazing on public lands, and that the agencies have largely failed in their attempts at substantive regulatory range reform, it is clear that a new strategy is needed. Because climate change has already begun to impact the federal range in known ways, and it will continue to do so in somewhat predictable ways for the foreseeable future, the Forest Service and BLM will have to find a way to manage for climate change within the existing statutory framework.

Adaptive management is currently the only theory already in use that will allow the agencies to do so in a flexible, iterative manner. Moreover, agencies will require flexibility given that they know the climate will change in certain ways (less overall water, increased temperatures), but they can only make a “best-guess” determination as to what other impacts will result (dust load on snow pack, beetles, and others). Adaptive management is a viable theory that provides this level of flexibility both at the outset and upon implementation. Lastly, adaptive management allows agencies to manage entire ecosystems, rather than discrete resources under discrete statutes. Thus, it is a management approach that is well suited to address a global environmental crisis like climate change on a regional level, based on the individual circumstances facing the public range in any given area.

199. Id. at 280.
WATER FOR WHOM? IMPROVING WATER GOVERNANCE IN YUNNAN CHINA THROUGH ENVIRONMENTAL CUSTOMARY LAW

By Carissa Michelle Wong* and Wu Guo**

Executive Summary .............................................................................................................. 291
Overview ................................................................................................................................. 292

I. Challenges in Water Allocation ......................................................................................... 293
   A. Water Rights .................................................................................................................... 294
      i. State Ownership ........................................................................................................... 294
      ii. Water Rights: Poorly Defined, Insecure, and Irrelevant ........................................... 295
   B. Allocation Plans ............................................................................................................. 296
      i. Lack of Public Consultation Results in Weak Compliance ........................................ 296
      ii. Lack of Understanding of Environmental Flow Realities Leads to Weak Direction .......................................................... 298
   C. Dispute Settlement ......................................................................................................... 300
      i. Water Shortages .......................................................................................................... 300
      ii. Mediation: Does Not Resolve Ambiguity in Rights, Allocation, or Access ............. 302

II. How Can Environmental Customary Law Improve Water Allocation? 305
   A. An Overview of Customary Law ..................................................................................... 305
   B. Strengthening Water Rights, Allocation Plans, and Dispute Resolution ......................... 308
      i. Equilibrium ................................................................................................................ 308
      ii. Reciprocity ............................................................................................................... 312
      iii. Duality .................................................................................................................... 314

* Carissa Wong is an Associate Fellow with the Centre for International Sustainable Development Law and conducts water governance programming for the International Development Law Organization. She holds a Master’s degree in Environmental Management from Duke University, a Common Law degree from the University of Ottawa, and a Bachelor of Science in Zoology from the University of Toronto.

** Wu Guo is an Associate Professor and PhD of Environmental Law in Gansu Institute of Political Science and Law, China. He is also Vice Dean of Civil, Commercial, and Economic Law. He is predominantly engaged in the basic theory of environmental law and environmental customary law.
EXECUTIVE SUMMARY

It is hard to overstate the importance of water. It is vital to human development and its movement sustains all life. The natural water regime in a river, lake, wetland, or coastal zone constitutes the “environmental flows” that ensure the right quality, quantity, and patterns of flow for human and ecological health.1 These environmental flows maintain the capacity of watersheds to purify water, regulate floods, maintain biodiversity and meet diverse human needs.2 The availability of water in China, as one of the most populous countries, has a profound effect on the world’s human and ecological health. China is a water-scarce country with a highly uneven distribution of naturally occurring rainfall, surface water and groundwater.3 By 2030, China’s Ministry of Water Resources predicts that per capita water resources in the country will fall below the World Bank’s level of “water scarcity” (i.e., 1000 cubic meters per person per year).4

In light of serious concerns over water availability, China’s 12th Five-Year Plan is the first to enunciate the goal of improving water management.5 Although it aims to reduce the water intensity of China’s Gross Domestic Product (GDP), it does not clarify how the allocation and distribution of residual water would be improved.6 Using less water per unit GDP, while laudable, does not ensure that water serves diverse human uses and in-stream environmental flows. In contrast, environmental customary law, which has governed water resources for centuries in China, provides insights to practically improve the equitable, efficient, and ecologically sustainable management of water.

This paper explores the ways in which ethnic customary and ancient Han law provide a framework for improving the implementation of modern

6. Id.
water law in China, with particular focus on Yunnan Province. In Yunnan, the principles of equilibrium, reciprocity, and duality in Chinese customary law would improve the equity and efficiency of water rights distribution, allocation, and dispute resolution. Currently, under China’s Constitution and 2002 Water Law, the lack of defined rights, poor implementation of rights, lack of system-wide coordination and consistency, and inadequate understanding of natural environmental flow regimes plague China’s water governance. In addition, China’s Water Law relies on a dispute settlement procedure that does not resolve the large degree of ambiguity and insecurity in water rights. Modern-day water allocation problems in Yunnan, as well as the region’s rich ethnic diversity and customary laws, offer an opportunity to apply customary law to strengthen the local relevancy, consistency, and validity of water governance. In addition, the customary law of ethnic minorities in Yunnan is consistent with the Han majority’s traditional approaches to water management. Further, China’s autonomous regions and ethnic minorities hold modest statutory authority over resource management. This provides an opportunity to investigate the role of customary environmental law in improving the equitable and environmentally sound distribution of water resources. In general, ethnic environmental customary law provides a counterweight to the heavy top-down approach to water management and to a political dialogue that devalues local knowledge and ecological needs. Overall, it affords a framework for public participation in water allocation planning and supports the development of a pluralist approach to living within the ecological limits of a river.

OVERVIEW

This paper begins, in Section I, by presenting the intense exploitation of water resources for economic development, and the challenges to equitable, effective, and ecologically beneficial water allocation. It identifies, in Part A, the lack of definition for water rights, in Part B, the lack of attention paid to local conditions and environmental flows leading to inconsistency within and poor implementation of allocation plans, and in Part C, a dispute settlement institution that is insufficient to reduce ambiguity and insecurity in water “rights.” Section II illustrates how the core concepts of environmental customary law, namely equilibrium, reciprocity, and duality, complement existing statutes in addressing these challenges. Section III demonstrates that China’s national laws governing autonomous regions provide opportunities for greater participation of ethnic minorities in water resources management. Section IV concludes that environmental customary
law, particularly in Yunnan Province, offers principles that could improve
the equitable, efficient, and ecologically sound allocation of water in China.

I. CHALLENGES IN WATER ALLOCATION

China has a naturally low per capita water supply that is exacerbated by
industrial consumption and pollution.7 China’s per capita renewable water
resources are 2,139 cubic meters per year, per person.8 This is roughly a
fifth of that of the United States,9 and twenty-eight percent of the global
average.10 In China, one-quarter of the population, or roughly 320 million
people, lacks access to safe drinking water,11 and two-thirds of cities face
increasing water scarcity.12 The country currently faces a water shortage of
40 billion cubic meters annually.13

Industry accounts for roughly one-quarter of China’s total water
consumption and takes between four to ten times more water per unit GDP
than other comparably competitive national economies.14 Water intensive
mining, coal processing, and hydropower development account for the
largest proportion of industrial water consumption.15 According to its recent
12th Five-Year Plan, the Chinese government plans to expand installed
hydropower capacity from 200 Gigawatts in 2010 to 420 Gigawatts by
2020,16 which would likely stop the flow of many of the country’s rivers.17

Further, pollution from agriculture, industrial, and domestic sources has
exacerbated the unavailability of water. From 2000–2009, the amount of
accessible water in China decreased by thirteen percent.18 In the first half of
2010, almost one-quarter of China’s surface water was so polluted that it
was not useable for even industrial purposes, and less than half of the total
water supplies were drinkable.19

7. GLEICK ET AL., supra note 3, at 84.
8. Id.
9. Id.
10. Climate change threatens our water, CHINA DAILY (Apr. 23, 2011),
11. Economy, supra note 4.
12. Id.
13. Id.
14. Id. at 1.
15. Id.
16. DI ZHOU & ANAÏS DELBOSC, THE ECONOMIC TOOLS OF CHINESE CLIMATE AND
http://www.ens.dk/sites/ens.dk/files/politik/vedvarende-energisamarbejde-
kina/economic_tools_of_chinese_climate-energy_policies.pdf.
17. Economy, supra note 4.
18. Id.
19. Id.
With its large population and highly polluted water system, China is facing increasingly inadequate access to water. This places a heavy burden on China’s water governance system to effectively allocate water to meet diverse human and ecological needs. Under its Constitution, Basic Laws, and 2002 Water Law, however, China’s centralized control of water resources has led to a general loss of local legitimacy, as a result of insecure and poorly-defined rights, vague and irrelevant allocation plans that do not recognize environmental flows, and poor dispute resolution mechanisms. The following sections describe these problems in more detail.

A. Water Rights

China’s laws give ownership of all water resources to the State. When distributed at a local level, however, these rights become arbitrary and inconsequential.

i. State Ownership

China’s statutory framework gives primary authority over water resources to the central government. Under the Constitution, the highest law in China, the current 2002 Water Law establishes hierarchical water governance. Article 9 of the Constitution outlines the system for natural resources management in China, including ownership, utilization, and protection of water resources.

China’s Water Law centralizes ownership and the system of granting water rights. The 1988 Water Law contained two categories of water ownership, State and collective; the 2002 Water Law replaced these categories with one category of ownership. The State exercises ownership

24. Id., at art. 10.
25. Id., at art. 3.
over water resources for the purposes of development and use\textsuperscript{26} notwithstanding any departmental rules from the Ministry of Water Resources or local rules from cities and provinces.\textsuperscript{27} The central government permits the use of State-owned water by approving allocation schemes and total quotas of water for abstraction by region.\textsuperscript{28} Based on these schemes, sub-regional governments formulate annual water use quotas.\textsuperscript{29} In addition, the National People's Congress (NPC) enacts “Basic Laws” that govern criminal, civil, State, and other offenses, some of which relate to water management.\textsuperscript{30}

As the executive body of the NPC and its Standing Committee, the State Council enacts administrative regulations to carry out national water law. The State Council controls the way in which either the regional Competent Department of Water Administration (CDWA) or the appropriate Basin Management Institution (BMI) manages permits and payments for the use of water.\textsuperscript{31} According to their share of water, the CDWA or BMI grant the right to withdraw water directly from rivers, lakes, and underground aquifers to individuals, farmers, or entities within a district.\textsuperscript{32}

\textbf{ii. Water Rights: Poorly Defined, Insecure, and Irrelevant}

Unfortunately, water abstraction rights are not clearly defined at any level of governance.\textsuperscript{33} At the river basin level, there are discrepancies over return flow requirements (i.e., whether rights afford abstraction pending return or rights to complete consumption) and the duration of rights.\textsuperscript{34} At the permit-trading level, confusion exists over who holds water entitlements and what those rights entail.\textsuperscript{35} For instance, conditions placed on water entitlements, such as the seasonal sharing of water, are ambiguously defined.\textsuperscript{36} In addition, there are few rules against changes to water rights.\textsuperscript{37} Moreover, many water abstractors—particularly farmers in water irrigation

\begin{thebibliography}{99}
\bibitem{26} Id., at art. 3.
\bibitem{27} Id., at art. 12.
\bibitem{28} Water Law, supra note 21, at art. 47.
\bibitem{29} Id.
\bibitem{31} Water Law, supra note 21, at art. 7.
\bibitem{32} Shen & Speed, supra note 1, at 271.
\bibitem{33} Shen & Speed, supra note 1, at 220.
\bibitem{34} Id.
\bibitem{35} JIAN XIE ET AL., ADDRESSING CHINA’S WATER SCARCITY, 77 (2009).
\bibitem{36} Shen & Speed, supra note 1, at 220.
\bibitem{37} XIE ET AL., supra note 35, at 78.
\end{thebibliography}
districts and rural groundwater users—do not even hold abstraction permits. Ultimately, from regional to farmer levels, despite firm central authority on paper, there is “broad discretion in terms of decisions affecting what water will be available under an entitlement” in any year. The result is poorly defined, insecure, and often irrelevant water rights.

B. Allocation Plans

The State government’s lack of public consultation on water needs and its inadequate recognition and understanding of watershed environmental flow requirements impair the implementation of its regulatory schemes. In addition, the limited publically available information on the process of annual allocations or monitoring of water abstractions exacerbates this problem.

i. Lack of Public Consultation Results in Weak Compliance

Under the State Council, the National Development and Reform Commission (NDRC), the Ministry of Water Resources (MWR), and the CDWA control the macro-allocation of water and its use through a quota system. These State entities first plan the long- and medium-term supply, demand, and allocation of water in river basins. Then, sub-regional levels of government (i.e., the CDWA at the county level or BMI for designated “major” rivers and lakes) develop mid- and long-range plans for water use, allocation, and in-stream flow that must be consistent with the State basin plans. Based on the State-approved basin allocation scheme and predicted annual income of water, the sub-regional levels of government create annual plans specifying water use. Finally, following the total quantities approved for allocation, provincial departments and industry administrators integrate economic and technological conditions with existing water use quotas to determine annual industrial sector water

38. Id. at 77.
39. Id. at 78.
40. Id. at 77; Shen & Speed, supra note 1, at 220.
41. XIE ET AL., supra note 35, at 78.
42. Water Law, supra note 21, at art. 44.
43. See LU XIAOPIING & FU ZENGCI, BRIEF INTRODUCTION ON THE MAIN RIVERS IN CHINA (2010) (identifying the Heilongjiang basin, Liaohe basin, Huanghe basin, Huaihe basin, Changjiang basin, and Zhujiang basin).
quotas. The State also authorizes any allocation plans between BMIs and either provinces or autonomous regions. In addition, the Water Law states that at each level of government, departments of environmental protection must develop water function zones that are consistent with the central government’s comprehensive plans for designated major rivers and lakes. The administrative department of the relevant BMI and the departments of water administration and environmental protection at the appropriate level of government must draft the functional plans for non-major rivers and lakes for State Council approval. Thus, the result of these plans is a unified system of control for water allocation, as specified under Article 47.

Although China’s State institutions provide convenient platforms to define water law and manage increasing demands from competing users, they move authority from local institutions, where much of customary water law is currently embedded, to centralized institutions. As a result, State level decision-makers and local level water users are less likely to identify with, understand, or respect each other’s needs. Indeed, the lower the sense of identification between the decision-maker and a group of water users, and the more limited influence a group of users has on the creation of rules, the weaker the compliance and enforcement of these rules.

In Yunnan, public participation in water allocation planning and resource decisions is particularly low. As early as 1000 years ago in the Nu River valley, in what is now Yunnan Province, people developed systems of resource use and economic production that supported evolving human-nature relationships. In this region, however, a history of power relations has limited the participation of ethnic minorities in water management decisions. Within Yunnan Province, the Nu River valley is one of the most ethnically diverse regions of China. Ethnic minorities comprise ninety-two percent of the Nu Prefecture population, while the Han comprise

45. Wouters et al., supra note 30, at 285–86.
46. Id. at 283–84.
47. SALMAN & BRADLOW, supra note 44, at 39.
48. Water Law, supra note 21, at art. 47.
49. RUTH MEINZEN-DICK & LETICIA NKONYA, COMMUNITY-BASED WATER LAW AND WATER RESOURCE MANAGEMENT REFORM IN DEVELOPING COUNTRIES 22 (B. van Koppen, M Giordano & J. Butterworth eds. 2007).
50. Id.
51. Id. at 23.
53. Id.
54. DARRIN MAGEE & SHAWN KELLY, CONTESTED WATERSCAPES IN THE MEKONG REGION 117 (Francois Molle, Tira Foran & Mira Kakonen eds., 2009).
eight percent.\textsuperscript{55} In 1949, with the founding of the People’s Republic of China, Chinese leaders frequently viewed indigenous livelihoods and production methods as “backward and inefficient in comparison to mainstream Han culture.”\textsuperscript{56} In 1954, the valley was named the “Nu River Lisu Ethnic Minority Autonomous Prefecture” and the exploitation of local capacity was coupled with a devaluation of local knowledge and culture that continues to characterize too many development programs in China.\textsuperscript{57} Gradually, the ethnic people of the Nu River valley internalized the mainstream perspective that their customs and practices are “backward” and in need of modernization. Subsequently, the central government has applied this rationale to justify its exploitive relations in the management of natural resources.\textsuperscript{58}

ii. Lack of Understanding of Environmental Flow Realities Leads to Weak Direction

As a result of i) insufficient understanding of environmental flows and ii) inadequate public participation, not to mention lack of coordination between ministries responsible for legal drafting, the NPC passes water regulations that at worst, conflict with those that other ministry authorities have drafted,\textsuperscript{59} or more frequently, create vague rules to follow. Too often, water resources schemes and allocation plans share little or no connection because they do not reflect a thorough understanding of a river basin’s hydrological regime.\textsuperscript{60} The 2002 Water Law requires the State to conduct river basin level strategic, multi-purpose planning (Article 14).\textsuperscript{61} These strategic plans include both a “comprehensive” and “special” plan. Both special and comprehensive plans regulate flood prevention, irrigation, water supply, hydropower generation, and fisheries (Article 14)\textsuperscript{62} while the natural water regimes of rivers, lakes, and wetlands in China “are not well understood.”\textsuperscript{63} In addition, the rate at which economic development and the

\textsuperscript{56} Id. at 87.
\textsuperscript{57} Id.
\textsuperscript{58} Id.
\textsuperscript{59} See, e.g., Water Pollution Control and Prevention Law (promulgated by Order No. 12 of the President of the People’s Rep. of China on May 11, 1984, effective Nov 1, 1984) (conflicting until recently with Water Law, supra note 22); XIE ET AL., supra note 35, at 45.
\textsuperscript{60} Id. at 77.
\textsuperscript{61} Water Law, supra note 21, at art. 14.
\textsuperscript{62} SALMAN & BRADLOW, supra note 44, at 39.
\textsuperscript{63} Shen & Speed, supra note 1, at 221.
alteration of watercourses is occurring in China makes it more difficult to determine the hydrological or ecological baseline and environmental flow regime of a watershed. Thus, China’s allocation schemes do not reflect the impact of water abstraction or developments, such as hydropower dams, on the total quantity of water available for allocation. Not surprisingly, allocation schemes within a basin often do not agree on the total volume of water available for distribution. Thus, local governments grant individual permits not on the basis of the volume of available water, or in relation to an environmental flow regime, but on an ad hoc, case-by-case basis. Thus, allocation plans are viewed as recommendations or aspirational targets, rather than regulatory requirements, and their true application is limited.

In addition, China’s Water Law prioritizes water for both urban and rural domestic use before, in descending order, use in agriculture, industry, and the environment. This ensures that water is not being allocated to support the environmental requirements of a river.

Furthermore, the allocation of water resources to industry and hydropower generation resulting in insufficient environmental flows exists within a “trajectory of local political relations.” In Yunnan Province, public participation in water resources management has not been encouraged, but, more accurately, actively denied. During the early years of the People’s Republic of China, the central government exercised control over Yunnan’s resources and transformed the Nu Valley. From the 1950s to the 1980s, Yunnan faced “[t]he largest period of destruction in the history of China’s forests,” roughly 27 million cubic meters annually. In addition to the increasing frequency and severity of mudslides in this mountainous region, drought has become an issue. Partly in response to the intensity and duration of droughts, the government has proposed thirteen dams on the Nu River. Today, water allocation for large hydropower dams fosters a paternalistic and non-participatory relationship between local governments and the local people, and an expectation that ethnic

64. Interview with Yu Xiaogang (July 15, 2010) (on file with author).
65. Shen & Speed, supra note 1, at 220.
66. XIE ET AL., supra note 35, at 77.
67. Id.
68. Shen & Speed, supra note 1, at 221.
69. Water Law, supra note 21, at art. 21.
70. Shen & Speed, supra note 1, at 221.
71. McDonald, supra note 55, at 88.
72. Id.
74. McDonald, supra note 55, at 52.
minorities’ needs be met through government generosity. There is a saying in Western China, “xiadiandongshu” (Western power goes East), in which the political and economic centers of the East siphon resources and decision-making capacity from the West. Centralized authority in China provides the power to manage water resources without committees and inquiries. Clearly, the 2002 Water Law is limited in its ability to ensure in-stream flows and promote stability in water use, and does not acknowledge the diverse interests in water or the importance of local environmental flows.

C. Dispute Settlement

In Yunnan, inadequate access to water has led to disputes of various forms. Frequently, rural water disputes involve many people with different interests; they arise among farmers, as well as between farmers and water administration authorities. For example, conflicts arise between the water management units that maintain water “conservancies” (storage) and the water users who pay conservancies for entitlements. Such tension is exacerbated by an attitude held by farmers that water for irrigation is a naturally occurring resource and one for which they do not feel obliged to pay the real price. Systemic problems in dispute resolution incapacitate mechanisms to address adverse effects on water entitlements and compound already insecure water rights.

i. Water Shortages

Despite being an area of historical water abundance, in 2012, Yunnan faced its third consecutive year of drought, which since December 2011 had damaged or destroyed 157,400 hectares of crops, costing the central government 120 million Yuan (19 million USD). Nine rivers dried up and thirty reservoirs ran empty, leaving 8.67 million people and at least 1.5

75. Id. at 117.
76. XU JIANCHU & DAVID MELICK, TOWARDS COMMUNITY-DRIVEN CONSERVATION IN SOUTHWEST CHINA: RECONCILING STATE AND LOCAL PERCEPTIONS 24 (2007).
77. Id.
78. Yu & Liu, supra note 52.
79. Id.
80. Id.
81. XIE ET AL., supra note 35, at 78.
million livestock short of drinking water. Although the accumulated effects of three successive years of drought have decreased water flows, one water expert stated that the current drought would not be a problem under sound water management throughout the country. This expert stresses that drought is a problem because of the low priority placed on the public interest in water management, because it does not generate revenue. To address the drought, however, the province plans to invest 100 billion Yuan (16 billion USD) in the construction of water conservancy infrastructure by the end of 2015. Also, the national government plans to “invest 4 trillion Yuan ($612 billion) in water conservancy projects over the next 10 years.”

Large engineering projects and water storage efforts designed to solve water shortages have frequently led to conflicts over how the water should be used. Project-initiated forced resettlement has also resulted in conflicts. Such conflicts are likely to increase with greater plans for engineered water conservancy infrastructure.

As well, in Yunnan’s Lancang/Mekong River Basin, there is a conflation of investment and development, where “[n]egotiated development benefits rarely trickle down to local communities or conservation.” In China, resettlement is generally considered to be a “development opportunity” rather than a cost of hydropower development. This has caused tensions. Some scholars argue that resource control in Yunnan is a means to “repress communities that threaten government power” and that “dams are a means to advance paternalistic and nationalistic development agendas.” Researchers have found that indigenous people in Yunnan face challenges similar to those faced by indigenous people in other parts of the world. These challenges include a reduced land base, which results in the disruption of land-use cycles, un-

85. Jiang, supra note 82.
87. Id.
88. China Allocates 120M Yuan, supra note 83.
90. WORLD WATER ORG., supra note 20.
91. Id.
92. JOHN DORE ET. AL., IMPROVING MEKONG WATER RESOURCES INVESTMENT AND ALLOCATION CHOICES 70 (2010).
93. XU & MELICK, supra note 76 at 20.
95. McDonald, supra note 55, at 123.
restituted dispossession of natural resources, and uneven terms of economic exchange with the ethnic majority.  

In addition to recent water shortages, disputes arising in Yuanmou and Nanhua Counties have frequently required the Chuxiong Water Conservancy in Yunnan to mediate. Over the past three years, dry weather has led to many disputes in Chuxiong City over the use and maintenance of water. In the half a year from January to May 2012, twenty-two water disputes arose in thirteen villages and towns. Of these, seven disputes are currently being mediated and fifteen were resolved through mediation. Further, in June 2007, the Water Conservancy Bureau of Nanhua County mediated an agreement between the town of Zheng Shaoyu and the villagers of Zheng Shaoke, Zheng Shaokuan, Zheng Shaohong, and Zheng Kajin over the sharing and protection of the source of drinking water. Even though the mediation took more than a year, Yuanmou and Nanhua Counties still face a lack of water for agriculture and domestic use during the annual dry season.

ii. Mediation: Does Not Resolve Ambiguity In Rights, Allocation, or Access

Despite authority in the Water Law to support water rights and address adverse impacts on water entitlements and environmental flows, the dispute settlement process on which the Water Law relies is inadequate to deal with the potential magnitude of problems. The 2002 Water Law uses a standard process of alternative dispute resolution in China to address conflicts in water allocation. Article 56 states that any dispute concerning water that

---

99. Id.
100. Yunnan Water Administration and Monitoring Corps, Chuxiong South County Water Conservancy Bureau actively mediate water disputes (Nov. 7, 2011), www.ynszjc.com/Listxx.aspx?ID=1271&SID.
101. Id.
arises between different administrative offices must be resolved through consultation, and if not, by the next level of government. According to Article 57, disputes between individuals and organizations must also be resolved through consultation. Failing this, resolution must be sought through mediation by the local government at or above the county level. If the parties are unable to resolve the matter at this level, either party may initiate civil legal proceedings. In all cases, until the dispute is resolved, no party may unilaterally alter the existing water regime.

Although alternative dispute resolution and mediation have a long history in China and are more rooted in Chinese tradition than litigation, systemic challenges limit the effectiveness of Articles 56 and 57 to resolve water allocation conflicts through mediation. These challenges include the quality and authority of mediators, the settlement process, and the unequal power of disputing parties. The first main problem with “people’s mediation” is the quality of mediators. The majority are retired workers or housewives who mediate on a part-time basis and receive meager allowances. There is also no incentive for mediators to perform well. Although mediators work under the supervision of judicial assistants of the local level people’s courts, many judicial assistants have limited training themselves, and may not provide sufficient guidance to mediators. The scarce time for judicial assistants to handle the court cases before them further limits the capacity of judicial assistants and mediators to perform their roles competently. In response, the State Ministry of Justice recently promulgated a rule that emphasizes the training of mediators, reward mechanisms to improve the quality of mediation, and a commitment of more financial resources for people’s mediation committees. The increasing likelihood of conflicts resulting from water allocation, however, will require an even greater commitment to mediation to keep up with the demand.

103. Water Law, supra note 21, at art. 56; SALMAN & BRADLOW, supra note 44, at 45.
104. Water Law, supra note 21, at art. 57.
105. Id.
106. Id.
109. Id.
110. Id. at 162.
111. Id. at 4.
112. Id.
The second problem with people’s mediation of disputes over water is that mediators often create “muddled settlements” that do not reflect a clear understanding of the facts or the law. They tend to over-emphasize compromise, while not ensuring the proper remedies to those whose rights have been infringed. Improved public participation in water planning would help to avoid disputes and alleviate the reliance on mediators whose capacity and understanding of the natural resource, and of people’s legal rights, are limited.

Finally, people’s mediators lack the substantive authority to enforce mediated agreements. Despite the considerable time and energy expended to help disputants reach an agreement, parties can simply refuse to comply with a mediated agreement. To address this, the Supreme People’s Court recently issued provisions that expressly provide that settlement agreements reached through people’s mediation committees bearing the chops of the disputing parties be treated as civil contracts. In addition, all new environmental legislation in China passed or amended since the 1990s includes provisions for “settlement by mediation” (“tiaojie chuli”), thus ensuring that bodies carrying out environmental mediation are protected from judicial review under administrative law. Due to the capacity issues aforementioned, however, the length of time for disputes to be resolved remains lengthy and still rather uncertain. For those suffering adverse impacts from water allocations as well as those whose water rights are in question, justice delayed is often justice denied.

The Water Law states that the development of hydropower “shall” protect the ecological environment and obliges the State to compensate people who are involuntarily resettled as a result of state-constructed water projects. The capacity of mediation is insufficient to deal with problems associated with water entitlements affected by hydropower development.

113. Id. at 164.
114. Id.
115. Id.
116. Id.
117. Id. at 166.
118. Water Law, supra note 21, at art. 31.
II. HOW CAN ENVIRONMENTAL CUSTOMARY LAW IMPROVE WATER ALLOCATION?

A. An Overview of Customary Law

Customary law in China has historically influenced water allocation. This influence is readily apparent in Yunnan Province, where the tradition dates back centuries. Customary law derives its binding force not through written agreements, but through sustained, established conduct that arises over time and which parties (states, in the case of international law, or individuals, in the case of domestic law) follow out of a sense of legal obligation or opinio juris.\footnote{119} Customary law is a source of law that exists distinct from agreements, recognized principles of law, and the academic literature on international law.\footnote{120} It is persuasive “not because it is backed by the power of some strong individual or institution, but because each individual recognizes the benefits of behaving in accordance with other individuals’ expectations [given] that others also behave as [s/]he expects.”\footnote{121}

This contrasts to the term for law in China, which has two distinct meanings: more broadly, a “legal norm enacted or administered by the State,” and more narrowly, the written normative document that the National People’s Congress has adopted.\footnote{122} However, indigenous or ethnic groups in China have customary rights “based on tradition or culture, rather than written law, regardless of whether they are practiced by recognized indigenous people or not.”\footnote{123}

Environmental customary law deals specifically with the natural environment. Its connection to statute is depicted in the international context. International environmental treaties are a form of statute that not only codify customary law, but also contribute to the development of new customary law.\footnote{124} In general, customary and statutory laws inform one

\footnotesize{\textsuperscript{119} See, e.g., Charter of the United Nations and Statute of the International Court of Justice, Jun. 26, 1945, 59 Stat. 1031, 3 Bevans 1153 (drawing on general principles of law shared by nations); \textsc{John Currie}, Public International Law 100 (2nd ed. 2008).}

\footnotesize{\textsuperscript{120} See, e.g., Charter of the United Nations, supra note 119, at art. 38(1)(b) (describing international customary law as a general practice accepted as law).}

\footnotesize{\textsuperscript{121} \textsc{Bruce Benson}, The Enterprise of Law: Justice Without the State 12 (The Independent Institute 2011) (1990).}

\footnotesize{\textsuperscript{122} Wouters et al., supra note 30, at 254.}


\footnotesize{\textsuperscript{124} \textsc{Patricia Birnie et al.}, International Law & the Environment xi, 22 (3rd ed. 2009).}
another. The “precautionary approach,” also called the precautionary principle, is arguably an environmental rule that has reached the status of customary international environmental law.125 Though not binding, the Rio Declaration first asserted precaution as a principle of international environmental law, and strengthened its stature as a normative principle of international customary law.126

Although there is a growing body of research that customary systems may be a source of wise resource management policies, to assume that customary law will produce sustainable development is blindly naïve.127 Michael Soule asserts that the myth of moral superiority of indigenous non-western traditions is misguided, and “has led guilt-ridden Westerners to glorify the environmental ethics of non-western traditions.”128 He continues: “[s]ome indigenous people can provide excellent guidance, some not.”129 In addition, customary law may reflect unequal power relations, for example, the way water is distributed and managed between genders.130 Environmental customary law of the indigenous ethnic minorities in China encompasses three principles: (i) equilibrium, (ii) reciprocity, and (iii) duality. It views human beings as part of the living ecosystem, such that “intangible knowledge, practices and innovations,” and tangible biological genetic resources are interconnected.131

Customary law in Yunnan Province

Although not representative of all areas in China, Yunnan Province affords a unique opportunity to examine the potential for environmental customary law to inform and promote more effective and equitable water governance in China. In contrast to regions such as Xingjiang Province’s Tarim Basin, the massive Yellow River in the North, the Karst formations in the Southeast, and the heavily urbanized areas along the East coast, Yunnan Province is historically a water-rich area in China and water allocation has received much less attention. Yunnan has not only a rich

125. Id. at 160.
128. Id.
129. Id.
history of customary law, but immense existing and potential hydropower exploitation, and recently, extreme water scarcity.

The Yungui Plateau and the Tibetan Plateau have the highest concentration of both ethnic minorities and environmental customary law in China.132 Yunnan Province, whose name translates to “South of the Clouds,” sits on the Yungui Plateau. Yunnan is known for its mild climate and rich biodiversity, which includes ninety-one percent of China’s 981 edible fungi species, and 18,000 different plant species, representing sixty percent of the country’s recorded varieties.133 Within this rich biodiversity, Yunnan is home to twenty-four ethnic minorities, which comprise roughly thirty-one percent of the population,134 including significant populations of Yi, Naxi, Bai, Dai, and Zang (Tibetan).135 The water system of Yunnan province is “perhaps the most complex in all of China,” including the headwaters of five major river systems: the Pearl, the Jinshau/Yangtze, the Lancang/Mekong, the Nu/Salween, and the Irrawaddy.136 Yunnan contains over 600 tributaries and 221 billion cubic meters of water.137

*Ancient Han Chinese water law*

Finally, ancient philosophical traditions in the Han Dynasty (206 BC–220 AD) have guided water management. These traditions are consistent with the general principles found in China’s indigenous or ethnic customary law. Similarly, consistent with Confucian tradition, Han water governance traditions repeatedly refer to the need to respect and internalize customs rather than follow laws.138

---

137. Id.
**B. Strengthening Water Rights, Allocation Plans and Dispute Resolution**

i. Equilibrium

The environmental customary law principle of equilibrium holds that the supreme state of human existence is in “equilibrium”, balance, and harmony with nature. Similar to environmental customary law, ancient Chinese legal thought is founded on the understanding of a “close interconnection between the human social order and the natural cosmic order.”

This understanding was particularly important in influencing water ownership, distribution, utilization and administration.

**Water Rights**

If water governance were rooted in the ethnic tradition of equilibrium, the allocation of water rights would ensure that human water needs are in balance with those of nature. Applying this principle, a standard abstraction right would be temporary and require that water be returned at sufficient levels of flow to ensure local river integrity and health. Asserting that both human and natural water requirements are of equal importance would not only promote in-stream flows, but also clarify existing uncertainty in China over whether water rights are indefinitely long or allow complete consumption.

In addition to environmental customary law, ancient Confucian philosophy dictates that harmony and unity must be maintained throughout the universe. In contrast with the competing Legalist tradition, Confucian philosophy emphasizes conduct guided by a sense of internal morality that respects this harmony, rather than by a set of external laws.

Ancient Han traditions also supported the protection of environmental flows. According to Confucianism in the Han Dynasty, the actions of the ruler in administering water resources must be “in harmony with the behaviour of nature and with the seasons.” Further, the upkeep and cleaning of waterways required laborers to maintain the “natural seasonal variations and requirements according to the natural order,” which in modern parlance would refer to environmental flows. In particular, with the expansion of Confucianism, the Emperor enacted an ordinance of waters in

---

139. Li & Song, supra note 131, at 10.
140. Caponera, supra note 138, at 240.
141. Id. at 239.
142. Id. at 246.
143. DANTe A. Caponera, PRINCIPLES OF WATER LAW AND ADMINISTRATION: NATIONAL AND INTERNATIONAL 19 (Marcella Nanni, ed., 2nd ed. 2007).
111 BC, establishing the principle of “water equalization.”\textsuperscript{144} Under the water codes, ordinances and regulations, offenses were punishable.\textsuperscript{145} One such water offense, “causing of inundations,” classified as a “Pu-ching,” was seen as a disrespectful action directed against established authority, whether family, clan, guild or Emperor.\textsuperscript{146} Seen as an offense against the harmonious established order of the community, this category of crime brought heavy punishment and shame.\textsuperscript{147} The gravity of the offense of causing inundations of water is thus evidence of the importance that ancient China placed on “equalization” or equitable distribution of waters.

According to this principle, upper riparian water users would be prohibited from blocking or monopolizing the resource. It would be possible to dam a minor branch canal for irrigation purposes for a short time where the land “is high and the water low.” One general regulation of the Tang Dynasty stated, “[w]henever there is a major canal used for irrigation, where the water itself is low and the land is high, dams may not be constructed in the canal itself.”\textsuperscript{148} Applying this principle to modern governance, water allocation schemes would need to consider dam construction plans (with the goal of sustaining rivers), which they currently do not. Today, China is in the business of causing inundations that store and modify the flow of rivers. Although these inundations are authorized by the Central government, there is some irony that it may be acting against the harmony of nature, which the ancient rulers forbade.

\textit{Allocation Plans}

The principle of equilibrium emphasizes harmony between different human interests. If centrally planned water allocation schemes incorporate the needs of diverse user groups, greater compliance with water laws and strategies is likely.\textsuperscript{149} Customary law is, by definition, an inductive rather than deductive source of law. Rooted in what parties “believe and do,” rather than “agree to do,”\textsuperscript{150} customary law circumvents the problems of implementation and enforcement that plague statutory law. This phenomenon has been described as follows: “if a minority coercively imposes law from above, then that law will require much more force to maintain social order than is required when law develops from the bottom
through mutual recognition and acceptance.151 By incorporating user customs into resources management, lawmakers would increase the level of cooperation within, implementation of, and compliance with a management system.152 Thus, environmental customary law would fortify the internal coherence and consistency of water law in practice.

Since customary law is rooted in what parties actually do or have done over a long period of time, it gives legal structure to a group’s customs and reinforces a group’s sense of responsibility and law-making power.153 This is empowering.154 If resource user groups apply traditional customs as a source of power within the dominant culture, they benefit from this reinforced sense of self.155 In Canada and Australia, for instance, occupational groups involved in fishing and grazing seek the power that comes with their ability to interpret their own customs.156 Recognizing customary law empowers users to take responsibility for a resource. Consequently, although multi-stakeholder platforms that assert equilibrium between user groups may increase the time required to create laws and regulations, they pay off with increased legitimacy, higher compliance, and lower enforcement costs.157

In Yunnan’s Yungui Plateau, despite the weakening of ethnic customary laws, norms, and traditional values beginning in the 1950s, these still exist in remote ethnic group dwellings.158 In addition, despite the effect of the Cultural Revolution from 1966 to 1976 on the practice of religious rituals, most indigenous communities adhere to their earlier norms of forest management.159 Most of Yunnan’s natural resources exist on territory that is governed by a range of customary institutions and rules and monitored and enforced by village chiefs, elders, and governors.160 Although the effectiveness of these customary institutions depends on the “cultural identity and local resilience to external influences,”161 these institutions shape villagers’ social relationships, attitudes, and technologies, which ensure the sustainability and collaborative management of natural resources. Ethnic communities with place-based spiritual practices use location to define their sense of identity, livelihood, and culture. Thus,

151. BENSON, supra note 121, at 12.
152. ØREBECH ET AL., supra note 127, at 436.
153. Id. at 435.
154. Id.
155. Id.
156. Id.
158. LI & SONG, supra note 131, at 10.
159. Xu & Ribot, supra note 134, at 155.
160. Id.
161. Id.
environmental customary law in local communities in Yunnan is more deeply integrated into local community practice than statutory laws that protect the environment.\textsuperscript{162}

In addition, according to ancient Confucian China, authorities had a duty to ensure that water is spread equitably everywhere, without partiality.\textsuperscript{163} Applying this to modern water management would support greater clarification of and equity in water rights. Today, the Chinese Supreme Court upholds this notion:

It is a principle that all riparians possess an equal right to use flowing waters. Therefore, if one [riparian] utilizes [flowing water] in such a way as to subtract [from] the [water] that [another] needs, [the former] must pay compensation in order to . . . undertake the works which [allow him/her to] enjoy his [her] right to . . . water.\textsuperscript{164}

Thus, the Confucian principle of equilibrium and harmony is consistent with modern Supreme Court jurisprudence in China.

\textit{Dispute Resolution}

Through its emphasis on equilibrium, environmental customary law creates the ethic of the precautionary principle. The precautionary principle states that when faced with “threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”\textsuperscript{165} Although not universal as a core element of international environmental law, the customary norm of precaution serves to prevent disputes such as those over scarce water.

By emphasizing the ideal of equilibrium between people and nature, environmental customary law in China supports values that prevent the loss of ecosystem integrity resulting in disputes. In addition, by focusing on the harmony between people rather than on individual rights, environmental customary law emphasizes personal liability and responsibility for the greater good. For example, it states that people must protect holy forests from being cut, not tread on grasslands in the spring, and, in order to preserve water for religious or worship purposes, not pollute plateau

\textsuperscript{163} Id.
\textsuperscript{164} Id. at 269.
\textsuperscript{165} ØREBECH ET AL., \textit{supra} note 127, at 390.
lakes.\textsuperscript{166} By avoiding the privatization of rights and responsibilities,\textsuperscript{167} which lead to litigation and dispute settlement, customary law depends on an internalized sense of obligation and responsibility, in this case, for the environment.

In addition, by basing legal requirements on the traditional cultures of local communities, reflecting their natural history, customs, and culture, environmental customary law improves the implementation of mediated agreements, particularly in areas dominated by minority groups. The pervasive failure of implementing mediation agreements in China suggests that the role that formal dispute resolution plays is to confirm the dispute rather than to solve it. Better application of customary law, however, would not only avoid water disputes in the first place but also improve the enforcement of mediation agreements. Although the mediation mechanisms to resolve water disputes under the 2002 Water Law are not sufficient, with guidance from the laws and traditions of ethnic minorities, this statute can be applied as a legal framework to improve water allocation and the maintenance of in-stream water flows.

ii. Reciprocity

The principle of reciprocity dictates that an exchange exists between humans and nature, and such an exchange must be respected.\textsuperscript{168} Although statutory legal systems are rigid and favor predictability, they must incorporate flexibility and resilience to respond to the changing, unpredictable nature of the natural environment.\textsuperscript{169} Environmental customary law offers this resilience, flexibility, and embeddedness, for example, to statutory allocations in the management of water.\textsuperscript{170} It also supports adaptive management, which is particularly appropriate for the unpredictable and unstable characteristics of water.\textsuperscript{171} Customary law has

\begin{itemize}
\item \textsuperscript{166} Nan Wenyuan, \textit{The Taboos in Tibetan Areas and the Role They Have Played in Environmental Protection}, 3 N.W. MINORITIES RES. 21, 21–29 (2001).
\item \textsuperscript{167} ØREBECH ET AL., supra note 127, at 253.
\item \textsuperscript{168} L\& SONG, supra note 131, at 10.
\item \textsuperscript{169} ØREBECH ET AL., supra note 127, at 249.
\end{itemize}
the advantage over statutory law of not depending on codification or legislation. Further, customary law applies the knowledge and adaptive capacity in interacting with nature that traditional societies have applied throughout history, and informs the implementation of modern water law.

*Water Rights*

Environmental customary law is adaptive in nature because it anticipates potential fluctuations in water supply and expressly mandates more conservative use of resources. This reduces ambiguity, enforcement problems, and future conflict. Specifically, customary law is helpful in regulating not “how much” (e.g., of fish or forest resource) a community should harvest, but “how.” It also offers “fine-grained” rules that facilitate modification and allow for feedback mechanisms to inform future practice.

*Allocation Plans*

The advantage of customary law to ensure environmental flows lies in the extent to which it supports resilience. Resilience is defined as a system’s ability to adapt to changing conditions, and is increasingly the subject of study in management, law, ecology, and economics. Like the process of adaptive management, resilient environmental customary law incorporates lessons from nature through a cycle of intervention, assessment, and adoption. For example, recognizing that cyclones are an unpredictable reality in the South Pacific Ocean, the Samoan people adopted the custom of planting multiple crops with the expectation that some would be destroyed by cyclone damage. This redundancy is similar to the custom of maintaining large forested areas, and provides resiliency: security against potential damage, adaptive capacity, and sustainability over the long-term. Despite being continuously amended, China’s statutory law does not offer this resilience and responsiveness to natural unpredictability,

172. *Birnie ET AL., supra note* 124, at 22.
175. *Id. at* 253.
176. *Id. at* 253.
177. *Id. at* 245.
178. *Id.*
nor does it incorporate long-term knowledge of local natural conditions. By asserting the reciprocity between nature and people, environmental customary law offers responsiveness to changes in water resource availability and promotes adaptive management in its allocation. Resilience is not a feature of all customary law, and some well-functioning customary law systems collapsed when circumstance changed; however, having evolved over time with changes, the surviving ones exhibit resilience. Since the world’s ecological, technological, and social structures are changing at different and often increasing rates, water allocation that meets the needs of current and future generations must be capable of adapting to a wide range of future scenarios and conditions. Generally, the customary law systems that are most likely to support resilience in management and meet increasing change have the following characteristics:

(i) A good historical record, oral or written, of the way the system has worked in the past under different environmental conditions,
(ii) An effective procedural mechanism for making rule changes built into the system,
(iii) A process that feeds information on current operations back into the rule modification process,
(iv) Sufficiently finely-detailed rules that can be ‘tweaked’ without wholesale revision, and,
(v) Rules that provide for a balance of rights and responsibilities relating to a wide range of ecosystem functions and thus that facilitate the negotiation of meaningful modifications.

Thus, careful application of the reciprocity principle in environmental customary law would improve the resilience of statutory water law, maintain environmental flows, and support water allocation planning in China.

iii. Duality

Environmental customary law asserts “duality,” that everything has a complementary opposite. This means that decision-makers can combine

181. CORTNER & MOOTE, supra note 179, at 43–44.
182. ØREBECH ET AL., supra note 127, at 246.
183. Id. at 245.
184. Id. at 245–46.
both traditional and modern approaches to water rights and allocation.\textsuperscript{185} Environmental customary law houses traditional knowledge that supports viable ecosystems, which can improve and animate statutory law. In addition, recognizing customary law serves to protect this knowledge about ecosystems. In Canada and Australia, for example, attaching power to indigenous knowledge is the only incentive to ensure that this knowledge survives.\textsuperscript{186}

\textit{Water Rights}

Environmental customary law in China would support statutory law by overcoming limitations in hydrologic and place-based knowledge that confuse the current regime. Customary law is viewed “like a scrapbook containing useful knowledge that can be incorporated into management systems.”\textsuperscript{187} Empirically derived indigenous knowledge for protecting water flows and water resources would thus inform the determination of hydrological limits to a river basin. Indigenous knowledge of a river basin over a long period of time prior to development, the protection of sacred sites, and an understanding of land-water interactions would establish a baseline from which water entitlements could be created to protect the ecology of the river. In addition, although environmental customary law is place-based, it is flexible and allows one specific environmental customary law to be applied in different places. Thus, customary principles in law would help define practices that affect both ownership and access rights to water.\textsuperscript{188}

Yunnan province is rich with traditional knowledge and place-based customary law that would support the definition of water rights in China. The natural history, geography, lifestyle, and religion of different ethnic groups in China’s Southwest, including Yunnan, as well as those of Guizhou, Sichuan, Guangxi, and Chongqing, have generated distinct customs that inform farming practices and interactions with land and water.\textsuperscript{189} Customary law not only applies to river basin protection, but also to forests, arable land, and community environmental protection.\textsuperscript{190} In Yungui Plateau, where Yunnan is located, it provides place-specific clarification of the general principles of environmental customary law. In

\begin{thebibliography}{99}
\bibitem{185} Li \& Song, \textit{supra} note 131, at 10.
\bibitem{186} Ørbech \textit{et al.}, \textit{supra} note 127, at 436.
\bibitem{187} \textit{Id.}
\bibitem{188} Li \& Song, \textit{supra} note 131, at 17.
\bibitem{189} \textit{Id.} at 4.
\bibitem{190} Guo, \textit{supra} note 132.
\end{thebibliography}
Yungui, environmental customary law takes the form of villager regulations or word of mouth.¹⁹¹ Environmental customary law is applied in small areas and usually each minority has its own religious or village regulations.¹⁹² Being place-based, it focuses on sacred places for worship that are in a convenient location, such as “at home, in the family garden, on a tree, at the family water well, on a rock nearby, or a small community sacred hill within easy walking distance.”¹⁹³ The more localized the worship site, the closer the relationship it bears with the wellbeing of the individual or household.¹⁹⁴ Environmental customary law also forms around village sacred sites, of which there are at least ten major ones in Yunnan Province. For example, a sacred site in Humugu-napa in Jiantang Township, Shangrila partially overlaps with a Ramsar-protected wetland and provincially protected area.¹⁹⁵ The sacred site in Yubeng Natural village, Yuling Township is the most important regional sacred mountain in southwest China.¹⁹⁶ Customary law involves at least a dozen other sacred sites in Yunnan.¹⁹⁷ Customary protection of sacred sites and river features would improve the effectiveness of the definition of water rights and entitlements.

Allocation Plans

Environmental customary law also supports an approach to water allocation that modern statutory law would readily absorb. Specifically, customary law is applicable to the water allocation and transfer framework of the 2002 Water Law. The Water Law framework establishes a hierarchy of water rights: (i) regional rights, (ii) abstractor rights, and (iii) user-level rights.¹⁹⁸ In a regional allocation plan, the central government grants water rights to an administrative region that allocates its share among water abstractions or to a sub-region.¹⁹⁹ This provides long-term goals for water use and theoretically creates water reliability for different classes of users.

At the regional level, environmental customary law would be a source of information to determine long-term goals for water allocation and

¹⁹³ LiBO ET AL., REV. OF CCA STUDIES IN SW CHINA 14 (2003).
¹⁹⁴ Id.
¹⁹⁵ Id. at 11.
¹⁹⁶ Id. at 12.
¹⁹⁷ Id. at 9–13.
¹⁹⁸ Shen & Speed, supra note 1, at 271.
¹⁹⁹ Water Law, supra note 21, at art. 44–47.
environmental protection. By applying the principle of duality, basin allocation plans would overcome insufficient attention to the hydrological requirements of rivers. This is accomplished by viewing the ecosystem (and its environmental flows) as a class of user, among industry, agriculture, and other groups of water users. The ecosystem itself, or indigenous users of environmental flows, would represent the ecosystem as a class of user. Further, in light of the fact that customary law may reflect unequal power relations, gender-specific needs would be included as a class of user. Thus, any formalization of water rights to protect traditional livelihoods and environmental flows would incorporate a mechanism for bringing in new users. In this way, the allocation process at the regional or basin level would more accurately “identify . . . out of stream water requirements, including both volumes and reliabilities for supplying this need.” Thus, the general planning step to determine the appropriate scale of human water allocations would observe the hydrological and ecological regimes of a river basin (or aquifer) and occur before the distribution of water licenses or permits for human use and trading. In this model, governments would determine the requirements for environmental flows prior to granting consumptive water uses and the associated conditions of these rights.

In considering the possible contents of water law, scholars have suggested that hydropower development corporations, which radically affect environmental flows and use public waters, be treated as users and, as such, subject to the provisions of the Water Law. Thus under the 2002 Water Law, the allocation scheme would include abstraction permits and conditions for hydroelectric power production and water distribution. This would improve the coordination of water allocation for industrial uses, including electricity generation, with traditional uses such as agriculture, navigation, and fisheries.

Thus, the duality and flexibility of environmental customary law would support its use in developing the State’s strategy for water allocation.

Dispute Resolution

In conjunction with the concepts of equilibrium and reciprocity, applying the principle of duality would reduce conflict over scarce water. Due to the high costs of enforcing water (compared to land) rights and the limitations in government agency capacity in rural areas, which still cover

201. Shen & Speed, supra note 1, at 271.
202. Id. at 270.
much of Asia, customary law has authority to be “as effective as State law as a basis for claiming water rights.”

Based on local norms and community sanctions, customary law has higher internal consistency and authority. In countries with development conditions similar to those of China, such as Nepal and India, attempts to formalize rights over the use of water have often triggered conflict. Theories of and experience with land-based property rights suggest that the use of defined property rights creates shared expectations and reduces conflict over resources. Water, unlike land, however, is a fluctuating resource, and creating fixed expectations for it through property “rights” disregards the fundamental characteristics of the resource. Instead, using local norms and principles, rather than rules, as a basis for claiming water rights would create greater flexibility in tenure arrangements and enable more peaceful water management. Customary law provides adaptive or flexible rules that unambiguously represent the required management practices and allocations required by local conditions, particularly where the resource is very variable.

Although using customary law can be more effective than the application of land-based property rights to water, in Yunnan, customary law for water and forest resources are closely tied. One example of environmental customary law protecting the headwater forests of Ana Village in Chuxiong Prefecture, central Yunnan, has been famously immortalized in stone. From the year 1714 in the Qing Dynasty, it reads:

A man with a beard is respected (indicative of his seasoned age and rich experience). . . . A person with a beard and hair is like a mountain covered with forest and grass. . . . A mountain sheltered in forest and grass is like a person well clothed. A barren mountain is no different from a naked person, exposing its flesh and bone. An unsheltered mountain with poor soil painfully bears great resemblance to a penniless and rugged man. Even a pine tree or single bamboo grows thousands of leaves and branches, how can a mountain tolerate a treeless state? Yes, indeed, no one does not enjoy being amongst clean streams and green mountains. Everyone understands that only healthy green forest and fertile soil can nurture ever-flowing springs.

204. MEINZEN-DICK & NKONYA, supra note 49, at 15.
205. Id. at 21.
206. Id.
207. Id.
208. Id.
None doubts the significance of those fundamental elements of nature such as soil, water, and fire. Yet, do we know it is the root of trees and forest that brings us water? It is for our benefit and fortune. Meanwhile, upon the order of the officials, our village has established a tradition of electing village forest guard since the time of Chi’ien-lung Emperor [Qing Dynasty]. Alas there have been so many generations of the old who have conscientiously protected our village’s forests till today. Let us dare not to discontinue this tradition…

Thus, applying the customary law for forests and water would directly protect water resources. Being a holistic approach to land and water management, environmental customary law in Yunnan would thus reduce conflicts over water without clashing with forest management.

In addition to combined forest-water customary law, the southwest mountain region of China in Yunnan province is home to a “rich set of customary laws to protect water resources.” For instance, the Dai ethnic group in Nu Prefecture of Yunnan is closely related to the Thai from Thailand and practices a form of Buddhism that includes the protection of sacred forests and springs. The Dai are accustomed to living in hot valleys rather than in the mountains, and possess a long tradition of living near the water. In particular, they live in interconnected human-ecological systems of paddy-rice agriculture that hold irrigation as the centerpiece of their culture. Recognizing this traditional form of water management would reduce conflicts in the area.

Further, by facilitating greater access to indigenous leaders, elders, and village committees familiar with mediation and negotiation over natural resources, the use of environmental customary law would improve the capacity, quality and expertise of mediators. Not only would it support the acquisition of factual evidence, but it would also employ mediators who are familiar with the legal tradition of customary law. It would impose

---

209. XU & MELICK, supra note 76, at 17.
211. McDonald, supra note 55, at 95.
decisions under a clearer, more consistent framework, relevant to modern dispute resolution. Thus, the principle of duality provides a basis for applying both customary and statutory law in dispute resolution.

III. STATUTORY SUPPORT FOR CUSTOMARY LAW IN CHINA

Despite its centralized authority over water resources, China gives autonomous regions and ethnic minorities some discretion in the management of natural resources. The Constitution allows China’s Autonomous Areas, under the guidance of State plans, to independently arrange and administer local economic development, including the exploitation of natural resources, including water.

In addition, the Law of the People’s Republic of China on Regional National Autonomy gives authority, under State leadership, to minority nationalities to “practise regional autonomy in areas where they live in concentrated communities and set up organs of self-government for the exercise of the power of autonomy.” These nationalities have the legal authority to enact separate regulations that recognize their region’s unique political, economic, and cultural characteristics. Subject to review and approval of the Standing Committee of the NPC, these regulations become effective. This gives minority nationalities the statutory authority to manage water resources according to their own organs of government and exercise of autonomy.

The Constitution also protects the rights and interests of ethnic minorities, including their language, and “own ways and customs.” With the approval of State authorities, if a national resolution does not suit an autonomous minority area, local authorities may either implement it with alterations, or cease implementation. This offers a unique legislative opportunity for greater participation of autonomous regions and ethnic

---

216. Id.
217. Wouters et al., supra note 30, at 255.
218. Id.
minorities in water management. Thus, China’s Constitution and the Law of the People’s Republic of China on Regional National Autonomy provide a framework in which the use of customary indigenous law may be applied to balance the top-down governance of water resources with stronger bottom-up integration under the 2002 Water Law.

An analysis of environmental customary law in Yunnan and of ancient Han culture demonstrates that these traditions are place-based and contain a relatively good historical record for functioning forest and water ecosystems, are detailed but could be tweaked without wholesale revision, and provide responsibilities over a range of ecosystem functions (including headwater protection and environmental flows). What is less is clear is how those rights and responsibilities are maintained, internally, through a “sense of duty” by the local resource users, and possibly, as a last resort, by the penal code. It is also not clear from our understanding of the environmental customary law what the process for incorporating new information into rulemaking is and what the mechanism of changing the rules is. Despite these uncertainties in promoting resilience, environmental customary law provides a foundation for equilibrium, reciprocity and duality that would improve water allocation in modern China.

CONCLUSION

As a result of its large population, its uneven distribution of water resources, extensive pollution from industrial, domestic, and agricultural sources, and mounting industrial energy demands, China is facing increasing water scarcity. Indigenous and customary environmental law provides a basis for the first step of planning in the allocation of water rights according to the ecological limits of a river. China’s water governance faces water rights that are poorly defined, insecure and irrelevant, allocation plans that lack recognition of local conditions and environmental flow regimes, which impair coordination and implementation, and dispute settlement that is unequipped to deal with water disputes effectively. The 2002 Water Law provides ample opportunity for this through incorporation of indigenous and customary environmental principles into the regional planning step of water allocations.

In particular, environmental customary law offers three general principles that statutory law may use to improve implementation: harmony or equilibrium, reciprocity, and duality. These three principles of customary law would help respectively reduce (i) water disputes, (ii) improve adaptive capacity and (iii) expand our understanding of the natural systems. In addition, incorporating indigenous knowledge and understandings of local
systems would improve the planning for environmental flows which is needed as a first step before water rights allocations. Ancient traditions of the Han majority are consistent with these fundamental ethnic customary principles.

With its history of natural resource exploitation in the service of the central government, as well as its rich environmental customary traditions, Yunnan has the potential to benefit from the greater incorporation of customary water law. Though the theoretical feasibility and practicality of these options is persuasive, the politics necessary to bring about these changes may present a formidable challenge. Ultimately, strengthening the pluralist recognition of customary and traditional legal approaches in China would improve the equity, efficiency, and ecological sustainability of water management in regions where, too often, plans lack local validity.
UNDERSTANDING THE FAILURE TO REDUCE PHOSPHORUS LOADING IN LAKE CHAMPLAIN: LESSONS FOR GOVERNANCE

by Gail Osherenko

I. Background .................................................................................................................. 324
II. Analysis of Programmatic Efforts to Solve the Problem ................................. 328
   A. Decades of Work by the Lake Champlain Basin Program .................. 328
   B. Efforts Aimed at Waste Water Treatment Facilities (WWTFs) .... 330
   C. Removing Phosphate from Consumer Products ................................. 334
   D. Wetland Protections ................................................................................. 335
   E. Controversy Over Storm Water Management .................................... 336
   F. Addressing Agricultural Inputs of Phosphorus ................................. 340
   G. Introduction of CAFO Permit System for Farms ............................... 347
III. Lessons for Success .............................................................................................. 348
   A. Individual Leaders Produce Funding but not Success ..................... 349
   B. Fragmentation of Agency Responsibility Impedes Problem Solving ........................................................................ 352
   C. Sparring Interest Groups Spur or Block Solutions ........................... 353
   D. Crisis Galvanizes Action but May Temporarily Set Back Progress... 355
   E. Social and Cultural Attitudes Matter ...................................................... 356
IV. The Way Forward .................................................................................................... 356

ABSTRACT

Many shallow lakes and bays throughout the world experience dangerous toxic algae blooms. Extensive biological research has been devoted to understanding the problem, but little research addresses the social and political drivers impeding solutions. This case study focuses on Vermont’s efforts to reduce phosphorus inputs to Lake Champlain, a large

* Osherenko served on the Vermont Water Resources Board from 1995–1999. She is a Project Scientist at the Marine Science Institute, University of California, Santa Barbara and prepared this paper for the International Conference on the Performance of Environmental Governance, School of the Environment, Nanjing University, Nanjing, China, 5–6 May 2013.
lake dividing New York and Vermont in the U.S. that stretches north into Québec, Canada. Why, after four decades and hundreds of millions of dollars spent, has success been so difficult to achieve? What needs to be done to improve water quality management and reduce or eliminate dangerous algae blooms?

In 1993 Vermont and Quebec set a target for phosphorus levels in the shallow Missisquoi Bay at twenty-five micrograms per liter (ug/L) of phosphorus; however, the levels have not declined but increased slightly to fifty ug/L phosphorous, double the target levels. Further, the historic spring and summer floods of 2011 caused a spike in phosphorus concentrations in many parts of Lake Champlain to the highest levels observed since 1990. A warming climate and intense storms are projected to increase erosion making the problem of phosphorous loading more difficult to address.

Five lessons emerge from a study of the literature and structured interviews with a dozen individuals involved in efforts to reduce pollution: (1) funding follows leadership, but success requires substantially more leadership and funding, (2) fragmentation of agency responsibility impedes problem solving, (3) sparring interest groups both spur and block solutions, (4) shocks and crises galvanize action but may temporarily set back progress, and (5) social and cultural attitudes matter both inside and outside bureaucracies.

I. BACKGROUND

Lake Champlain ("the Lake") is a large body of water dividing New York and Vermont, stretching north into Québec, Canada. Intergovernmental efforts to reduce phosphorus loading and improve water quality in the Lake began in the late 1980s. However, blue green algae blooms (also commonly referred to as cyanobacteria or harmful algae blooms known to produce neurotoxins) continue to seasonally shut down beaches and threaten or kill fish in shallow waters of the Lake, especially in the St. Albans and Missisquoi Bays (at the northeast edge of the lake) and at the lake’s south end.

1. Laura Medalie et al., Use of Flow-Normalization to Evaluate Nutrient Concentration and Flux Changes in Lake Champlain Tributaries, 1990–2009, in 38 JOURNAL OF GREAT LAKES RESEARCH, 58, 58 (See map, Fig. 1 at 59) (2012) (Its surface waters cover 435 sq. miles (1127 sq. kilometers) with an average depth of 64 ft. (19.5 meters). The watershed drainage area covers 21,326 square kilometers in Vermont, New York and Québec. Eric Smeltzer et al., Environmental Change in Lake Champlain Revealed by Long-term Monitoring, 38 SUPP. 1 J. SCI. RESEARCH 6, 6 (2012).

Despite sustained efforts by government at the state, provincial, federal, and international levels, phosphorus in the Lake, and especially in its shallow bays, has not improved. In 2011, the Lake Champlain Basin Program reported that, by 2008, point sources of phosphorus had been reduced to approximately five percent of the total load to the Lake suggesting that phosphorus inputs from wastewater treatment facilities (“WWTFs”) have declined substantially due to increased treatment following adoption of the federal Clean Water Act (“CWA”) in 1972. Nonetheless, Christopher Kilian of the Conservation Law Foundation (“CLF”), a non-profit environmental advocacy group based in Boston with an office in Vermont, asserts that the CWA requires more strict regulation of WWTFs. The remainder of the phosphorus comes from a combination of stormwater runoff and agricultural sources (in roughly equal measure).

Because phosphorus concentrations in many segments of Lake Champlain exceed levels allowed under Vermont’s Water Quality Standards, the Lake is on the list of “impaired waters.” The CWA requires


3. Figure 3 “The Lake Champlain Phosphorus Concentrations by Lake Segment,” available at http://sol.lcbp.org/PDFs/Fig3-PChart.pdf (last visited Jan. 27, 2014).

4. Medalie, supra note 1 (citing Missisquoi Bay Basin Study: Identification of Critical Source Areas of Phosphorus Pollution, LAKE CHAMPLAIN BASIN PROGRAM (2011), http://www.lcbp.org/water-environment/water-quality/nutrients/missisquoi-bay-basin-study/); see also Interview with Laura DiPietro, ARM Deputy Dir., Vt. Agency of Agric., Food and Mkts. (Mar. 1, 2013) (asserting that phosphorus coming directly from sewage treatment or industrial facilities accounts for only 3-5% of the problem and the remaining inputs are roughly split equally between agricultural runoff and stormwater); Email from Christopher Kilian, Vt. Dir., Conservation Law Found. (Apr. 18, 2013) (on file with author) (arguing that point sources still contribute roughly fifteen percent of human induced phosphorus pollution, and this has not gone down for fifteen years. Kilian explains that the ten percent discrepancy between the two stems from a difference in whether streambank erosion is treated as part of the natural background load or part of the non-point source load.)

5. Email from Christopher Kilian, supra note 4.

6. Where Does the Phosphorus Come From?, LAKE CHAMPLAIN BASIN PROGRAM (2012), http://sol.lcbp.org/phosphorus_where-does-p-come-from.html. The author avoids categorizing stormwater or agricultural runoff as either a point source or non-point source under the CWA. Anil J. Antony, Shotguns, Spray, and Smoke: Regulating Atmospheric Deposition of Pollutants Under the Clean Water Act, 29 UCLA J. ENVTL. L. & POL’Y 215, 239–40, n.116–18 (2011) (arguing that the CWA “contains an expansive definition of point sources.” Clearly “under the point source rationale, a pollutant [that] travels from a point source to navigable waters” violates the CWA, but a murky questions remains when there are “instances when a point source releases a pollutant onto land [such as stormwater and agricultural runoff], and the pollutant then travels to navigable waters without the aid of any conveyance other than gravity.”)

7. To see a comparison of phosphorus concentrations to target levels, see Figure 3 supra note 3; see also Vermont Water Quality Standards, VT. CODE R. § 12.004.052 (2011), available at http://www.watershedmanagement.vt.gov/rulemaking/docs/wrprules/wsmd_wqs.pdf?zoom=100.

establishment of a Total Maximum Daily Load ("TMDL") that a water-body with impaired waters can receive and still meet water quality standards. As will be explored below, the U.S. Environmental Protection Agency ("EPA"), in 2002, approved Vermont and New York’s jointly developed TMDL for the Lake; however, following legal challenges, the EPA withdrew approval of the Vermont portion of the TMDL in 2011 and is currently rewriting the TMDL.

A significant reason for lack of progress in reducing algae blooms is the huge quantity of phosphorus already locked up in the lake system. Sediment deposited in the lake over generations has built up a legacy of phosphorus, delaying visible improvements in water quality for what is likely to be decades. Phosphorus moves out of the system very slowly, especially from the shallower bays, so even where a tributary stream might indicate a decline in phosphorus, the lake or bay may take decades to respond.

Missisquoi Bay is shallow and is only twelve to fourteen feet at its deepest points. Since agricultural lands surround the bay, farms are a significant source of phosphorus. Pollutants flow through tributaries in the watershed and wash into the bay from the shoreline.

In 1993, Vermont and Québec adopted a bilateral agreement on Water Quality for Missisquoi Bay and set a 25 µg/L limit for phosphorus.


10. See supra note 1 (stating the watershed of Lake Champlain was heavily forested until the 1800s when hillsides were largely denuded over a period of seventy years as European settlers built sawmills, dammed and straightened streams, and created farmland producing erosion and increasing human inputs of fertilizers); Suzanne N. Levine et al., The Eutrophication of Lake Champlain’s Northeastern Arm: Insights from Paleolimnological Analyses, 38 J. OF GREAT LAKES RES. 35, 37–38 (2012) (providing a short overview of land use changes in the Lake Champlain Watershed, stating that “persistent release of phosphorus from bottom sediments can delay lake recovery from nutrient diversion for years-to-decades.”).

11. Levine et al., supra note 11, at 35 (“Persistent release of phosphorus from bottom sediments can delay lake recovery from nutrient diversion for years-to-decades.”).

12. See also supra note 6.


15. Interview with Laura DiPietro, supra note 4.

Phosphorus levels in recent years, however, have not declined but remained at double the level set in the 1993 standard and are near 50 µg/L.\textsuperscript{17} Between 2003 and 2010, Vermont invested over $100 million (from federal and state sources) in reducing phosphorous loading; nonetheless, phosphorus levels have increased or remained the same.\textsuperscript{18}

This paper explores the history of governance and examines why success has been difficult to achieve and what needs to be done to improve water quality management and reduce or eliminate harmful algae blooms. The study emphasizes Vermont because phosphorus loading is predominately generated from the Vermont part of the Lake’s watershed, though there are lessons to be learned from governance in New York and Québec as well.

The story below reveals that a combination of powerful agricultural and development interests have made it difficult or impossible either to impose stricter regulations on stormwater treatment or to enforce, let alone increase, regulation of small farms (that account for half the phosphorus inputs from agriculture). Governors and other political figures pay lip service to the importance of water quality, but when confronted with competing economic interests and the demand for development and job growth they fail to allocate sufficient funding for environmental remediation or enforce full compliance with the CWA. Addressing phosphorus overload requires cooperation and coordination throughout numerous levels of government. The Lake Champlain Basin Program (“LCBP”) has coordinated and fostered communication among New York, Vermont, and Québec; however, Vermont’s key environmental agencies, the Agency of Agriculture, Food and Markets (“AAFM”) and the Agency of Natural Resources (“ANR”), have only recently committed to coordinate and work closely together.

The ANR has resisted ratcheting up regulation of WWTFs and tightening controls on stormwater while pointing to agriculture as the less expensive way to reduce phosphorus loads. In response, CLF has launched a prolonged legal battle using the administrative appeals process and the courts to lower the phosphorus limits that WWTFs must meet and to require more stringent control of stormwater runoff from urban development.
Blue-green algal blooms show up sporadically as well as seasonally (with warmer summer water) and are often localized. Thus, the algal bloom problem easily drops out of sight and out of mind until a particularly bad year or bad bloom triggers concern about human health, toxics, fish kills, and complaints about the look and putrid smell. The occasional, rather than persistent, bloom easily masks the problem and allows the solution to fall off of the political agenda.

II. ANALYSIS OF PROGRAMMATIC EFFORTS TO SOLVE THE PROBLEM

A. Decades of Work by the Lake Champlain Basin Program

In 1990, Congress declared Lake Champlain “a resource of national significance” and created the LCBP, a non-regulatory partnership among the states of New York and Vermont, the Province of Québec, the EPA, as well as other federal, regional, and local government agencies and many public and private groups. LCBP has brought diverse interests together to create comprehensive plans for protecting and improving water quality in the Lake’s watershed. The Governors of Vermont and New York and the Regional Administrator of the EPA signed the first Basin Plan in 1996. Québec joined New York and Vermont to approve the second five-year plan in 2003. The Governors, Québec’s Premier, and EPA Regional Administrators endorsed the third and current five-year plan in 2010. The management plan identifies eight goals including reducing phosphorus, preventing toxic contamination, managing aquatic invasive species, and...
implementing educational programs to increase public involvement in stewardship.\textsuperscript{25}

The LCBP has become a basis for attracting funding from federal, state, provincial, and private non-profit foundation sources. The plan strongly influences the priorities of relevant agencies in Vermont, New York, and Québec. Thus, it carries significant weight but does not guarantee that funds will be authorized or appropriated to achieve the stated objectives. The current plan is now available online allowing citizens and managers access to updated information and studies.\textsuperscript{26}

For two decades, the LCBP has fostered international and regional cooperation among agencies across international and state borders and brought environmentalists, business leaders, legislators, scientists, and government agencies together to find ways to reduce phosphorus loading (among other goals). A generation of cooperative effort by the LCBP and hundreds of millions of government dollars,\textsuperscript{27} however, have not ended or even reduced the toxic algae blooms that periodically make the waters of several of the shallower bays unsafe for swimming and harmful to fish and aquatic species.\textsuperscript{28}

Arguably, extensive research and education funded through the LCBP, in addition to incentive programs and increased regulation by government agencies, have prevented a serious problem from becoming far worse, but this is counterfactual and is hard, if not impossible, to document. One recent report by the U.S. Geological Survey (“USGS”) used flow weighted monitoring to determine that some improvement in water quality and phosphorus reduction occurred between 1990 and 2009.\textsuperscript{29} Adding to the


\textsuperscript{26} See generally, id. (describing studies and information to improve water quality in the Lake Champlain Basin).

\textsuperscript{27} See Eric Smeltzer et al., Lake Champlain Phosphorus Concentrations and Loading Rates, 1990-2008, 57 LAKE CHAMPLAIN BASIN PROGRAM TECHNICAL REP. 1, 2–3 (2009), available at http://www.lcbp.org/wp-content/uploads/2013/04/57_Phosphorus_Loading_1990-2008.pdf (calculating that Vermont, New York, and Québec had spent approximately $151 million to upgrade WWTFs, while the two states had expended $115 million to reduce phosphorus from nonpoint sources); see also VERMONT CLEAN AND CLEAR ACTION PLAN, 2010 ANNUAL REPORT 1 (2011) (identifying over $120 million for phosphorus reduction efforts).

\textsuperscript{28} MISSISSQUOI BAY BASIN: WATER QUALITY MANAGEMENT PLAN, supra note 14, at 41.

\textsuperscript{29} See Medalie, supra note 1, at 62 (“Although the magnitude of many of the individual downward trends in the [1999–2009] period is small, taken as a group, it appears that nutrient reduction progress is being made.” The second ten years of the study were wetter years producing higher phosphorus levels, but correcting for the wetter weather, the study indicated that programs to reduce phosphorus are beginning to show positive results); SOIL AND WATER CONSERVATION SOC’Y, HOW TO BUILD BETTER AGRICULTURAL CONSERVATION PROGRAMS TO PROTECT WATER QUALITY: THE
problem, climate change over the last ten years has made the region wetter.\textsuperscript{30} Wet years increase runoff that promotes algae blooms, therefore, government efforts to reduce phosphorus may be masked by the changing weather.\textsuperscript{31} The surface water temperatures have also increased over the last fifty years.\textsuperscript{32}

In August 2011, Tropical Storm Irene struck parts of central Vermont, sweeping acres of farmland into rivers and streams feeding into Lake Champlain, destroying bridges and roads, and displacing even Vermont’s emergency response center and headquarters of the ANR.\textsuperscript{33} More damage to watercourses occurred in the clean up as the ANR suspended regulations and permitting processes. Untrained clean up crews drove heavy equipment into streams and even tried to straighten river courses as they responded to massive destruction.\textsuperscript{34} On the positive side, Irene was an alarm bell for the public, the media, and policy makers. It focused attention on water quality, increased the sense of urgency around phosphorus reduction, and led to widespread understanding that climate change is a current reality that cannot be ignored.

\textbf{B. Efforts Aimed at Wastewater Treatment Facilities}

In the 1970s and 80s, the U.S. made relatively rapid progress to clean up obviously polluted waters primarily by passing the CWA in 1972.\textsuperscript{35} The

\begin{footnotesize}
\begin{itemize}
\item 31. \textit{Id}.
\item 32. See Smeltzer et al., supra note 1, at 10 (reporting mean surface temperature increases of 1.6–3.8 degrees C (0.035–0.085 degrees C/year) over the forty-six year period. They attribute this to warming regional climate likely due to declining winter ice coverage and increased heat absorption in the absence of ice.).
\item 33. SACHA PEALER, LESSONS FROM IRENE: BUILDING RESILIENCY AS WE REBUILD 1–5 (Jan. 4, 2012), available at http://www.anr.state.vt.us/anr/climatechange/Pubs/Irene_Facts.pdf; see also LCBP, Technical Advisory Committee Meeting Summary from Oct. 3, 2012 at 4, available at http://www.lcbp.org/wp-content/uploads/2012/09/2012-Oct-3-TAC-Meeting-Summary.pdf (“Irene deposited 102mm of rainfall in the watershed and produced an estimated 5.16 hm\textsuperscript{3} of stormflow runoff with a peak flow of approximately 52 m\textsuperscript{3}/s (1,840 ft\textsuperscript{3}/s).”).
\end{itemize}
\end{footnotesize}
CWA established the National Pollution Discharge Elimination System ("NPDES") addressing the obvious point sources of pollution. While the federal government, through the EPA, sets minimum standards, each state may administer its own clean water program, issue permits, and set standards in accord with federal law and EPA’s regulations. In Vermont and New York, this produced dramatic improvements in municipal WWTFs, although the WWTFs remain substantial contributors to the phosphorus problem.

The City of St. Albans Treatment Plant (“Plant”) completed a major $2.3 million upgrade (by chemical addition, flocculation, and sand filtration) in 1987 that resulted in a thirty percent drop in total annual phosphorus loading to the St. Albans Bay and reduced phosphorus from this one facility about ninety percent. Although the Plant continues to meet the regulatory limit of 0.5 milligrams per liter (mg/L) and operates below the phosphorus load limit allocated under the TMDL established in 2002, today’s phosphorus concentrations in St. Albans Bay remain high.

As ANR staff explained, high phosphorous concentrations are due to lake processes such as century-old accumulated phosphorous. This preexisting phosphorus loading from decades of industrial pollution, however, does not constitute an excuse for not further upgrading the St. Albans Plant or other plants. As will be discussed later, the EPA invalidated the 2002 TMDL and is now developing a more stringent TMDL to meet the requirements of the CWA.

Further, the CLF argues, “this plant needs to be upgraded to the Limit of Technology which is now less than .1 mg/L at the end of the pipe.”

See Dutcher & Blythe, supra note 18, at 718–22.

Id. at 719–20.


No significant change in phosphorous levels occurred between 1992 and 2009. See Smeltzer et al., supra note 1, at 14 (stating that “[c]onversion of land during this period to higher phosphorous-yielding uses, and greater river flow rates in recent years, may have offset the gains from wastewater treatment.”).

SMELTZER, supra note 38, at 2–8, 11 (noting that long delays in recovery of lakes after long historical accumulation of phosphorous is not unusual.).


Email from Christopher Kilian, supra note 4 (Kilian notes that facilities in Massachusetts, New Jersey, and elsewhere are now meeting such limits. CLF strategy of commenting on permit applications and litigating when limits are too lax resulted in EPA setting an instream concentration of phosphorus limit of .1 mg/L in 2008 on the Upper Blackstone River in Massachusetts, a limit the U.S. Court of Appeals for the First Circuit upheld in August 3, 2012).
The environmental movement was just beginning in the 1970s when Vermont’s Attorney General, Jim Jeffords, sued New York over sewage sludge discharged directly to Lake Champlain from an International Paper Company plant in Ticonderoga, New York. Jeffords won one of the two lawsuits against International Paper and settled the other. The settlement led to International Paper conducting meaningful cleanup work as well as making significant payments to environmental groups to help clean up the Lake. According to Tom Berry, who later staffed Senator Jeffords’ Vermont field office, “[the successful lawsuits] cemented Jim Jeffords as a leader with strong environmental credibility, and the funds helped environmental groups coalesce around the fight to protect Lake Champlain.”

Québec was behind Vermont on the cleanup of wastewater treatment plants, but with a population of only 20,000 in the Missisquoi Bay watershed, Québec had only about five towns without treatment. The province developed a 2010–2016 plan for wastewater treatment; now all towns have completed installation of proper water treatment. Due to the engagement of the Government of Québec, Québec’s Environment Minister in the LCBP was able to spend funds more freely to pay for preparation of the Lake Champlain Action Plan and for actions to address phosphorus inputs into the Missisquoi watershed. To date, Québec has invested over $61 million in clean up. Before 2003, Québec invested $24 million in WWTFs and $3 million for storage structures. From 2003 to 2010, Québec

---

44. Interview with Tom Berry, Field Representative, Senator Leahy (Mar. 26, 2013).
45. *Id.* (controversy continued over the company’s discharges into water and air into the ’80s and ’90s; air emissions that could also affect the lake have become more controversial in the last 10 years); see PEOPLE FOR LESS POLLUTION, supra note 43; See also NYS Governor’s Award for Pollution Prevention—International Paper, NY STATE DEPT. OF ENVTL. CONSERVATION (Mar. 8, 1999), http://www.dec.ny.gov/public/22498.html (describing the Governor’s award to Ticonderoga for pollution prevention related to a voluntary effort to reduce potential dioxin formation and reduction of elemental chlorine in its operations).
47. Email from Martin Mimeault, Agronomic Expert, Ministry of Sustainable Dev. of the Env’t., Fauna, and Parks (Sept. 18, 2013) (on file with author) (regarding the integration of Lake Champlain into wastewater treatment plans.).
48. *Id.* Québec’s MDDEFP mandated Mimeault in Dec. 1996 as a technical coordinator to assist with Québec’s commitment to the LCBP. In 2003 more funding became available to hire staff full-time to survey and enforce regulations, identify which streams were problematic and identify the major sources of pollution. They surveyed all the resorts and camping places not covered by wastewater collection systems, and inspected and enforced the requirement to install septic systems.
and its partners invested more than $34 million in various actions to reduce phosphorus from the Missisquoi Bay watershed.\textsuperscript{49}

In 1990, Vermont unilaterally passed a law limiting phosphorus from WWTFs to 0.8 mg/L.\textsuperscript{50} The larger plants were required to upgrade if they discharged to Lake Champlain or Lake Memphramegog.\textsuperscript{51} Thirty of the sixty plants discharging to Lake Champlain were above the threshold; these thirty were upgraded over 10–15 years to meet the 1990 standard, largely with state rather than federal funds.\textsuperscript{52}

The Vermont Legislature, in an effort to not overburden municipalities, required the state to cover all costs of state requirements to reduce phosphorus below 0.8 mg/L.\textsuperscript{53} The remaining half of Vermont’s WWTFs (thirty facilities) still have no phosphorus controls, as only the largest facilities have been required to implement phosphorus controls.\textsuperscript{54} Kilian points out, “dissolved phosphorus is immediately bioavailable and is unlikely to precipitate out of solution. Thus, it is far worse in the near term than the phosphorus bound up with sediment associated with non-point sources.”\textsuperscript{55}

In 2002, Vermont and New York set a TMDL for Lake Champlain as required by the federal CWA for all “impaired waters” of the state.\textsuperscript{56} This required upgrading five additional WWTFs that had been exempt earlier because they used an aerated lagoon process.\textsuperscript{57} After 2002, the state found that these plants could use a phosphorus-reducing chemical additive to

\textsuperscript{49} Id. (referencing Suivi environnemental des eaux du basin de la Baie Missisquoi: Séance d’information de la Commission mixte internationale à Saint-Armand, Québec at 7–8 (Oct 13, 2010)).
\textsuperscript{51} Telephone Interview with Eric Smeltzer, Envtl. Scientist, Vt. Dep’t. of Envtl. Conservation (Feb. 15, 2013) Smeltzer, a limnologist, has been with DEC for thirty years working on lake science and particularly on Lake Champlain, focusing on wastewater discharge and management of non-point sources in the watershed.
\textsuperscript{52} Id.
\textsuperscript{53} Vt. Stat. Ann. Tit. 10, § 1266a(c) (2012), available at http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=10&Chapter=047&Section=01266a; see also, Email from David Deen, Vt. State Rep., Chair of the Fish, Wildlife and Water Res. Comm. (Apr. 20, 2013) (on file with author). In 2008, Vermont Law School’s Environmental and Natural Resources Law Clinic filed a Petition on behalf of CLF to invalidate Vermont’s NPDES program alleging, among other complaints, that Waterbury’s WWTF far exceeded its wasteload allocation under the 2002 TMDL. CLF argued that the Vermont law that made compliance contingent on availability of state funding was inconsistent with the CWA. In March 2012, the Commissioner of DEC committed to assist municipalities to secure funding and to require compliance with water quality-based effluent limits without regard to Vt. Stat. Ann. 10 § 1266a (c)). Anthony Iarrapino, Vermont Recommits to the Clean Water Act, CLF SCOOCH (July 19, 2013), available at http://www.clf.org/blog/vermont/vermont-recommits-to-the-clean-water-act/.
\textsuperscript{54} Email from Christopher Kilian, supra note 4.
\textsuperscript{55} Id.
\textsuperscript{56} Guercio, supra note 9.
\textsuperscript{57} Telephone interview with Eric Smeltzer, supra note 51.
affordably meet the TMDL, and four of the plants were upgraded.\textsuperscript{58} Revocation of the 2002 TMDL in the courts (discussed later), as well as other design and funding issues, delayed plans to upgrade the Waterbury plant because the chemical additive might be insufficient to meet the requirements of the new TMDL, expected to be established sometime in 2014.\textsuperscript{59} Kilian argues, “[t]he 2002 wasteload allocation was about shielding dischargers from upgrades and allowing them to increase dissolved phosphorus loads, which of course was all about pacifying developers who want free and easy access to WWTF capacity.”\textsuperscript{60}

The early efforts to reduce pollution in the Lake focused on the easily identifiable sources of phosphorus from industrial and municipal WWTFs rather than focusing efforts to reduce sources of pollution from urban storm water and rural agricultural runoff, which appeared both expensive and politically difficult.\textsuperscript{61} In CLF’s view, reducing phosphorus from large WWTFs to a standard lower than 0.8 mg/L has been difficult politically.\textsuperscript{62}

\textbf{C. Removing Phosphate from Consumer Products}

An early and effective action by the Vermont Legislature to reduce inputs of phosphorus into the environment banned the sale of laundry detergents containing more than trace amounts of phosphorus.\textsuperscript{63} The ban removed nearly forty percent of phosphorus from wastewater.\textsuperscript{64} The Vermont ban became effective in 1978.\textsuperscript{65} Surprisingly, however, Vermont’s ban left a legal loophole that allowed phosphorus to remain in automatic dishwasher detergent sold within the state, a loophole the Vermont legislature (and fifteen other states) closed in 2010.\textsuperscript{66} Québec adopted a ban

58. Id.
59. See id. (explaining the Waterbury plant is discharging 5 mg/L now).
60. Email from Christopher Kilian, supra note 4.
61. Telephone interview with Eric Smeltzer, supra note 51 (explaining that this sector has made major improvements, and further expenditures to reduce phosphorus are not as cost effective as other measures to reduce pollution from non-point sources, and questions targeting limited funds for further WWTF reductions).
62. Email from Christopher Kilian, supra note 4 (stating the Vermont League of Cities and Towns (VLCT) and the administration of Governor Douglas completely shielded municipal WWTFs from needed upgrades, and the current Governor is not doing more).
64. Telephone interview with Eric Smeltzer, supra note 52.
65. See generally KNUD-HANSEN, supra note 63 (detailing the history of the ban on phosphates in laundry detergent).
66. VT. STAT. ANN. tit. 10 § 1382(c) (2010); Melinda Davenport, Phosphate Ban to Take Effect in July, WAX.COM (June 20, 2010), http://www.wcax.com/global/story.asp?s=12679796; see also Interview with David Deen, Vt. State Representative, Chair of the Fish, Wildlife and Water Res. Comm.
Understanding the Failure to Reduce Phosphorous on phosphorus in dishwasher detergent in 2007 that became effective in 2010, and New York followed, adopting a ban in 2012. New York and Vermont also adopted bans on lawn fertilizers containing phosphorus in 2012.67

D. Wetlands Protection

Wetlands provide a natural mechanism for phosphorus reduction.68 In 1981, the Vermont Natural Resources Council (“VNRC”), a non-profit statewide environmental organization, produced a report with recommendations for protecting wetlands in Vermont under contract to the ANR.69 In spite of early efforts of environmental advocates to protect wetlands, Vermont’s first Wetland Rules were not adopted until 1990.70 The Wetland Rules were most recently revised in 2010.71 The Wetland Rules establish a three tiered classification system that treats Class 1 and Class 2 wetlands as “significant.”72 The rules also protect ten functions and values of these wetlands and their buffer zones (generally 100 feet for Class 1 and fifty feet for Class 2). Class 3 covers smaller and less important wetlands; these are not regulated under state law, but some may be


69. GAIL OSHERENKO ET AL., VERMONT WETLANDS—LAWS AND VOLUNTARY TECHNIQUES FOR CONSERVATION, VT. AGENCY OF ENV’L CONSERVATION (1992); see also ROBERT WANNER, WETLANDS IN VERMONT, THEIR IDENTIFICATION AND PROTECTION, VT. AGENCY OF ENV’T CONSERVATION (1979) (preceding the 1982 Vermont Natural Resources Council report and describing the importance of Vermont’s wetlands).

70. Vt. Admin. Code 16-5-103:1 (2010) (identifying after Feb. 23, 1990 “[i]t is the policy of the State of Vermont to identify and protect significant wetlands and the values and functions which they serve in such a manner that the goal of no net loss of such wetlands and their function is achieved”).


protected by municipal or federal law. Québec has not been allowed to convert or develop wetlands in the Missisquoi watershed since 2006.

E. Controversy Over Stormwater Management

Once wastewater-treatment facilities and industrial plants had been substantially cleaned up through the NPDES permit process, state and federal agencies turned their attention to stormwater runoff. Here, the responsibility lies with municipalities, industrial facility operators, and development interests to treat runoff from roads and parking lots to remove pollutants in order to meet water quality standards. Where the receiving water body is not impaired, stormwater runoff may be regulated by Best Management Practices (“BMPs”). BMPs may include “use of detention ponds, vegetated swales, infiltration systems, low-impact development, and other structural or design practices to help regulate storm flows and to remove some pollutants, including phosphorus.” Under the CWA, all municipal separate storm sewer system (“MS4”) permits require BMPs to address “6 minimum control measures,” in order to meet the enhanced requirements of water quality standards and/or implement a TMDL.

After Hurricane Irene in 2011, the Vermont Department of Environmental Conservation (“DEC”) within the ANR became more aware of the need to improve road and bridge standards and pay more attention to culvert sizing. As with farms, the DEC needs to identify and inventory the critical areas or hot spots for agricultural runoff. Currently, House Bill 291, if passed, would make road and bridge standards mandatory rather than voluntary.

Under the CWA, new or increased discharges of stormwater must be regulated under NPDES if they flow into “impaired waters” (waters not meeting the state’s water quality standards). Numerous other conditions trigger the need for a permit, including MS4s serving a population over 1,000 as defined in the CWA, discharges associated with industrial activities, discharges from large and small construction sites, and

73. Id.
74. Interview with Martin Mimeault (Feb. 27, 2013), supra note 46.
75. Dutcher & Blythe, supra note 17, at 720.
76. Id. at 719.
discharges that contribute to violations of Water Quality Standards or are significant contributors of pollutants to the waters of the U.S.  

Technology based effluent limitations ("TBELs") and BMPs are not sufficient to meet the legal requirements for flows into impaired waters. Instead, regulations focus on whether the discharge will exceed the limited capacity of the receiving waters to assimilate the pollutant. Regulation shifts to “tier-two” standards where water quality is based on effluent limitations (called “WQBELS”). Permits are to be based on the amount of phosphorus a water body can assimilate, and the ANR is charged with setting a TMDL (total maximum daily load) for each impaired water body.

Environmental groups, frustrated by inaction on the part of Vermont’s DEC, challenged the agency’s issuance of permits for new or increased discharge of storm water into “impaired waters” of the state where the ANR had not yet determined the assimilative capacity of the receiving waters by setting a TMDL. Two legal scholars, Dutcher and Blythe, present a scathing attack on the ANR for resisting “pollutant budgeting and other essential policies for cleaning up Vermont’s polluted waters.” The attack recounts the administrative and court battles between environmental advocates and executive agencies.

The CLF challenged a permit issued by the ANR before the Vermont Water Resources Board ("WRB"), a quasi-judicial body of citizens appointed by the Governor. The ANR had granted a permit for a shopping center based on compliance with technological standards rather than an assessment of assimilative capacity of the impaired receiving waters. The WRB decided in favor of the CLF, determining that permitting the applicants’ (Hannaford Brothers, a grocery chain, and Lowes Home Center) new or increased discharges into impaired waters was not allowed under Vermont law and regulations in the absence of a TMDL. Angry land developers claimed that the decision would shut down all new development.

81. See generally 40 C.F.R. § 122.26(b)(8) (establishing regulations for when a NPDES permit is required).
82. Dutcher & Blythe, supra note 18, at 720.
83. See id. at 720–21 (describing how the Clean Water Act addresses requirements for impaired waters).
84. See id. at 724–27 (discussing CLF’s action challenging ANR’s permit of a shopping center in Burlington).
85. Id. at 723.
86. Dutcher & Blythe, supra note 18, at 724–39.
88. Id. at *1, *5, *11.
89. Id. at *16.
in Vermont; this sparked pushback from the ANR and led to more
government delay.90 Eventually, the WRB allowed the ANR to issue a
permit before developing TMDLs for the receiving waters because
applicants could avoid increasing their overall discharges by reducing
pollution from preexisting development.91

In 2011, after the Hannaford case, the Vermont Legislature rewrote the
stormwater laws to allow ANR to issue Watershed Improvement Permits
(“WIPs”) even where the state had no watershed cleanup plan or TMDL for
the receiving water body.92 Dutcher and Blythe pointed out that it was not
concern for water quality that made the ANR move forward on clean up
plans, but rather concern that water quality laws would block the ANR’s
ability to issue discharge permits for new development.93

In 2003, the CLF and VNRC challenged the ANR’s issuance of WIPs
in another case before the Vermont WRB, and once again, the WRB told
the ANR to develop TMDLs before it could issue permits.94 The ANR
argued that TMDLs were not feasible and stalled on development of
cleanup plans, although it did develop a phosphorus TMDL for Lake
Champlain95 and determined maximum loads of phosphorus for each of
the Lake’s thirteen segments and major tributaries. But the ANR failed to
develop a detailed plan for how to reduce loads so that new discharges
might be assimilated. In 2008, the CLF finally sued the EPA in federal
court to get the EPA to declare the ANR’s 2002 Lake Champlain TMDL
invalid.96 According to Kilian of the CLF:

The 2002 TMDL wasteload allocation for Vermont allowed WWTFs to
increase their actual aggregate load to Lake Champlain by relying on
the “permitted design load” rather than “actual loads.” So Table 5 in
the TMDL compares actual loads in 2001 (33.5 mt/yr) with the
“permitted load”-based WLA (55.8 mt/yr)—an increase of 22.3 mt/yr!

90. Dutcher & Blythe, supra note 18, at 725–26.
(Findings of Fact, Conclusions of Law, and Order).
93. Dutcher & Blythe, supra note 18, at 728 (“ANR had cannibalized its stormwater
program to cope with budget cuts during the Dean Administration.” Thousands of permits had expired,
and ANR lacked the capacity to enforce existing permits.).
2003).
95. Dutcher & Blythe, supra note 18, at 735 (citing Vermont Wetland Rules, VT. CODE R.
§ 5).
96. EPA Repeals Approval of Champlain TMDL, LAKE CHAMPLAIN COMMITTEE (Feb. 18,
2011), http://www.lakechamplaincommittee.org/learn/news/item/?tx_ttnews%5Btt_news%5D=167&cHash=cbb3e9c1973a2f40661378e8817a02a.
That is why we commented so vehemently at the time of adoption that this approach is illegal, why we challenged the TMDL in court . . . and why we challenged every WWTF permit based on the TMDL in court, successfully. ninety-seven

In a settlement of the lawsuit, the EPA agreed to reconsider its 2002 TMDL approval. In 2011, EPA revoked its approval ninety-eight and is now developing a new TMDL. Ultimately, EPA agreed that the Lake Champlain cleanup plan failed for lack of “reasonable assurance” that clean up actions would occur. ninety-nine Unfortunately, rewriting of the TMDL has stalled installation of some improvements, including a storm water pond in the town of St. Albans, because the town “won’t get credit” for the project until the new TMDL is in place. one hundred

Vermont is a largely rural state with only one major metropolitan area with a population over 200,000. Until recently only Burlington (population 42,417 according to 2010 census) one hundred and one had any regulations for stormwater, although now several additional communities with populations around 10,000 discharging into “impaired waters” (MS4 areas) are required by regulation to obtain permits. one hundred and two Smaller cities and towns have begun to separate their stormwater so that it doesn’t flow into the sewer system, but they don’t generally treat stormwater; instead it flows directly into rivers, as is the case in Swanton, a town of roughly 6,000, close to Lake Champlain. one hundred and three

According to Kari Dolan, Manager of the ANR’s Ecosystem Restoration Program within the DEC, the state only regulates six percent of impervious cover in the Lake Champlain Basin, not including the MS4, which is about twelve percent when including MS4 permits for storm water

97. Email from Christopher Kilian, supra note 4.
99. EPA Repeals Approval of Champlain TMDL, supra note 96.
103. Id.
flowing into impaired waters. In short, Vermont is a long way from addressing runoff from gravel roads and impervious surfaces into adjacent streams and surface waters.

F. Addressing Agricultural Inputs of Phosphorus

Agriculture contributes approximately fifty-five percent of the pollution to Lake Champlain that does not come from WWTFs. The social and cultural taboos on regulating farms and the high value Vermont places on protection of farmers’ livelihoods has impeded progress on reducing the load of phosphorous from agricultural land. Vermont’s farms are valued both for the food they produce and the role they play in maintaining picturesque rural landscapes. The Natural Resources Conservation Service (“NRCS”), a branch of the U.S. Department of Agriculture (“USDA”), uses incentive programs rather than regulations to address water pollution from agricultural operations. NRCS, formerly known as the Soil Conservation Service, has provided $7–8 million annually over the last ten years to the LCBP for water quality improvement practices. Monitoring in Lake Champlain and its tributaries has not shown significant improvement in either stream or lake water quality; however, a 2012 study using statistical models did show phosphorus reductions from 1990–2009 in half the tributaries of the Lake Champlain basin. Christopher Kilian asks, “if we import tons of phosphorus into the watershed annually in feed and fertilizer, how can we expect to deal with the phosphorus problem?” According to Kilian, Vermont’s phosphorus input into the lake dwarf those of Québec and New York, and Vermont needs to reduce inputs by hundreds of metric tons based on new analyses since revocation of the TMDL. Even under the new defunct TMDL, Vermont was required to reduce phosphorus

105. Medalie, supra note 1, at 65 (citing WILLIAM HEGMAN ET AL., ESTIMATION OF LAKE CHAMPLAIN BASIN-WIDE PHOSPHORUS EXPORT 63 (1999) and stating that thirty-five percent comes from urban sources. Presumably these figures include stream bank erosion.).
108. Interview with Kip Potter, Res. Conservationist, supra note 103.
109. Medalie, supra note 1, at 63.
110. Interview with Christopher Kilian, Dir., CLF. (Oct. 11, 2012).
by 150 metric tons while New York was only required to reduce inputs by 0.5 metric tons over fifteen years.  

The number of cows in Vermont is constant if not increasing, as is the concentration of cows, cornfields, and fertilizer into large-scale farms in the Champlain basin (particularly in Franklin and Addison Counties). Additionally, the acres in corn production increased twenty percent from 1987-2007 along the northern Vermont tributaries of the Lake. Farmers have increasingly installed tile drains in fields to reduce water in soils and increase production, and those changes increase the direct runoff of phosphorus into waterways. To be eligible for NRCS programs, farmers are not allowed to convert wetlands and must reduce erosion on highly erodible land; however, monitoring for compliance is far from perfect. The NRCS provides funding to correct “resource concerns,” but many farmers are not able to plan five years ahead given the uncertainty in milk prices, weather, and the economy, so they may not be able to take advantage of financial assistance for water quality improvement.

Kip Potter, a resource conservationist with NRCS, explained that NRCS has concentrated funding for structural improvements around the farmstead—focusing on practices such as proper manure storage, treatment of milk house wastes, and controlling runoff from barnyards. In more recent years, the NRCS has emphasized field based management practices such as cover crops, reduced tillage, and nutrient management in order to reduce phosphorus runoff. Bruce Howlett, a conservation planner and former farmer, noted, “nutrient management was all the rage about ten

---

111. Email from Christopher Kilian, supra note 4 (explaining that Table 3 provides the overview of load reductions for the two states. Vermont had no planned or funded WWTF upgrades and shows a need for total load reduction of 145.8 tons phosphorus/yr. This leaves Missisquoi Bay with annual loading of 58.3 metric tons of phosphorus, an amount insufficient to meet Water Quality Standards.).


113. Medalie et al., supra note 1, at 62–63 (see Table 4).


117. Interview with Kip Potter, supra note 102.

118. Id.
years ago, but has dropped from priorities (though it is still required). Field practices generally pay too little to interest farmers and require too much paperwork to interest agency field staff.”

Potter also explained that NRCS is learning from critical area studies that they need to target the farms and areas most responsible for phosphorus runoff rather than fund whichever farmer happens to apply voluntarily for funding. At the same time, the local office of NRCS is constrained by national NRCS rules that disallow any favoritism.

The LCBP completed a Critical Source Area Study for Missisquoi Bay in 2012 that identified the hot spots of phosphorus generation. The study brought watershed modeling and critical source area analysis in Vermont to a comparable level of what exists in Québec, modeling the entire Missisquoi basin at high resolution of land use, slope, and soil type. According to the final project report, “[t]argeting critical source areas of phosphorus in the watershed for BMP implementation can result in two-to-three fold improvements in phosphorus reduction over random BMP targeting.”

Half of the manure and land in the Lake Champlain watershed are in 170 large and medium size farms. AAFM claims to be “completely engaged” with these farms, as does NRCS. Regulation of the twenty large farm operations (“LFOs”) has been in place since 1999. For efficiency, these LFOs have cows in the barn, not in the streams, and the manure on each farm is managed in one pool. LFOs and medium farm operations (“MFOs”) are required to have nutrient management plans. In 2007, Vermont began to regulate MFOs of 200–699 mature cows.

---

120. Interview with Kip Potter, supra note 102.
121. Email from Bruce Howlett, supra note 119.
123. Id. at 15, 31.
125. Interview with Laura DiPietro, supra note 4.
127. Id.
129. Id. There are no authorized positions to monitor and work with small farms, though DiPietro submitted a proposal to the Governor and the Legislature in 2013 to institute a fee increase on feed, seed, pesticide, and fertilizers sold in the state to raise an additional $250,000 to fund 2–3 staff positions to work with small farms. See FREQUENTLY ASKED QUESTIONS, VERMONT’S CONFINED
MFOs and LFOs have their own economic reasons for reducing phosphorus. Since the price of fertilizer has risen substantially, nutrient management provides financial gains. A younger generation of farmers using smart phones and computers has the sophistication and the technology to reduce phosphorus flows; on mid-size and large farms, they may have the personnel and incentive to learn about new methods and technologies. Nonetheless, nutrient management plans have not solved the manure runoff problems at large and medium size farms.

Unlike LFOs and MFOs, compliance with BMPs for small farms (fewer than 200 mature cows and 100-150 acres in the Lake Champlain basin) is voluntary. Small farms however control half the land and half the cows in the Lake Champlain basin. They also may have issues with phosphorus reduction. Thus, environmental NGOs are calling for regulation of small farms, and some farmers and agency personnel think regulation is inevitable, while others are adamantly opposed to a regulatory approach.

Vermont regulations require stream banks to be vegetated except at defined animal crossings, but no state has a total prohibition on cows in streams. According to DiPietro, regulation to exclude livestock from streams is likely in the next two years. The cost in Vermont, however, to fence all livestock and prevent manure directly entering streams has been estimated at $33 million, and some question whether the water quality benefits will warrant this expense. DiPietro suggests that they need to know which areas to target and that density of livestock is a critical factor. Organic farming, which is growing rapidly, produces grass fed meat and dairy products that require grazing in open fields and even near streams because the organic farmer cannot spray invasive weeds.

ANIMAL FEEDING OPERATIONS GENERAL PERMIT 1 (Feb. 2013), available at http://www.watershedmanagement.vt.gov/stormwater/docs/CAFO/sw_gp_6100_faq.pdf ("Individual permits may be required for large or small farms that discharge.") LFOs and MFOs are defined by the number of animals on the farm. These animals might also be veal calves, swine, horses, sheep or lambs, turkeys, or chickens. Vermont requires a Concentrated Animal Feeding Operation (CAFO) permit for any medium farm that discharges pollutants into the State’s waters. See VT. AGENCY OF AGRIC., FOOD, & MKTS., MEDIUM AND SMALL FARM OPERATION RULES FOR ISSUANCE OF GENERAL AND INDIVIDUAL PERMITS 5–6 (2006), available at http://agriculture.vermont.gov/sites/ag/files/MFO_Rule.pdf (stating a small farm operation houses no more than 199 mature dairy animals, 299 youngstock or heifers, 299 cattle or cow/calf pairs, 749 swine weighing over 55 pounds, 149 horses, 2,999 sheep or lambs, 16,499 laying hens without a liquid manure handling system, 37,499 chickens other than laying hens without a liquid manure handling system, or 9,999 ducks without a liquid manure handling system).

131. Id.
132. Id.
133. Id.
134. Id.
In contrast to Québec where the land is quite flat, Vermont’s hills are steep, and seventy percent of the riverbanks are eroding.\footnote{135} Thirty-five to forty percent of the sediment flow to tributaries in the Missisquoi basin comes from the stream banks, and rivers are now so deeply cut into the landscape that erosion is a huge problem that even stream buffers do not prevent.\footnote{136}

According to Howlett, the 1985 Food Security Act (“FSA”) requires farmers to follow field-specific conservation plans to limit field or “sheet” erosion.\footnote{137} A plan, for example, might rule out growing corn for more than three consecutive years on highly erodible land (“HEL”). There is no systematic monitoring of compliance with these plans;\footnote{138} however, if farmers violate the FSA, they become ineligible to receive federal or USDA loans, grants, or milk price support.\footnote{139}

The Vermont AAFM is now doing a small farm survey with the goal of surveying all small farms.\footnote{140} This could result in more funding applications to NRCS, but the lack of agronomists or conservation planners to advise small farms has been an impediment to farmers applying for available grant money. An audit of the ANR’s Clean and Clear Program (now renamed the Ecosystem Restoration Program) found that the state AAFM did not have enough engineers to do design work for manure silos and management of discharges from farms.\footnote{141} After the audit, the agency finally received money for one position, and according to Representative Deen, this one position “probably leveraged millions of dollars in agricultural improvements.”\footnote{142}

The LCBP funded three agronomists for the state of Vermont and one for New York, which is a good start, but fewer than will be needed to work with small farmers to encourage compliance with the law and greater

\footnotesize

\begin{itemize}
  \item \footnote{135}{Id.}
  \item \footnote{136}{Id.; Comments from Kari Dolan, supra note 104.}
  \item \footnote{137}{Email from Bruce Howlett, supra note 119.}
  \item \footnote{138}{Id.; Interview with Bruce Howlett, Conservation Planner, Mass. Ass’n of Conservation Dists. (Aug. 17, 2013).}
  \item \footnote{139}{Interview with Bruce Howlett, supra note 138.}
  \item \footnote{140}{Revised Implementation Plan Lake Champlain Phosphorus TMDL, VT. AGENCY OF NAT. RES. 1, 65 (2010), http://www.vtwaterquality.org/erp/docs/erp_revisedtmdl.pdf.}
  \item \footnote{141}{Interview with David Deen, Vt. State Rep., Chair of the Fish, Wildlife and Water Res. Comm. (Feb. 13, 2013). The audit had been ordered by the legislature after the Chairs of the Senate and Assembly natural resources committees, Virginia Lyons and David Deen, became frustrated with the failure to clean up water demonstrated by the TMDL fight. According to Deen, “We had a hell of a fight with the Douglas Administration to put money aside to hire an engineer in the Ag Agency [AAFM]. Leahy had brought in extra money to help agriculture through the NRCS program, and we couldn’t spend it because of the Douglas Administration.”}
  \item \footnote{142}{Id.}
\end{itemize}
participation in NRCS programs. NRCS provides $4,000–$5,000 per year per district to work with District Conservation Associations in Vermont. A few towns contribute small amounts (several hundred dollars) annually to the Conservation Associations. These are quasi-governmental associations of citizens. They often have offices co-located with NCRS offices. Vermont has one conservation district manager who is a part-time employee and one or two full time paid staff, depending on funding levels. New York, in contrast, has well staffed Conservation Districts with more employees because their government funds the Conservation Districts at the county (not the town) level. These conservation district managers and staff are key to increasing participation in federal incentive programs. They operate at the local level and have more knowledge of, and trust from, local farmers. In Vermont, conservation district work is supplemented through an independent non-profit, Vermont Association of Conservation Districts (“VACD”). The VACD serves as an umbrella organization for the fourteen Natural Resource Conservation Districts established in 1939 under the Soil Conservation Act. According to Bruce Howlett, VACD and its Massachusetts sister non-profit, MACD, “have proved to be convenient conduits to channel discretionary NRCS and Department of Agriculture funds to hire extra staff, but New York State does have a better funded system that would be a reasonable model for New England states to follow.”

Since 1996–1997, Québec has had an effective system of watershed clubs (called Dura Clubs). There are now fifty-six in the province. One agronomist works with about thirty farms. According to Mimeault, these clubs, together with the Farmer’s Union and government, pushed for implementation of regulations through BMPs. Québec uses financial incentive programs to control non-point sources, and has been about a decade ahead of Vermont in working with farmers to change the way

---

148. Who We Are, supra note 145.
149. Email from Bruce Howlett, supra note 119.
150. Interview with Martin Mimeault, supra note 46.
151. Id.
farmers manage nutrients. BMPs are voluntary, but compliance is high due to the education and expertise provided by agronomists working for the clubs. The federal and provincial government, as well as private farmers, provide funding for the clubs. Membership in a club is not required, but in the Missisquoi region, about one-third of the 600 farmers are members in one of the two clubs. The Farmers Union played a major role and has been an active partner since 1996, in part because farmers hoped to avoid regulation by initiating action voluntarily.

Québec uses regulation alongside voluntary programs. Animals don’t have access to watercourses. Even small farms are regulated and can be fined for violations, and regulations require nutrient management plans for almost all farms. Mimeault attributes the high level of cooperation and compliance among Québec farmers in part to Québec’s culture of cooperation. Québec farmers accept more basic regulation than is the case in Vermont due to concern that one farmer doesn’t harm someone else because of his or her action. But another significant difference between Vermont and Québec is availability of funding for agency staff, on the ground inspections, education, and incentive programs to help farmers pay for the necessary changes. Vermont and New York have had neither the staffing nor agronomists on the ground working closely with farmers and assisting them.

To solve this problem, several of the agency experts interviewed suggest increasing the number and use of private agronomists available to farmers. These agronomists will consult with and assist farmers in identifying problems contributing to water pollution and apply for grants from NRCS. In the last few years, NRCS has returned money allocated for conservation programs in Vermont because it either did not have enough applicants or some applicants who were approved for funding chose to drop out of the program. In addition to the lack of trained agronomists in Vermont, farmers are deterred by the amount and complexity of the

152. Id.
153. Id.
154. Id.
155. Id.
156. Id.
157. Id.
158. Id.; see also Interview with Laura DiPietro, supra note 4 (noting that while regulation in Québec covers farms of all sizes and is much more intrusive than in Vermont, their stream setback rules only require a ten foot setback and on the top of a bank only a three foot buffer. They also have intense cropping (corn and soybeans) which can contribute more to phosphorus inputs than open fields. Since this whole breadbasket region is zoned as a greenbelt, the farms cannot be converted to urban uses, which could produce even more phosphorus. Where an area is zoned as a floodplain, when a barn burns down, it cannot be rebuilt.)
paperwork required or because the cost to participate may be too high. NRCS expects farms to pay twenty-five percent of the average projected cost as estimated by NRCS.\textsuperscript{159} Some see accepting grants as charity and do not want to be seen taking government handouts. Others have concerns that once they become involved in incentive programs, regulation will follow.\textsuperscript{160}

Many larger farms use outside experts, including soil fertility consultants and nutrient management consultants, but these consultants often work for or are affiliated with fertilizer companies.\textsuperscript{161} NRCS does not have the staff to closely check nutrient management plans submitted before authorizing payments to farmers, nor does it have the staff to do follow-up monitoring.

\textbf{G. Introduction of CAFO Permit System for Farms}

CLF had advocated that the ANR require permits for spreading manure and regulating Vermont’s intensive dairy farms and other industrial farms under the NPDES permit system.\textsuperscript{162} CLF’s website states, “Vermont is one of the last states, and in fact may be the last state to issue a permit to minimize and eventually eliminate these discharges from “Concentrated Animal Feeding Operations” (“CAFOs”) under the Clean Water Act.”\textsuperscript{163}

In 2008, the CLF issued a detailed report that relied on years of agency inspection documents showing numerous cases of manure and other discharges that clearly violated the CWA.\textsuperscript{164} CLF’s report called for the Vermont ANR to require polluting operations to obtain CWA permits.\textsuperscript{165} CLF lawyers argued, “Vermont officials lacked the political will to adequately deal with a major group of polluters in a manner consistent with the nation’s landmark clean water law.”\textsuperscript{166} When the ANR did not respond,
the Vermont Law School Environmental and Natural Resources Law Clinic petitioned the EPA on behalf of CLF to take over Vermont’s CWA NPDES permitting. EPA took the petition seriously, and negotiations over the last couple of years finally resulted in the DEC agreeing to a Corrective Action Plan to resolve most of the issues raised by the petition. This Plan included a commitment that DEC will administer the NPDES permit program to regulate discharges from CAFOs. In June 2013, ANR issued General Permit 3-9100 for “Discharges from Medium Concentrated Animal Feeding Operations.” The permit applies to MFOs that discharge pollutants to waters of the state through a man-made ditch, flushing system, or similar man-made device. The permit also applies to “pollutants discharged directly into waters of the State which originate outside of and pass over, across, or through the [MFO] or otherwise come into direct contact with the animals confined in the operation.” While not all MFOs are required to seek coverage under this general CAFO permit, coverage under the permit protects an MFO against enforcement actions by federal or state government and against citizen suits, should a discharge occur.

III. LESSONS FOR SUCCESS

Five lessons emerge from this study: (1) funding follows leadership, but success requires substantially more leadership and funding; (2) fragmentation of agency responsibility impedes problem solving; (3) sparring interest groups both spur and block solutions; (4) shocks and crises galvanize action but may temporarily set back progress; and (5) social and cultural attitudes matter both inside and outside bureaucracies. This section discusses each of these before closing with comments on the way forward.

170. Id. at 2–3.
171. FREQUENTLY ASKED QUESTIONS, supra note 129, at 4.
A. Individual Leaders Produce Funding But Not Success

Vermont has the good fortune to have had two long-term powerful senators who have been champions for water quality of Lake Champlain. These two senators were instrumental in writing and passing the Lake Champlain Special Designation Act and have together helped to funnel substantial funds for water quality and agricultural support to both Vermont and New York. Senator Patrick Leahy was elected to the U.S. Senate in 1974 at the age of 34. He is now the senior most member of the Senate Appropriations Committee and a senior member of the Agriculture Committee. 172 James “Jim” Jeffords became the U.S. Congressman from Vermont in 1975 (at the age of 40) and served until 1989 when he was elected to the U.S. Senate, where he served until 2007. 173

Over nearly four decades, Leahy (with the help of Jeffords) secured more than $70 million in federal funds to clean up Lake Champlain. 174 In the last five fiscal years (2008–2012) alone, “programs authored and championed by Senator Leahy have delivered over $41 million to Vermont for sea lamprey control, ecosystem restoration and improved water quality in Vermont’s Great Lake.” 175 Federal authorizations of funds for Lake Champlain have been as high as $11 million a year (2001), although the highest amount appropriated in a single year was $4 million (in 2010). 176 This dropped to $3.4 million in FY 2011. Funding for 2012–2013 is at $2.4 million, but this could decline another five to eight percent depending on sequestration. 177 Until recently, the EPA received appropriations of $2.5–$3 million for Lake Champlain, some of which went to the LCBP that

173. Interview with Tom Berry, *supra* note 44. Jim Jeffords developed his reputation as a strong environmentalist from his days as Vermont’s Attorney General. He was one of the leaders in passage of Vermont’s unique land preservation law known as Act 250. He also helped with the first enforcement of Vermont’s ban on billboards (roadside advertising), and as Attorney General of Vermont, he sued International Paper Company for dumping sewage sludge directly into Lake Champlain from its plant in Ticonderoga, New York. In one of the two lawsuits against International Paper, Jeffords won and the other he settled, which led to International Paper doing meaningful cleanup as well as making significant payments to environmental groups to help clean up Lake Champlain. According to Berry, “[t]his cemented Jim Jeffords as a leader with strong environmental credibility, and the funds helped environmental groups coalesce around the fight to protect Lake Champlain.” Berry, who holds a master’s degree in aquatic ecology, was on Jeffords’ staff in Vermont from 1997 until Jeffords’ retirement in 2006; then Berry began working for Senator Leahy.  *See also Senator James M. Jeffords: A Short Biography, U. Of Vt.*, http://www.uvm.edu/~jeffords/?Page=about/jeffords_bio.php&SM=about/_aboutmenu.html (last visited Jan. 11, 2014) (describing Jim Jeffords’ achievements).
175. Interview with Tom Berry, *supra* note 44.
176. *Id.*
177. *Id.*
allocates funding to each state. Vermont and New York each receive about $100,000 annually to assign a staff position to the LCBP.

Two-thirds of ANR’s funding comes from EPA. There have been grants in every federal budget for WWTF upgrades in the range of $6 million per year. In 2009, Congress adopted the American Recovery Act in order to stimulate the lagging economy; this resulted in tens of millions of dollars nationally for sewage treatment in 2010 and 2011.

In the last few years federal funding for the Great Lakes Fisheries Commission has surpassed funding for Lake Champlain coming from EPA. Initially this funding was directed to sea lamprey control, but in the last four years significant funds have come to support work in Lake Champlain. Some funds come through the U.S. Fish and Wildlife Service (about $3 million per year). The largest source of funding ($9–$15 million annually) comes through the Farm Bill and is allocated to the U.S. Department of Agriculture for Vermont conservation programs that impact Lake Champlain, including implementation of BMPs to reduce runoff from silage, increase stream buffers, etc. Tom Berry of Leahy’s Vermont staff estimates that seventy-five to eighty percent of this funding is spent in the Lake Champlain Basin which is the most significant agricultural area in the state.

Studies have demonstrated the importance of entrepreneurial leadership—leadership by individuals who can form winning coalitions, skillfully craft agreements, move issues to the front burner, and “bring home the bacon” (funding to accomplish their goals). Both Senators Leahy and Jeffords provided this leadership in Congress to create the LCBP and keep Lake Champlain high on the agenda of places to protect and restore. While they demonstrated significant success in obtaining funding, even in tough economic times, the funding has not achieved one of the top goals: restoration of water quality.

178. Id.
179. Id.
180. Id. EPA puts considerable funding into upgrading sewage treatment plants through the Clean Water Revolving Fund. This funding is available to states to allocate to towns through a state loan fund. As less funding was available from EPA for State Revolving Funds, Leahy was able to add funds through the State and Tribal Assistance Grants (STAG). Between 1997 and 2003–04 Leahy earmarked $3–$4 million in funding for particular Vermont towns to assist in upgrades of sewage treatment plants. Often these STAG grants were prioritized for towns in the Lake Champlain watershed.
181. Id.
182. Id.
183. Id.
184. Id.
185. Id.
Given the importance of leadership in advancing environmental protection, the lack of obvious leaders at the state and local levels with a strong commitment to improving water quality in Lake Champlain impeded the progress in solving the phosphorus problem. Leadership from some long term legislators in the Vermont statehouse has led to legislative action requiring ANR to tighten regulations, consider using improved methods of waste water treatment (such as cloth disk filtration), and provide a thorough report on cost figures for water quality remediation (the Act 138 Report).187 State legislators in Vermont and New York closed loopholes that allowed phosphorus in lawn fertilizers and automatic dishwasher detergent; the Vermont legislature is currently working to pass a Clean Lakes Bill (H.526) that would reduce shoreline erosion.188 Vermont, however, still needs leaders with entrepreneurial skills to overcome reluctance to increased regulation or to offer creative solutions that will induce industry, local government, and the farm community to take strong action. Improved water quality was not among the five areas Governor Shumlin listed in January 2013 for “bold transformation and targeted investment” for FY 2014.189 It seems unlikely that water quality will become a high priority for the Governor in FY 2015, although Commissioner of DEC, David Mears, regards water quality improvement as his department’s “highest priority”.190 Nonetheless, Commissioner Mears is only recommending a “modest increase in this year’s budget until we know more and can really justify what we are requesting.”191

International and regional cooperation has been a powerful force for getting funding focused on the problem.192 If those funds do not produce

187. See Email from Tom Joslin, Envtl. Engineer for the State of Vt. (Apr. 19, 2013) (on file with author) (stating “[f]or years we resisted the increased cost of post-lagoon cloth disk filtration, but eventually our department was specifically directed by the legislature, through a provision in a state capital bill, to reconsider filtration for phosphorous removal”); see WATER QUALITY REMEDIATION, IMPLEMENTATION, AND FUNDING REPORT 5–6 (Jan. 14, 2015), available at http://www.watershedmanagement.vt.gov/erp/docs/erp_act138report.pdf (estimating the costs of addressing Vermont’s “clean water challenges”).


191. Id.

visible and meaningful results, however, the public and the actors who could make the most difference will turn on the entity and resist cooperation. International cooperation as evidenced in signing of MOUs for Lake Champlain has helped loosen purse strings in both Québec and the U.S.; politicians see cross border cooperation as politically advantageous, but funded projects need to be more result oriented.

B. Fragmentation of Agency Responsibility Impedes Problem Solving

The case of water quality governance for Lake Champlain is replete with both cooperation (especially international cooperation at the regional level as well as between New York and Vermont) and fragmentation (agencies that do not or will not work together). The cooperation through the LCBP has fostered citizen involvement and science based approaches to watershed protection. A consensus approach has built trust among leaders in Vermont, New York, and Québec, though voting on decisions is by majority. Michaela Stickney, a Lake Champlain Basin Coordinator with the Vermont DEC, asserts that the LCBP has been a success in agenda setting, overcoming potential interstate and cross-border conflicts, and transcending “litigation, political elections, and regulation to offer a truly integrated partnership-based dialogue for solving difficult problems.”

There is no question that the LCBP has been an important factor in keeping Lake Champlain high on the agenda of the multiplicity of agencies working for clean water. It has brought concerned citizens, NGOs, scientists, and agency representatives together to identify and address problems and potential solutions. Creating and adopting the five-year management plans has been important in setting goals and priorities for funding. Nonetheless, the LCBP may have also provided an excuse for delaying regulation and direct action while creating plans with long term goals that agencies fail to meet.

Undoubtedly, the LCBP’s science based approach has led to increased monitoring and ongoing research to understand the nature of the

---


194. Id. at 470.

195. Id.

196. Opportunities for Action, supra note 25.
phosphorus problem and find solutions.\textsuperscript{197} We now know that the continuing input of phosphorus to Lake Champlain will make removal of phosphorus slow, difficult, and costly; we now have critical area studies that will help target the limited funds to the agricultural hot spots from which phosphorus flows into the lake.\textsuperscript{198} While coordination, planning, and participation of private and public interests are critical, it is also vital not to allow an elaborate process of planning to replace or delay concrete steps to clean up the lake.

ANR and AAFM’s estimated costs of reducing phosphorus from stormwater runoff and agriculture have been a huge impedance to real action. While leaders (especially the Vermont Senators) have been quite successful in channeling federal funds to Lake Champlain and water quality programs within the EPA and AAFM, uses of the funding have not always been strategically focused to direct reduction of phosphorus. Commissioner Mears stated that the DEC is now aiming to allocate one-third of funding to monitoring, one-third to research, and one-third to action on the ground.\textsuperscript{199} The department started working for this last year and according to Mears is “already putting more funds into action on the ground” and strategically employing what funds it has.\textsuperscript{200}

\section*{C. Sparring Interest Groups Spur or Block Solutions}

Powerful lobbying forces including the Chamber of Commerce (representing developers and other business interests) have successfully fought regulatory power for the LCBP and stricter regulation by ANR. As David Deen explained, interest groups with considerable political clout—the Chamber of Commerce, the League of Cities and Towns (representing municipalities in Vermont), and the Farm Bureau—have resisted costs that could increase taxes, burden town budgets, or place the costs of cleanup directly on farmers. Some of the biggest businesses in Vermont are large farms, so even individual farmers have considerable influence in the state legislature.\textsuperscript{201}

While Governor Shumlin, has voiced support for clean water, his administration was unwilling to allow the ANR to make specific recommendations to prioritize actions in the Act 138 Report released in

\begin{flushleft}
\textsuperscript{197} Id.
\textsuperscript{199} Interview with David Mears, \textit{supra} note 190.
\textsuperscript{200} Id.
\textsuperscript{201} Interview with David Deen, \textit{supra} note 66.
\end{flushleft}
January 2013 or to include funding in the state budget to carry out specific actions discussed in the report.\textsuperscript{202} The Report summarizes the average annual cost of reducing nonpoint source pollution at $91,649,000 annually over ten years, a total that far exceeds normal expenditures for nonpoint source reduction.\textsuperscript{203}

Agency staff point out that the Act 138 Report was not intended to suggest that the totals in the report were the amount necessary to deal with the stormwater needs of the state, but to suggest strategic investments and target the needs that would have the greatest impact.\textsuperscript{204} “We don’t have to do all of those things all at once,” DEC Commissioner Mears explained.\textsuperscript{205} The DEC is waiting to see what the EPA proposes with the new TMDL, thus Commissioner Mears does not expect to request or receive substantial new funding for a year, or more likely two years.\textsuperscript{206}

According to Representative Deen:

[O]ne of the reasons the [Act 138] report is not prioritized was that the Chamber made it known that the business community was against putting more money into cleaning up the waters of Lake Champlain or other waters. Their executive director [Tom Torti] came in and said, “look I can go into any agency budget and find $10 million;” he knows that’s not possible.\textsuperscript{207}

But finding even part of the $70 million needed for stormwater according to the Act 138 report, or $300,000 to hire additional conservation planners to work with small farms is problematic.\textsuperscript{208} The AAFM is responsible for monitoring and enforcement under a memorandum of understanding (MOU) with the ANR. It has proposed to raise rates on registration of fertilizers and pesticides sold in the state and to put people in the field to monitor Accepted Agricultural Practices (“AAPs”).\textsuperscript{209} Whether the Vermont Legislature has the political will to approve this relatively small rate increase is uncertain.

\begin{thebibliography}{99}
\item 202. \textit{Id.}
\item 203. \textit{WATER QUALITY REMEDIATION, IMPLEMENTATION, AND FUNDING REPORT, supra note 188, at 49.}
\item 204. Comments from Kari Dolan, \textit{supra} note 104.
\item 205. Telephone interview with David Mears, \textit{supra} note 190.
\item 206. \textit{Id.}
\item 207. Interview with David Deen, \textit{supra} note 66.
\item 208. \textit{WATER QUALITY, REMEDIATION, IMPLEMENTATION, AND FUNDING, supra note at 187, at 49.}
\item 209. \textit{Id.}
\end{thebibliography}
As for the role of the environmental NGOs, they have not proven effective in overcoming the obstacles of business interests in the legislature or the executive branch. But their effectiveness in the courts has forced both the EPA and ANR to develop a TMDL with “a margin of safety” and “reasonable assurance of compliance.” In addition, NGO advocacy in quasi-judicial and legal processes have pushed ANR to enhance and expand stormwater programs, led to DECs adoption of a general permit for medium concentrated animal feeding operations (CAFOs), and prevented expansion of WWTF phosphorus discharges.\(^210\) The agencies are working on a draft of the new TMDL, but it will not be done before the middle of 2014.\(^211\) And as discussed earlier, CLF’s petition for the EPA to take over Vermont’s NPDES program pushed the ANR into issuing a general CAFO permit that brings medium farm operations under the requirements of the NPDES system.\(^212\)

\textit{D. Crisis Galvanizes Action but May Temporarily Set Back Progress}

As we know from other studies of what it takes to bring about positive environmental change (or bring a new environmental regime into being), crises (real or manufactured) help.\(^213\) Tropical Storm Irene in the summer of 2011 galvanized governmental action to address the excess of phosphorus inputs into Lake Champlain. The storm’s devastating effect on human lives, the economy, and property elevated concern about climate change—especially about the impacts of increasingly large and frequent storms on water quality as well as everyday life for Vermont residents. The more recent storm that devastated the Atlantic coast, Hurricane Sandy, has kept the concerns about climate change and impacts on the environment in the minds of the public and policy makers.

Act 138, passed by Vermont’s General Assembly in 2012, contains a sweeping call for specific actions to regulate flood hazard areas, river corridors, and stream alteration.\(^214\) Perhaps the resistance within both ANR and AAFM to more aggressive steps to reduce phosphorus from stormwater and farms would have come earlier if the storm had come years before.

\begin{footnotes}
\footnote{210. \textit{EPA Repeals Approval of Champlain TMDL}, supra note 96.}
\footnote{212. \textit{See supra} note 53 (outlining the story of CLF’s petition).}
\footnote{213. \textit{POLAR POLITICS}, supra note 186, at 239.}
\footnote{214. \textit{See generally} VT. STAT. ANN. TIT. 10 § 751 (2012) (relating to regulation of flood hazard areas, river corridors, and stream alteration).}
\end{footnotes}
E. Social and Cultural Attitudes Matter

Vermonters place a high value on the identity of Vermont as a farm state. Vermont Life Magazine and many other publications feature and promote Vermont as an ideal tourist destination using pictures of cows, barns, and rolling green hills.\(^{215}\) Ben and Jerry’s ice cream company’s marketing has always featured Vermont’s ubiquitous black and white Holstein cows.\(^{216}\) Dairy farming no longer accounts directly for a large part of Vermont’s economy, yet dairy farmers still wield outsized power in the state and federal government. Vermont’s iconic rural landscape attracts visitors, new residents, and businesses. So it is no surprise that agricultural interests have wide support from the public, and political leaders not only oppose more regulation of farms, but also promote farm subsidies as well as grant and loan programs. Québec, as noted earlier, has a somewhat more communal attitude toward actions that harm neighbors than Vermonters and New Yorkers; thus, they have been more willing to accept environmental and water quality regulations.

IV. The Way Forward

The Vermont agency staff members interviewed shared a strong optimism for the future. Kari Dolan argued, “we are in an exciting period instigated [by] new political leadership and a new set of initiatives that are rallying sectors [particularly the farm sector] never fully engaged before in water quality restoration.”\(^{217}\) She, along with others in the ANR and AAFM, shared an optimism that a whole set of new strategies will result in success over time. The ANR has held twenty-five “kitchen table meetings” with farmers, mostly in the Lake Champlain basin, hosted by conservation district officers. Out of these meetings an agricultural working group developed with twenty-four representatives.\(^{218}\) For the first time, the ANR has its own agricultural specialist overseeing development of CAFO permits. The ANR now has both deadlines and technical expertise. This is the first time in twenty years that farmers are getting involved in solving the problem. DEC has commissioned a study to identify the hot spots for phosphorus flows. Mapping of slopes, soil types, and land use in proximity to water bodies is helping farmers to see where they need to make changes.

---

217. Comments from Kari Dolan, supra note 104.
218. Id.
A memorandum of understanding between the NRCS, DEC, and the conservation districts is making it easier to share data and monitor practices put in place to improve water quality.\footnote{219}

There is also hope that Vermont House Bill 291 will pass; this would lead to an inventory of critical areas of gravel roads and mandate standards for road and bridge construction that are now voluntary.\footnote{220} And the DEC has a new employee from the conservation districts working to encourage low impact structures such as bioswales, rain gardens, permeable pavement, as well as water capture and reuse systems to reduce the amount of stormwater flowing into sewage systems.

Perhaps the most important recent change is that the heads of both Vermont’s key agencies are working closely together. Vermont’s Secretary of Agriculture, Chuck Ross, and the Secretary of Natural Resources, Deb Markowitz, have appeared together at public meetings with Secretary Ross stressing the importance of clean water and Secretary Markowitz speaking about the importance of farming to Vermont’s economy.\footnote{221} Staff in both agencies noted this new cooperation and leadership in explaining their optimism that new steps will solve the phosphorus problem. Interagency cooperation is also increasing between DEC and the Department of Transportation (DOT). Local roads (both gravel and paved) contribute substantially to pollution in some tributaries, so DEC has been working with road engineers in DOT to develop new statewide standards for road grading.\footnote{222}

Another reason some I interviewed expressed optimism is that the state agencies are now finally engaging the local farming community and not just issuing top-down decisions. As many scholarly studies document, there must be trust and effective communication between local people who are affected by government decisions and government decision makers. As DEC’s Ecosystem Restoration Program Manager Kari Dolan stated:

\begin{quote}
Government alone cannot restore our waters. Government needs partners, including municipalities, farmers, loggers, and citizens, as
\end{quote}

\footnote{219. WATER QUALITY, REMEDIATION, IMPLEMENTATION, AND FUNDING, supra note 187, at 98.}
\footnote{221. Correspondence with David Deen, Vt. State Rep., Chair of the Fish, Wildlife and Water Res. Comm. (Apr. 20, 2013) (on file with author); see also Chuck Ross and Deb Markowitz How to Deal with the Lake, ST. ALBANS AREA WATERSHED ASSOCIATION NEWSLETTER, May 2012, at 3, available at http://www.saintalbanswatershed.org/May_2012_Newsletter.pdf (demonstrating Ross and Markowitz’s expressed shared commitment to improving the Lake).}
\footnote{222. Interview with David Mears, supra note 190.}
well as watershed groups, conservation districts, regional commissions, and others. Government can provide the guidance on how to target actions where it will make a difference and monitor our progress. Government will also need to offer technical, educational, and financial assistance, such as grants and loans. Our effectiveness in implementing sound land use practices that will make a difference in safeguarding our lakes and rivers depends on these partnerships.  

Despite these positive developments, the Governor of Vermont will need to demonstrate a commitment to water quality backed up by substantial funding to make genuine progress in phosphorus reduction and end the problems of eutrophication and toxic algae blooms. Problems of agency fragmentation of responsibility must be solved, the influence of vested business interests will need to be overcome, and environmental interests will need to develop greater clout in the legislative and executive branches of government. Addressing the problem of toxic algae blooms will require a shift in public attitudes to recognize the importance of clean water to human and environmental health, as well as to a strong economy.

AAFM regulates all agricultural operations, but monitors, enforces, and works only with LFOs and MFOs unless it receives specific complaints about a small farm. The new study of critical source areas allows the AAFM to target funds where it will be the most effective. Additionally, the new commitment by the heads of the AAFM and ANR to work together is a promising sign for the future. The biggest need is some way to work with small farmers to assist and advise them in how to meet both AAPs and BMPs, develop nutrient management plans, and other site specific actions (such as buffers and reduced tillage). Perhaps a cadre of private consulting agricultural conservation planners, akin to consulting foresters, who can establish long-term rapport with farmers, would be more likely to gain the trust of small farmers than government agents. Independent farm consultants are needed to advise on nutrient management, stream bank stabilization, and other accepted agricultural practices.

The problem remains how to pay for these farm consultants. In Vermont, the NRCS funding covers ninety percent of the cost of

---

223. Interview with Kari Dolan, supra note 79; Comments from Kari Dolan, supra note 104; Email with Kari Dolan (Jan. 22, 2014) (on file with author).
224. INT’L MISSISQUOI BAY STUDY BD. supra note 16, at 23 (the link between the critical area study and ground truthing is far from perfect, but this is an obstacle that the agencies are able to work with assuming they have staff available).
225. See WATER QUALITY, REMEDIATION, IMPLEMENTATION, AND FUNDING, supra note 187, at 13–18 (proposing different management approaches on small farms that will improve enforcement of AAPs and provide benefits to the farm and water quality).
preparation of a new forest management plan, including conservation concerns, but NRCS only covers seventy-five percent of the cost of Comprehensive Nutrient Management Plans (“CNMP”) for farmers.  

Forest landowners need to update their forest plans every ten years to remain in the current use program and retain substantial local property tax reductions. There is now no equivalent incentive for farmers to seek a private consultant to develop conservation management plans that would include land treatment as well as nutrient and waste management. Additionally, consulting foresters may reap the benefits of their work when they supervise a logging job for the landowner. For LFOs and MFOs, the consultant is often an expert from a fertilizer or pesticide company creating a conflict of interest that may not lead to the best conservation advice.

NRCS has grant funds, but until recently has not had sufficient demand from farmers to use even the existing grant money available. The NRCS grant applications require voluminous paperwork, and the NRCS staff writes the application. A shortage of the NRCS field staff results in funds not being spent. Additionally, the NRCS is only allowed to fund the particular solutions approved by regional and national policy, a system that lacks the flexibility farmers may need to participate in the program. With the addition of more conservation planners (whether they are in the private sector, non-profit organizations such as the NOFA, government agencies such as the AAFM, or the NRCS’s own offices), NRCS would be able to use all available funds and target those funds to more effective projects. Additionally, formulas for cost sharing in NRCS’s programs may need to be adjusted to the local realities of farm economics to encourage greater participation in solving water quality problems.

There is a need to fund education to train agricultural conservation planners in Vermont. While K–12 education programs designed for the next generation are useful and potentially will influence parents of current students, the need for action now requires higher level training to develop a cadre of agronomists well versed in conservation planning. Vermont could

226. Comments from Kip Potter, supra note 144.
228. Email from Bruce Howlett, supra note 119 (explaining that large and medium farm operations in Vermont that apply for NRCS funds for manure management must have a CNMP that considers all possible farm operations that could pollute the environment and indicate ways to avoid runoff of manure, sediment, or nutrients. When NRCS funds a CNMP, discrete sections of the plan are written by different people: the Land Treatment Plan by VACD employees working in NRCS office, the NMP (recommending nutrient applications to each field based on planned crops) is most often written by a private contractor affiliated with a fertilizer company, and the Waste Management Plan, if required, includes plans, engineering designs, and management for infrastructure and is written by NRCS staff and signed by a NRCS engineer.)
look at the model of foresters who are successfully working with woodlot owners to institute conservation practices into their land use and forestry plans. The foresters steer and encourage their clients to apply for NRCS grants to cover costs.229 In a similar way, agricultural conservation planners could encourage small farmers to implement actions that advance water quality by taking advantage of available grants. Even the small farmers now know that if water quality doesn’t improve there will be more demand for regulations and more backlash against them.

LCBP needs leadership with the skill and charisma to bring all its members together to keep the phosphorus problem on the front burner and form coalitions that will select projects for funding that make a difference in water quality. LCBP could be a conduit for seeding and funding farm conservation plans. Certainly some of the many studies completed with LCBP funding have been important to better understand the problems and identify solutions. Nonetheless, funds need to be used now for actions that actually reduce phosphorus loading. A more strategic leadership might have speeded cleanup of Lake Champlain by confronting opponents of regulatory action and keeping the public’s attention focused on the urgent need to address the phosphorus problem.

As the Vermont Legislature looks at the Act 138 Report, it may need to set priorities for funding in the absence of leadership from the Governor. Vermont’s congressional delegation would do well to ensure that the funds it secures for the state go beyond more studies and actually solve the phosphorus problem. State legislators, as well as the heads of the ANR and AAFM, can play key leadership roles by finding ways to overcome agency fragmentation and prioritize funding for actions that actually reduce phosphorus pollution.

ALL ABOARD: NAVIGATING THE COURSE FOR UNIVERSAL ADOPTION OF THE PUBLIC TRUST DOCTRINE

By James Olson*

I. Overview and Summary of the Request for Public Trust Principles.... 362
   A. Systemic Threats Call for a Unifying Governing Principle.......... 362
   B. Application of the Public Trust Doctrine as a Unifying Principle.. 365
   C. North America’s Great Lakes Basin as a Real World Context...... 366
   D. Legal Basis for Applying Public Trust Principles in the Great Lakes Basin ............................................. 368

II. The Historical Development of the Public Trust in the United States and Canada......................................................... 371
   A. Ancient Roots of the Public Trust Doctrine ................................ 372
   B. The Public Trust Doctrine in the United States ......................... 373
      ii. The Public Trust Doctrine in Great Lakes States..................... 377
   C. The Right to Public Use of Navigable Waters in Canada.............. 390
   D. The Public Trust and Treaty Rights of Indigenous Peoples ......... 393
   E. Public Trust in International Agreements and Great Lakes .......... 395

III. The Modern Reach of the Public Trust Doctrine.......................... 396
   A. Basic Principles of the Public Trust Doctrine.......................... 396
      i. Non-Alienation and Need for Valid Public Purpose............... 396
      ii. No Interference or Impairment ......................................... 396
      iii. Duty to Account for Protection of Public Trust Waters and Uses

* LL.M., University of Michigan; J.D., Detroit College of Law (Michigan State University College of Law). This article is based in significant part on a report to the International Joint Commission (referred to throughout this article as “IJC” or “Commission”). This report provided legal and policy background to assist the Commission in its consideration of the adoption of a new guiding principle based on the public trust doctrine for the exercise of its authority or responsibilities under the Boundary Water Treaty of 1909 and in the implementation of the Great Lakes Water Quality Agreement. This report was authored and prepared by James M. Olson, J.D., LL.M., Chair, Flow for Water, Public Trust Water Policy Center, with the assistance of Jeff Jocks, J.D., Ross Hammersley, J.D., Kate Redman, J.D., and William Rastetter (Of Counsel), of Olson, Bzdok & Howard, P.C. (Traverse City, Michigan), and in conjunction with Maude Barlow, Chair of the Council of Canadians, Our Great Lakes Commons report, as part of the Presentation to the IJC on the Great Lakes as a Commons Protected by Public Trust Principles (hereinafter “Presentation”). The authors would like to acknowledge and thank research associates: Jacqueline Goodrum, Molly Krauza, Marie Kyle, Hannah Smith, and Lindsay Walton, Vermont Law School Water and Justice Program and Visiting Professor Jack Tuhloske, Director of the Vermont Law School Water and Justice Program, as well as Ursula Jonsson, Communications Director for Flow for Water.
I. OVERVIEW AND SUMMARY OF THE REQUEST FOR PUBLIC TRUST PRINCIPLES

A. Systemic Threats Call for a Unifying Governing Principle

At this time in history, it is evident that current efforts to address specific environmental problems are inadequate. For example, the regulatory permit systems and land preservation projects of the 20th century first introduced to protect parks and natural areas and later implemented in the 1970s and 1980s to prevent harmful water discharges, wetland fills, air emissions, and disposal of toxic wastes have failed to stem the worsening systemic human effects on water, land, soil, plants, atmosphere, habitat, wildlife, and human health. Reports and articles released into the digital “library,” known as the cloud, underscore or even lament the billions spent to save globally and regionally significant conservation areas or features only to see their efforts scuttled by climate change or other systemic impacts.  

1 The same lament could be made about the voluntary efforts of

---

international conservancy organizations. These groups have expended massive amounts of resources and manpower to save and preserve land, water, and related biological systems. As successful as these directed regulation, preservation, and restoration efforts have been, the systemic threats to and demands on the commons—air, water, biological diversity—threaten to undermine the commitment of resources invested in these efforts and, even worse, could outstrip the natural capacity of the earth’s systems.

The questions must then be asked: what can and should be done to assure that the systemic threats to the planet are minimized, or in some cases even reversed from worsening? What can be done to address melting polar ice caps, the shrinking glacial ice cover of Greenland, increasing global temperatures and evaporation, dramatically decreasing water levels and “dead zones” from algae blooms in the Great Lakes and Mississippi River basin, or the ravaging of other global regions by droughts, floods, and storms?

Much is being done through combined regulatory and voluntary actions by government, private non-profit organizations, and individuals to address these systemic threats, but will these efforts be enough? Will they work? Is it too late to incorporate meaningful principles into policies that promote adaptation and resilience, not acquiescence? Will human behavior really respond by incorporating the future into the present, and make decisions that benefit both themselves and future generations? So far, given the extraordinary social, political, economic, and scientific efforts to date, and worsening effects in practically every sector and region on the planet, something more fundamental, something game-changing, a shift in paradigm, framework, and principle is in order.

For example, the magnitude of these systemic threats, as well as the magnitude of harm from increasing demands on natural resources, is pushing our remaining water commons and exploited natural resources and ecosystems to their limits. Activities such as extraction of the Canadian “tar sands,” deep horizontal hydro-fracturing, unchecked water mining, nutrient loading, or diversions of rivers to China’s arid coal-rich-region in the north put immense pressure on our natural systems. These resources are exploited mostly to extend a fossil-fuel driven economy, with inevitably prolonged and increasing emissions of global warming gases, consumption of scarce water sources, continued pollution of the atmosphere, and alteration of the landscape. In some instances the industrialization required to support this continuing demand on natural resources, such as the use of extraordinarily


2. Melnick, supra note 1; Rosa & Dietz, supra note 1.
high volumes of pressurized water mixed with chemicals used to fracture deep shale formations to capture oil and gas, has been implemented with little consideration of what will happen if human error disrupts the process or releases chemical or poisonous compounds into the commons of the earth.\(^3\)

When something goes wrong, as it did with the “Deep Water Horizon” oil well in the Gulf of Mexico, the response is often one of surprise at having been caught off guard, or chalked up to human error, rather than asking whether the scope or magnitude of impacts on our common air, water, and ecosystems from the massive scale of technology and development have gone too far.\(^4\)

---


4. See Rafe Sagarin & Mary Turnipseed, Commentary: The Gulf Oil Disaster and the Public Trust Doctrine, McCLATCHY NEWSPAPERS (June 11, 2010), http://www.mcclatchydc.com/2010/06/11/95601/commentary-the-gulf-oil-disaster.html (discussing the use of Public Trust Doctrine in the context of gulf oil spill). The idea of going “too far” is perhaps not enough, but at the very least, it would require both recognition of the interests at stake and some outer limit beyond which actions and behavior, or their effects, are not allowed to go—an umbrella protection on the commons in the same way outer limits are imposed on the confiscation or overburdening of private property, see, e.g., Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 415–16 (1922) (recognizing that too much regulation may constitute a takings), see Illinois Central, Infra, note 43 (explaining the public trust doctrine and how it can work in conjunction with private interests); see Barton H. Thompson, Jr., The Public Trust Doctrine: A Conservative Reconstruction & Defense, 15
B. Application of the Public Trust Doctrine as a Unifying Principle

This article evaluates the application of the public trust doctrine or its principles, as those principles have evolved over the past 100 years, as a means of addressing the growing systemic threats to the earth’s water, ecosystems, and natural communities. This article examines whether the doctrine could play a new positive and unifying role in addressing these threats by establishing an umbrella or outer limits on government and private actions that contribute to or increase these systemic threats. The article concludes that if the public trust doctrine already applies to, and protects, lakes, streams, and navigable waters, then because these waters are critical components of the hydrologic cycle, threats to any part of the hydrologic cycle that effect public trust waters can be addressed or remedied under the public trust doctrine. Finally, the article submits that there should be an exploration of applying public trust principles to the hydrologic cycle as a means to view and solve these threats holistically.

There is an urgent need to take a holistic and scientifically informed approach to creating policies that will protect the hydrologic cycle. The public trust doctrine—or at least its principles—offer a legal construct to integrate our understanding of energy production, food systems, and climate change with the hydrologic cycle. In a number of recent innovative lawsuits filed by young Americans claiming to be the immediate beneficiaries of a public trust in the atmosphere, plaintiffs have sought to address the impacts of climate change through the imposition of affirmative

duties on government to stop climate change inducing gases like carbon dioxide.\(^6\)

While the atmosphere is undoubtedly connected to public trust waters, and a commons in the air held by government for the public is based on ancient legal principles, it remains to be seen whether air or the atmosphere itself is subject to the public trust doctrine.\(^7\) However, what is suggested here is less ambitious: climate change impacts, such as habitat shifting from global warming and weather changes, are directly related and connected to traditional public trust waters through the hydrologic cycle. Climate change effects and impacts are thus subject to the public trust doctrine if it can be demonstrated that such effects result in significant impacts to navigable or other public trust waters or uses are attributable to climate change and releases of greenhouse gases.\(^8\)

C. North America’s Great Lakes Basin as a Real World Context

In order to better explore the questions raised above, a real world context is helpful. The freshwater seas of North America, the five Great Lakes and their connecting and tributary waters and ecosystems, represent nearly twenty percent of the world’s fresh surface water and are home to 35 million people spread over eight states and two provinces. Because the Lakes face worsening systemic harms and threats from a multitude of interacting conditions and circumstances—global warming and climate change, rapidly dropping water levels, invasive species like quagga mussels and Asian Carp, excessive water demand and consumption, diversions and exports, nutrient loading, and stormwater and sewage overflows—the area of the Great Lakes Basin offers a valuable context for the purposes of this article. Moreover, the Great Lakes are managed as “boundary waters”

---


8. See Part III of this article on the modern application of the public trust doctrine, particularly infra note 188 and accompanying text.

Additionally, the Lakes are governed by the Great Lakes Water Quality Agreement,\footnote{Great Lakes Water Quality Agreement of 1972, U.S.-Can., Apr. 15, 1972, 23 U.S.T. 301. It was later amended in 1978 and 1987. See generally Great Lakes Water Quality Agreement, U.S.-Can., Apr. 15, 1972, 23.1 U.S.T. 301 as amended by Great Lakes Water Quality Agreement [hereinafter GLWQA], U.S.-Can., Nov. 22, 1978, 30.2 U.S.T. 1383, and Great Lakes Water Quality Agreement of 1987, U.S.-Can., Nov. 18, 1987 (collectively referred to hereinafter as the “Great Lakes Water Quality Agreement” or “GLWQA”), available at http://www.ijc.org/rel/agree/quality.html.} recently reaffirmed by the United States and Canada in 2012, as well as federal and state provincial air, water, and other environmental and natural resource regulations. Most importantly, for the purposes of this article, the Great Lakes and their connecting and tributary navigable waters are subject to and protected by the public trust doctrine, as it is known in the United States, and a public right in navigable waters that have been historically characterized as “held in trust” in Canada.\footnote{See Sec. IIC, infra p. 28; Michael C. Blumm & Rachel D. Guthrie, Internationalizing the Public Trust Doctrine: Natural Law and Constitutional and Statutory Approaches to Fulfilling the Saxien Vision, 45 U.C. Davis L.R. 741, 801–07 (2012).}

The Great Lakes also reflect the impacts of systemic threats to water, air and ecosystems described at the outset of this article. In the summer of 2011, 3,000 square miles of western Lake Erie, nearly one-third of the lake’s area, turned into a blue-green algae soup resulting in the closure of beaches, damage to the fishing industry, and substantial interference with boating and recreation. The massive algae bloom, and resulting “dead zone” in the Lake, was caused by the interaction of invasive mussels, increased water temperatures, nutrient run-off from farmland, and discharges from stormwater or waste water systems to streams and rivers more than 100 miles upstream of Lake Erie. By February 2013 water levels in Lake Michigan and Lake Huron, a single hydrologic unit, reached record low levels, upending shipping, navigation, recreation, wetland and fish spawning habitat, and creating havoc for tourism, recreational and commercial harbors, and lakefront owners. The interaction of natural processes and human behavior, such as climate change, dredging, and the diversion of 3,200 cubic feet of Lake Michigan water per second through the Chicago River canal, combine to physically diminish the quantity and quality of water and uses of the Great Lakes and tributary waters.

If the public trust doctrine applies to these waters, as this article establishes, and carries with it a limitation on activities or uses that impact an affirmative duty to protect these waters and their public uses, and in some instances related private reasonable use, from one generation to the
next, could it be a comprehensive tool for protecting these waters? Does the doctrine or its set of principles offer a universal or unifying approach to addressing these larger threats to the Great Lakes through understanding the natural and human interactions of these waters and their diversion and use?

D. Legal Basis for Applying Unifying Public Trust Principles in the Great Lakes Basin

Under the English common law, members of the public enjoyed a paramount right to the sea, bays, inlets, foreshore and tributary navigable waters for public uses, including navigation, boating, and fishing. These rights are often referred to as the *jus publicum*. The crown held the waters in trust for the public, and the crown or the crown’s grantees of the foreshore or beds of these waters could not sell or alienate this public right or interfere with the public uses protected by it. Canadian and American laws have recognized this ancient principle, which is known today as the “public trust doctrine.” From the settling of both Canada and the United States, the public right has been part of the daily life of every person, business, farmer, government leader, and community on the boundary waters. The right of public use continues to be held by both governments in a “solemn and perpetual trust.” The right protecting public uses of navigable waters could provide a comprehensive approach in the 21st century for unifying and integrating the protection and management of uses, quantity, and quality of water of the Great Lakes, St. Lawrence River, and other boundary waters.

As noted above, the Great Lakes basin and its ecosystem are in ecological crisis and face many challenges. These include a rapidly increasing demand and competition for freshwater; continuing influxes of invasive species such as quagga mussels; dead zones; loss of fish

---

populations; climate change;\textsuperscript{17} increasing energy and food demands; and increasing demand for drinking water.\textsuperscript{18} Although the governments and inhabitants have confronted many challenges to the Great Lakes, the Great Lakes commons have never been so threatened by so many potential losses, harms, or risks, of such systemic or overwhelming magnitude.\textsuperscript{19} These threats challenge the very core of our existing water and environmental regulatory framework, which currently is fragmented and addresses only specific actions that result in localized harms.

The rights, duties, and principles embedded in the public trust doctrine could offer a comprehensive and unified framework to address these challenges. The public trust doctrine provides a duty to account for public trust values and holds governments and individuals responsible when

\textsuperscript{17} The evidence of climate change and its effects on flows or levels of water bodies, like the Great Lakes or their tributary waters, suggests that climate change or global warming may be the largest diversion of these waters of all. In this sense, while current regulatory efforts concerning the Great Lakes focus on surface waters or groundwater, these are but a small portion of the arc of the entire water or hydrological cycle. Properly viewed as a single hydrologic system, the water cycle itself could be viewed at least for considering the effects on flows or levels as a public trust for purposes of considering diversions and uses of the Great Lakes boundary waters. See generally Craig, supra note 5, at 783.


these values have been brushed aside.\(^{20}\) We should bring back to center stage these public trust values and concerns, which are so essential to the protection of long term community, environmental, and economic stability from generation to generation. When core public trust interests are ignored or minimized, the demands of special more narrow interests in our public and common resources take the spotlight.\(^{21}\) This, in turn, inevitably leads to suppression and eventual erosion or even loss of the public trust values and the obfuscation of the duty to protect an enforceable right to ensure continued public use of these common waters and natural resources.\(^{22}\)

Public trust principles can resolve complex threats to the Great Lakes boundary waters and ecosystem, yet are flexible enough to allow for adaption to the changing needs of future generations.\(^{23}\) Perhaps the time, place, and importance of the public trust in the Great Lakes Commons have reemerged.\(^{24}\)

The International Joint Commission (IJC) has the capacity to build upon a legacy of public trust, that will over the long term, protect these common waters and their paramount public uses. It has a strong historical commitment under the Boundary Waters Treaty to resolve disputes between the countries and their inhabitants and to protect the integrity of the quantity


\(^{22}\) See People ex rel. Scott v. Chi. Park Dist., 360 N.E.2d 773, 780–81 (Ill. 1976) (holding that the incidental economic benefits and jobs from a private project could not be used to justify the transfer and subordination of public trust natural resources for a primarily private purpose). *But cf.* Friends of the Parks v. Chi. Park Dist., 786 N.E.2d. 170 (Ill. 2003) (holding Soldier Field is held in trust by the state and therefore improvements are for public use despite the private benefit to the Chicago Bears).


and quality of the boundary waters, their related ecosystems, and the rights of the public to use these shared waters. 25 Article I of the Treaty, like court decisions of both countries, recognizes that the boundary waters should be kept free and open for public use. 26 Decisions under Article III reference other reports regarding pollution, flows and levels, and related issues under Articles III, IV, VIII, and IX, have applied a cooperative and commons-based governance approach for Great Lakes and the many interests, including rights of the public, which use or depend on the integrity of these waters. 27 Public uses or interests protected by the public trust doctrine have also been the subject of numerous IJC decisions, reports, and recommendations, including: navigation; boating; fishing; swimming; other forms of recreation; fish, habitat, and food chain; wetlands, and the integrity of the ecosystem. 28 The IJC’s strong commitment is unique and critical for both countries; the provinces and states; and their communities, businesses, and citizens who face the myriad of existing and future threats to the Great Lakes and St. Lawrence River waters.

The balance of this report will demonstrate that a commons and public trust approach fits elegantly within the common law of the two countries, the provinces and states, the shared heritage of their people, and the Boundary Waters Treaty.

II. THE HISTORICAL DEVELOPMENT OF THE PUBLIC TRUST IN THE UNITED STATES AND CANADA

The principles of the public trust, derived from English common law and ancient Roman law principles, have been integrated into both Canadian and American common law, as well as into the civil law system of Quebec. 29 These legal systems recognize special public properties or natural resources in which the whole public has an interest as part of the jus publicum. Public trust principles impose outer limits on how and to what extent governments can reallocate and transfer property falling within the

26 Boundary Waters Treaty, supra note 9, at 2608.
27 Id. at art. III, IV, IX, IX.
28 See supra notes 20–24 and accompanying text (identifying the numerous public uses and interests subject to the public trust doctrine).
29 Quebec has enacted a “patrimoine commun” principle in its new water law that declares water a “collective resource” of “common heritage,” protected by a principle l’etat guardien, making the province “custodian” of its water resources. Sarah Jackson et al., Lessons from an Ancient Concept: How the Public Trust Doctrine Will Meet Obligations to Protect the Environment and the Public Interest in BC Water Management, in L’ENVIRONNEMENT, NOTRE PATRIMOINE COMMUN ET SON ÉTAT GARDIEN: ASPECTS JURIDIQUES NATIONAUX, TRANSNATIONAUX ET INTERNATIONAUX 279–300 (P. Halley & J. Sotousek eds., 2012).
ambit of the public trust, with the ultimate goal of ensuring the long term survival or sustainability of these commons and the people and life that depend on them.30

A. Ancient Roots of the Public Trust Doctrine

The theory of a commons and the right to public use of water in Canada and the United States can be traced to the principle of *jus publicum* in the Justinian Codes of Rome in 529 A.D.:

The following things are by natural law common to all—the air, running water, the sea, and consequently the sea shore... But they cannot be said to belong to any one as private property, but rather are subject to the same law as the sea itself, with the soil or sand which lies beneath it.31

Common natural resources, like moving water, were understood to be held by government for the benefit of the people, imposing upon the government a responsibility to safeguard the public’s free use of these natural commons.32

This principle passed down into English common law through the Magna Carta.33 Under English common law, the sea, the soil under the sea and over which the sea ebbed and flowed, and the seashore between the low

---

30. The recent presentation after the IJC Biennial Meeting, Town Hall Session, by U.S. Co-Chair, Lana Pollock, is a good example of how public trust principles could provide a residual exercise of power and recommendation by the IJC as an outer limit. Co-Chair Pollock illustrated the data showing, convincingly, the loss of 85% of the tiny shrimp (*diporeia*) in the last 15 years from invasive quagga mussels. The oil spill that continues to plague the shore in the Gulf of Mexico is another example; see also discussion in Section IV, infra. To a greater or lesser extent, each of the magnitude of these losses and threats overwhelm or exceed the capacity of the public trust waters and ecosystem to sustain itself as needed for changing and important public needs for both present and future generations. If this question and principle is not ever present in decision making, the true nature of the values at risk and the limits imposed by a fiduciary duty to future generations is lost or breached.


and high water marks, was held by the Crown; but it was considered to be held in trust for the protection of the public’s uses of these waters and as common property. Neither the Crown nor private persons could interfere with or alienate the natural and fundamental right of the public to use navigable waters and their foreshore for public uses, including navigation, boating, or fishing. As one court described the English doctrine in 1821:

Other [forms of property] remain common to all the citizens . . . Of this latter kind . . . are the air, the running water, the sea, the fish, and the wild beasts . . . But inasmuch as the things which constitute this common property are things in which a sort of transient usufructuary possession, only, can be had; . . . therefore, the wisdom of that law has placed it in the hands of the sovereign power, to be held, protected, and regulated for the common use and benefit.

B. The Public Trust Doctrine in the United States

The courts in the United States have generally protected the public’s use of navigable waters and the lands beneath them from sale, interference, or harm under the common law. When the colonies won independence from England, ownership and control over navigable waters, shores, and common natural resources, like air and wildlife, vested in each of the sovereign states for the benefit of their citizens. The federal government reserved for itself and all citizens a right of navigation over navigable

35. See Sax, supra note 15, at 476; see also Martin v. Waddle’s Lessee, 41 U.S. 367, 413–14 (1842) (explaining the navigable waters are held by the state as a public trust).
37. See e.g., Alger, 61 Mass. at 82–83 (protecting Massachusetts’s sea, shores, bays, coves, and tide waters); Arnold, 6 N.J.L. at 71. See e.g., Strobel, 164 N.Y. at 320, 321 (holding that the defendant’s use and diversion of the stream’s water, unknown to the state, constitutes an unreasonable use).
38. See Alger, 61 Mass. at 82 (discussing how the rights vested in the state passed from England to the sovereign states); See also, New Orleans v. United States, 35 U.S. 662, 737 (1836) (explaining how the public trust passed from the English crown to the several states); See Pollard v. Hagan, 44 U.S. 212, 228–29 (1845) (holding Alabama maintains the public trust as other sovereign states do under the Constitution).
waters and the power to pass laws to improve and manage navigation,\textsuperscript{39} including the power of Congress to pass laws to regulate commerce.\textsuperscript{40} Based on principles of sovereignty and the public’s rights in common public natural resources, courts ruled that water and related natural resources were held in trust for the security and protection of the public rights in navigation and fisheries.\textsuperscript{41} State courts also generally decided that these public trust resources could not be sold or alienated by the state or owned or controlled by private persons or interests.\textsuperscript{42} Thus, while the scope or standards of the public trust may vary from state to state, all recognize and follow this principle that protects the rights of the public to use navigable waters for navigation, boating, and fishing.

i. Illinois Central Railroad Co. v. Illinois: “Lodestar” of Public Trust Law

In the seminal case of Illinois Central Railroad Co. v. Illinois, the United States Supreme Court affirmed the foundational nature of the public trust doctrine and its applicability to the Great Lakes and navigable waters.\textsuperscript{43} The question before the Court was whether the state legislature of Illinois had the authority to convey to a private railroad company one square mile of Lake Michigan, including lands formerly submerged by the lake, for expansion of the company’s industrial operations.\textsuperscript{44} The Court ruled that the conveyance was beyond the authority of the state legislature because all of the Great Lakes, including Lake Michigan, were owned by the states as sovereigns at the time of admission to statehood, and that the waters and land beneath them were held in trust for the benefit of citizens for navigation and other public uses.\textsuperscript{45} The Court reasoned that under the public trust doctrine it was beyond the power of the state to transfer or convey public trust waters and land for private purposes, or in a manner impairing the public trust and the public’s protected right of public use.\textsuperscript{46}

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{39} United States v. Willow River Power Co., 324 U.S. 499, 509–10 (1945) (federal navigational servitude allows the government to displace or at least subordinate state-recognized property rights in order to ensure the right of public navigation.)
\item \textsuperscript{40} \textit{Alger}, 61 Mass. at 81–83.
\item \textsuperscript{41} \textit{Id.} at 93 (“We think it clear therefore, that the colony charter, revived and confirmed as it was by the province charter, was not a mere grant of the soil of the territory of Massachusetts, but carried with it so much of the royal prerogative, as was necessary for holding, appropriating, and governing the sea and its shores, arms and branches, and also so much, as was necessary for securing the acknowledged common and general right of the subjects to its free navigation and fisheries.”).
\item \textsuperscript{42} \textit{Id.} at 82–83; \textit{See also} Section II.B.ii., infra.
\item \textsuperscript{43} Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 436–37, 459 (1892) (hereinafter \textit{Illinois Central}).
\item \textsuperscript{44} \textit{Id.} at 433–34, 438.
\item \textsuperscript{45} \textit{Id.} at 452–53.
\item \textsuperscript{46} \textit{Id.}
\end{enumerate}
\end{footnotesize}
The *Illinois Central* case is viewed as an essential statement on the public trust doctrine not only because of its holding but also because the *Illinois Central* Court discussed the attributes of the public trust doctrine at length. This discussion included the underlying purposes of the doctrine and how the scope of the doctrine may change to fit different circumstances as necessary to ensure the invaluable purposes of the doctrine were protected.

To begin with, the Court explained that in the United States the public trust doctrine applied not only to tidal bodies but also navigable waters such as the Great Lakes because the underlying rationale of the public trust doctrine applied to both:

Some of our rivers are navigable for great distances above the flow of the tide; indeed, for hundreds of miles, by the largest vessels used in commerce. As said in the case cited: “There is certainly nothing in the ebb and flow of the tide that makes the waters peculiarly suitable for admiralty jurisdiction, nor anything in the absence of a tide that renders it unfit. If it is a public navigable water, on which commerce is carried on between different States or nations, the reason for the jurisdiction is precisely the same. And if a distinction is made on that account, it is merely arbitrary . . .”

Further, the Court explained that in light of the fact that the underlying purpose of the doctrine is to ensure the freedom of public use in navigable waters, the scope of uses protected by the public trust and the manner in which the state exercised its authority might change over time, as the needs of the public changed:

The public being interested in the use of [navigable] waters, the possession by private individuals of lands under them could not be permitted except by license of the crown, which could alone exercise such dominion over the waters as would insure freedom in their use so far as consistent with the public interest. The doctrine is founded upon the necessity of preserving to the public the use of navigable waters from private interruption and encroachment.

The Court compared the public trust doctrine to the general police power held by the states. It concluded that while the state may delegate to

---

47. *Id.* at 436.
48. *Id.*
and allow private interests to use public resources in a manner that the state determines to enhance the public interest protected, so long as it does not substantially impair that or the public trust resource, it could never permanently delegate away such power and would always retain a right to regulate the use of the water as needed to serve the public interest. It explained the nature of the state’s title in water and submerged lands as follows:

A grant of all the lands under the navigable waters of a state has never been adjudged to be within the legislative power; and any attempted grant of the kind would be held, if not absolutely void on its face, as subject to revocation. The state can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them, so as to leave them entirely under the use and control of private parties . . . than it can abdicate its police powers in the administration of government and the preservation of the peace . . . So with trusts connected with public property, or property of a special character, like lands under navigable waters; they cannot be placed entirely beyond the direction and control of the state.49

The public trust doctrine has continued to grow and evolve since Illinois Central was decided. Although different states, and different legal commentators and historians, have given the doctrine different slants, the United States Supreme Court has continued to consistently affirm that Illinois Central and the public trust doctrine are essential and foundational components of United States law, explaining recently that it is “the ‘settled law of this country’ that the lands under navigable freshwater lakes and rivers were within the public trust given the new States upon their entry into the Union.”50 The essential tenets of the public trust doctrine articulated in Illinois Central remain unchanged, and foundational principles of the doctrine are applied in most every state: the Great Lakes, and other navigable waters, are held in trust by the state for the benefit of the public. Although the state’s determination of what serves the public interest may vary over time, and use of the property may even be delegated to private parties to the extent it enhances or does not substantially impair the public interest, the state’s duty to hold these waters in the interest of the public cannot be abdicated and such waters can never be “placed entirely beyond

49. Id. at 453–54.
the direction and control of the state” to protect and provide for the public interest the free use of navigable waters.\footnote{51}{Illinois Central, 146 U.S. at 454.}

Accordingly, \textit{Illinois Central} is viewed as affirming three foundational principles of the public trust: (1) The public trust can never be alienated or subordinated unless it has the express “assent of the State;”\footnote{52}{Id. at 437, 452–53; Sax, supra note 15.} (2) the “assent of the state” is unlawful where the legislature transfers public trust resources to a private person for non-public purposes; or (3) a transfer or authorized use can not impair the public’s interest in the trust or its trust resources.\footnote{53}{Illinois Central at 452–53.} In addition, the Court left the door open that other public resources of a “special character, like lands under navigable waters” might be protected by the public trust doctrine.\footnote{54}{Id. at 454.} Finally, the Court made it clear that a state would be held accountable for abdicating its duty to protect the public trust from such alienation or impairment.\footnote{55}{Id. at 453 (declaring that “the trust devolving upon the state for the public, and which can only be discharged by the management and control of property in which the public has an interest, cannot be relinquished by a transfer of the property. The control of the state for the purposes of the trust can never be lost, except as to such parcels as are used in promoting the interests of the public therein, or can be disposed of without any substantial impairment of the public interest in the lands and waters remaining.”).}

Professor Joseph Sax describes the principles this way:

First, the property subject to the public trust must not only be used for a public purpose, but it must be held available for use by the general public; second, the property may not be sold, even for a fair-cash equivalent; third, the property [water or public trust resource] must be maintained for particular types of uses.\footnote{56}{Sax, supra note 15, at 477. adsfa}

These principles have remained constant and flourished over time in the states, including all of the Great Lakes states.

ii. The Public Trust Doctrine in Great Lakes States

Today, virtually all eight Great Lakes states have adopted the public trust doctrine for the Great Lakes and navigable lakes and streams.\footnote{57}{This is not surprising, since five of the states were carved out of the Northwest Ordinance of 1787, which declared “[t]he navigable waters leading into the Mississippi and St. Lawrence . . . shall be common highways and forever free,” See Transcript of Northwest Ordinance (1787), 1 Stat. 41, 444 Stat. 1851 (The Avalon Project at Yale Law School, trans.), available at http://www.ourdocuments.gov/doc.php?flash=true&doc=8&page=transcript [hereinafter Northwest}
constitutions or laws of several of the states have recognized a public trust in navigable waters or public natural resources. The following is a state-by-state summary of each of the Great Lakes states’ statutory, constitutional, and/or jurisprudential recognition of the public trust doctrine.58

Illinois

As described above, the 1892 decision by the United States Supreme Court in Illinois Central is widely seen as having adapted the public trust principles long-established in English common law to the United States, forming a baseline for state-based recognition of the public trust doctrine throughout the country, including Illinois. Illinois later amended its constitution to include the following public trust declarations in Sections 1 and 2 of Article XI:

The public policy of the State and the duty of each person is to provide and maintain a healthful environment for the benefit of this and future generations.59

Each person has the right to a healthful environment. Each person may enforce this right against any party, governmental or private, through appropriate legal proceedings subject to reasonable limitation and regulation as the General Assembly may provide by law.60

The Illinois Supreme Court later recognized in People ex rel Scott v. Chicago Park District, that these constitutional amendments clearly and unambiguously connect the public trust doctrine to public health and

Ordinance]. For an extensive review of the extent of state ownership and the public trust in the waters, bottomlands, and foreshores of the Great Lakes, see Frey & Mutz, supra note 23.

58 As ably described by Professor Robin Kundis Craig, there is a “richness and complexity of public trust philosophies” that is revealed upon review of the application of the public trust doctrine on a state by state basis. See Robin Kundis Craig, A Comparative Guide to the Eastern Public Trust Doctrines: Classifications of States, Property Rights, and State Summaries, 16 Penn. St. Envtl. L. Rev. 1, 3 (2008) (describing a “richness and complexity of public trust philosophies” is revealed upon review of the application of the Public Trust Doctrine on a state-by-state basis); see ALEXANDRA B. Klass & Ling-Yee Huang, RESTORING THE TRUST: WATER RESOURCES AND THE PUBLIC TRUST, Ctr. for Progressive Reform, White Paper No. 908 1, 5, 12–13 (Sept. 2009), available at http://www.progressivereform.org/articles/CPR_Public_Trust_Doctrine_Manual.pdf (analyzing the application of the public trust doctrine across the country, including case studies from multiple states). For other brief synopses of public trust law in the states, see Henquinet & Dobson, supra note 20, at 347.

59 ILL. CONST. art. XI, § 1.
60 ILL. CONST. art. XI, § 2.
environmental concerns. That case is also noteworthy for the Illinois Supreme Court’s willingness to build upon the ruling in Illinois Central by adopting a view that the public uses protected by the public trust doctrine may evolve over time, and that the doctrine does not permit a transfer of control of public trust resources for primarily private purposes. Illinois has also applied the public trust doctrine to parks and conservation areas, and has declared an attempted grant of submerged lands by the state to be a violation of the public trust where the project has a solely private purpose. As to the public trust protection of the Great Lakes specifically, the Illinois Supreme Court sets the high-water mark of Lake Michigan for demarcation of the line between public and private ownership. The state has also enacted numerous statutes recognizing the public trust doctrine, as well as others which regulate the use of public trust resources such as the Great Lakes.

Indiana

In 1918, the Indiana Court of Appeals held that the land within Indiana’s borders beneath Lake Michigan “is held by the state in trust for the people as a whole, and the property so held in trust is common property of all.” Then in 1950, the Indiana Supreme Court recognized that the lands underlying navigable waters are protected by the public trust, stating:

[i]t is settled law in this country that lands underlying navigable waters within a state belong to the state in its sovereign capacity and may be

62. Id.
63. See generally Paepcke v. Pub. Bldg. Comm’n of Chicago, 263 N.E.2d 11 (Ill. 1970) (dismissing Plaintiff’s complaint because the legislation was made “in good faith and for the public good” and encroached on public lands consistent with the public trust doctrine); but cf. Timothy Christian Schools v. Vill. of Western Springs, 675 N.E.2d 168, 174 (Ill. App. Ct. 1996) (holding the public trust doctrine does not apply because the land in question is an empty lot for drainage and rather than protected public lands such as “parks, conservation areas, [or] mostly submerged land under Lake Michigan or the Chicago River”).
64. Scott, 360 N.E.2d at 781.
65. Revell v. People, 52 N.E. 1052, 1058, 1060 (Ill. 1898).
66. These Illinois statutes recognizing the public trust doctrine include: the Submerged Lands Act, 5 ILL. COMP. STAT. ANN. §§ 605/1 and 605/2 (West 2005); and the Rivers, Lakes and Streams Act, 615 ILL. COMP. STAT. ANN. §§ 5/4.9–5/30 (West 2005).
67. Illinois statutes regulating public trust resources include: the Level of Lake Michigan Act, 615 ILL. COMP. STAT. ANN. § 50 (West 2007); the Navigable Waterways Obstruction Act, 615 ILL. COMP. STAT. ANN. §§ 20/1 to 20/5 (West 2007); the Illinois Waterways Act, 615 ILL. COMP. STAT. ANN. §§ 10/0.01 to 10/28 (West 2007); the Water Use Act of 1983, 525 ILL. COMP. STAT. ANN. §§ 45/1 to 45/7 (West 2007); the Lincoln Park Submerged Lands Act, 70 ILL. COMP. STAT. ANN. §§ 1575/0.01 to 1575/2 (West 2007); and the Chicago Submerged Lands Act, 70 ILL. COMP. STAT. ANN. §§ 1550/0.01 to 1555/1.1 (West 2007).
used and disposed of as it may elect, subject to the paramount power of Congress to control such waters for the purposes of navigation in commerce among the states and with foreign nations.69

In 1955 the Indiana Legislature adopted the public trust into law, stating that the waters "in a natural stream, natural lake, or other natural body of water in Indiana that may be applied to a useful or beneficial purpose is declared to be a natural resource and public water of Indiana."70

By statute, Indiana has reserved to the public "a vested right in . . . (A) [t]he preservation, protection, and enjoyment of all the public freshwater lakes of Indiana in their present state; and (B) [t]he use of the public freshwater lakes for recreational purposes."71 Indiana has also declared that "the natural resources and scenic beauty of Indiana are a public right,"72 that the state has the capability to enforce these rights, and that the state "holds and controls all public freshwater lakes in trust for the use of all of the citizens of Indiana for recreational purposes."73 Under Indiana statute, the public’s right of access typically begins at the ordinary high water mark.74 In Lake Michigan, the ordinary high water mark is statutorily defined to fall at an elevation of 581.5 feet.75 However, in other inland water bodies the high water mark is defined using a “physical characteristics” test. The mark is defined as “a clear and natural line impressed on the bank, shelving, changes in character of the soil, the destruction of terrestrial vegetation, [and] the presence of litter or debris.”76

For freshwater lakes, courts in Indiana have recognized that these statutes make no distinction between navigable and non-navigable lakes and therefore the public trust extends to all such public freshwater lakes.77 A variety of uses are protected in public waters, including navigation, recreation, fishing, and sand and gravel mining (unless otherwise regulated),78 and the state holds title to any lake that is considered a public lake.79

71. IND. CODE § 14-26-2-5(c) (2003).
72. Id. at (c)(1).
73. Id. at (d)(2).
75. 312 IND. ADMIN. CODE 1-1-26(2) (1995).
76. Id. at (1)(A)-(E).
78. See Lake Sand Co. v. State, 120 N.E. 714, 715–16 (Ind. Ct. App. 1918) (citing several cases protecting these recreational uses under the public trust doctrine).
However, Indiana’s freshwater lake law does not apply to Lake Michigan. Thus, the common law public trust doctrine, as well as the public waters law, can be looked at for determining the scope of public trust uses protected by the public trust in Lake Michigan. While the issue has not been decided directly, several courts have recognized that the land between the waters’ edge and the ordinary high water mark is owned by the state and subject to the public trust doctrine. The Indiana Supreme Court has stated that the public’s right of navigation and protected public trust uses are considered superior to the rights of riparian landowners, unless a waterway is considered non-navigable. In non-navigable waters, rights of use are generally limited to the abutting riparian landowner.

**Michigan**

The Michigan Constitution does not explicitly recognize the public trust doctrine, but, as stated by the Michigan Court of Appeals, “[t]he importance of this trust is recognized by the People of Michigan in our Constitution,” in the following constitutional provision: “the conservation and development of the natural resources of the State are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people.”

The state also has a number of statutes recognizing the public trust doctrine, including this provision of Michigan’s Natural Resources and Environmental Protection Act relating to Great Lakes preservation:

> The waters of the state are valuable public natural resources held in trust by the state, and the state has a duty as trustee to manage its waters effectively for the use and enjoyment of present and future residents and for the protection of the environment.

80. **Ind. Code § 14-26-2-5(D) (2003).**
85. **Mich. Const. art. IV, § 52.**
As with several other Great Lakes states, Michigan follows the public trust principles set forth in *Illinois Central*. Michigan’s judicial recognition and implementation of the public trust doctrine, however, actually pre-dates *Illinois Central*, dating back to early decisions such as the Michigan Supreme Court’s 1853 opinion in *Moore v. Sanborne*, which both recognized that the original public trust doctrine from English common law applied in the state, and that the true scope of the public trust doctrine is broader based on its dynamic nature and changing public needs. The state supreme court has also recognized the state’s “duty and responsibility as trustee” to protect public trust resources. For example, in *Obrecht v. National Gypsum Co.*, the court prohibited leasing of public trust bottomlands and waters of Lake Huron for a private commercial dock facility absent due consideration and a recorded determination that the project promoted a public purpose and did not impair public trust and uses.

Michigan presumes the substantial value of the public trust resource(s) at issue, and therefore establishes that the proponent must meet a burden of proof which requires a showing that the public trust resource has no public value and that it will not be impaired. The state supreme court has also rejected a *de minimis* defense to impairment of public trust resources, ruling that the precedent of “nibbling effects” of impairment of public trust waters or uses violated the public trust.

In *Glass v. Goeckel*, the court recognized the state’s responsibility “to protect and preserve the waters of the Great Lakes and the lands beneath them for the public,” including for public uses such as fishing, hunting, boating (“for commerce or pleasure”), shoreline walks below the high-water mark, cutting ice, gathering of shellfish and seaweed, and bathing. Michigan has its own rule marking the line between upland private property and the state’s public trust bottomlands and shore. The decision of the

---

88. *Moore v. Sanborn*, 2 Mich. 519, 525 (1853) (holding that “[t]he servitude of the public interest depends rather upon the purpose for which the public requires the use of its streams, than upon any particular mode of use. . . the public claim to a right of passage along its streams must depend upon their capacity for the use to which they can be made subservient”).
89. *Obrecht*, 105 N.W.2d at 149.
90. *Id.* at 151.
Michigan Supreme Court in *Glass v. Goeckel* takes the “‘ordinary high water mark’ from the common law of the sea and applies it to our Great Lakes.” 94 For other navigable waters, such as inland lakes and streams, Michigan courts have followed a “log floating” test to define the reach of public trust doctrine for inland lakes and streams. 95 Once a lake or stream is navigable, the public enjoys reasonable use of the entire surface of the waters for boating, fishing, swimming and other recreation. 96 The public trust doctrine also includes fish and game and their habitat. 97

**Minnesota**

Article II, Section 2 of the Minnesota Constitution states:

The state of Minnesota has concurrent jurisdiction on the Mississippi and on all other rivers and waters forming a common boundary with any other state or states. Navigable waters leading into the same, shall be common highways and forever free to citizens of the United States without any tax, duty, impost or toll therefore. 98

The Minnesota Supreme Court has recognized the public trust doctrine in its navigable waters, including Lake Superior. 99 The Minnesota Court has also declared that “[a] riparian owner’s rights are qualified, restricted, and subordinate to the paramount rights of the public,” 100 which include such uses as “commercial navigation, the drawing of water for various private and public purposes, recreational activity, and similar water-

---

94. *Id.* at 71 (quoting *Diana Shooting Club v. Husting*, 145 N.W. 816, 820 (Wis. 1914)) (ruling definitively that in Michigan, private title to land lakeward of the high water mark is subject to the public trust. The court defines the high water mark as “the point on the bank or shore up to which the presence and action of water is so continuous as to leave a distinct mark”).


98. MINN. CONST. art. II, § 2. The provisions is nearly identical to the Northwest Ordinance of 1787. Northwest Ordinance, *supra* note 57. The state also has a permanent, constitutionally established “environment and natural resources trust fund” to be used “for the public purpose of protection, conservation, preservation, and enhancement of the state’s air, water, land, fish, wildlife, and other natural resources. MINN. CONST. art. XI, § 14.


100. *Id.*
connected uses.” Once established, the state holds title “in a sovereign capacity, as trustee for the public good, and not in a proprietary sense.”

Chapter 103G of Minnesota’s statutes declares that the ownership of the bed and the land under the waters of all rivers in the state that are navigable for commercial purposes belong to the state in fee simple, subject only to the regulations made by the United States with regard to the public navigation and commerce and the lawful use by the public while on the waters. Other statutes subject public waters to regulation and govern their use and preservation.

In addition, Minnesota declares that its air, water, and natural resources and “the public trust” in those resources are protected from “pollution, impairment or destruction.”

New York

While New York does not have a constitutional public trust declaration, the state’s Environmental Conservation Law declares:

All the waters of the state are valuable public natural resources held in trust by this state, and this state has a duty as trustee to manage

101. State v. Slotness, 185 N.W.2d 530, 532 (Minn. 1971). Minnesota utilizes the federal “navigable in fact” test for determining the existence of public rights in all waters, and requires that commercial use of such waters be established as of the admission of the state into the Union on May 11, 1858; State v. Adams Corp., 89 N.W.2d 661, 665 (Minn. 1957).

102. Pratt v. State, Dep’t of Natural Res., 309 N.W.2d 767, 771 (Minn. 1981) (citing Lamprey v. State, 53 N.W. 1139, 1143 (Minn. 1893)).

103. MINN. STAT. § 103G.711 (2007). Another portion of that statute also includes a thorough, eleven-point definition of “public waters” that includes items such as “waters of the state that have been finally determined to be public waters or navigable waters by a court of competent jurisdiction,” “water basins assigned a shoreland management classification,” “water basins where the state of Minnesota or the federal government holds title to any of the beds or shores, unless the owner declares that the water is not necessary for the purposes of the public ownership,” and “water basins where there is a publicly owned and controlled access that is intended to provide for public access to the water basin,” among others. MINN. STAT. § 103G.005(15) (2007).

104. Minnesota statutes regulating public waters also include: Chapter 103A “Water Policy and Information” (MINN. STAT. § 103A.001 to 103A.43 (West 2007) (Chapter 103A “Water Policy and Information”)); MINN. STAT. § 103B.3361 to 103B.355 (2007) (Chapter 103B “Local Water Resources Protection and Management Program”); MINN. STAT. §§ 103F.201 to 103F.227 (2007) (Chapter 103F “Shoreland Development”); and MINN. STAT. §§ 103F.801 to 103F.805 (2007) (“Lake Preservation and Protection”). Minnesota has enacted a citizen suit provision that grants the right of a person to bring a lawsuit to protect the air, water and natural resources from pollution or impairment. MINN. STAT. § 116.B.03 (1971).

its waters effectively for the use and enjoyment of present and future residents and for the protection of the environment.  

Similarly, other sections of New York’s Environmental Conservation, Navigation, and Public Lands statutes reference the public trust doctrine and the public’s use rights in navigable waters.  

As stated in Adirondack League Club Inc. v. Sierra Club, “[p]ursuant to the public trust doctrine, the public right of navigation in navigable waters supersedes [a riparian’s] private right in the land under the water.” New York courts have found violations of the public trust doctrine in instances involving “interference with the public’s right to fish or with the public’s right of access for navigation, or [where] the land under the stream has been improperly alienated.” Furthermore, courts have recognized a special state duty “to safeguard wetlands within the State,” based on the public trust doctrine and the state’s Freshwater Wetlands Act. While New York applies the public trust doctrine to parkland, it has not extended the doctrine to non-navigable waterways. For a stream to be owned exclusively by a riparian owner, it “must be too small to be navigable, in fact.”

---

112. Evans, 410 N.Y.S.2d at 207. It should also be noted that just because a stream is not navigable for purposes of denying public access over the private bed of a stream, does not mean the water itself is not public to the extent water is capable of ownership and subject to the government’s duty to protect public trust waters, fish, the ecosystem from harm. Collins v. Gerhardt, 211 N.W. 115 (Mich. 1926); In re Water Use Applications infra 9 P.3d 409 (Haw. 2000).
113. Fulton Light, Heat & Power v. New York, 94 N.E. 199, 202 (N.Y. 1911). Although New York considers the tidal, ebb-and-flow rule for title purposes to be “discredited,” it was begrudgingly accepted in People v. System Properties, 120 N.Y.S.2d 269, 280 (N.Y. App. Div. 1953), where the court declared, “[t]estimonial as the rule may be, it is a settled rule of property law and we must respect it as such.” However, both the Mohawk River (“a fresh water stream”) and the Hudson River (“above the ebb and flow of the tide”) are exceptions to this rule and are considered to be publicly owned. Fulton Light, Heat & Power, 94 N.E. at 202–03.
Ohio

The Supreme Court of Ohio, building on *Illinois Central*, declared in 1979:

[i]t is clear… that the trust doctrine of state control over the submerged lands of Lake Erie and its bays from the beneficial ownership of the public, which originated in England and has been reinforced in this country by judicial decision, has existed in this state since Ohio was admitted to the Union in 1803. 114

Although, Ohio has no constitutional public trust declaration, its Coastal Management statute declares that the public trust doctrine applies to Lake Erie:

It is hereby declared that the waters of Lake Erie consisting of the territory within the boundaries of the state, extending from the southerly shore of Lake Erie to the international boundary line between the United States and Canada, together with the soil beneath and their contents, do now belong and have always, since the organization of the state of Ohio, belonged to the state as proprietor in trust for the people of the state, for the public uses to which they may be adapted, subject to the powers of the United States government, to the public rights of navigation, water commerce, and fishery, and to the property rights of littoral owners, including the right to make reasonable use of the waters in front of or flowing past their lands. 115

Protected public uses include “all legitimate uses, be they commercial, transportational, or recreational.” 116 Over time, the Ohio courts have applied a “gradually changing concept of navigability,” such that a capacity for use by nearly any type of watercraft would be demonstrative of “the availability of the stream for the simpler types of commercial navigation,” and not only in its natural condition, but also “after the making of reasonable improvements,” even if not “actually completed or even

---

115.  OHIO REV. CODE ANN. § 1506.10 (West 1989) (recognized in Beach Cliff Board of Trustees v. Ferciff, 2003 WL 21027604, at *2 (Ohio Ct. App., 8th Dist., 2003) (“Codified now at R.C. Chapter 1506, the ‘public trust’ doctrine delineates the property rights of those whose property abuts a lake, otherwise known as littoral owners.”)).
authorized." Most recently, in the matter of State ex rel. Merrill v. Ohio Dep’t of Natural Resources, the Ohio Supreme Court declared that the “boundary of the public trust does not . . . change from moment to moment as the water rises and falls; rather, it is at the location where the water usually stands when free from disturbing causes.”

**Pennsylvania**

Article 1, Section 27 of Pennsylvania’s Constitution includes a clear public trust declaration:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania’s public natural resources are the common property of all of the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all people.

The Pennsylvania Supreme Court has stated that this provision “installs the common law public trust doctrine as a constitutional right to environmental protection susceptible to enforcement by an action in equity.” This provision is not self-executing, but references to the public trust doctrine may be found in various Pennsylvania statutes as well, including the declaration that it is “the purpose of this section [related to “Water Resources Planning”] to provide additional and cumulative remedies to protect the public interest in the water resources of this Commonwealth.”

117. Coleman v. Schaeffer, 126 N.E.2d 444, 445–46 (Ohio 1955). The Supreme Court of Ohio declared long ago that “it may be regarded as settled in this state that all navigable rivers are public highways,” applying the “navigable in fact” rule to such rivers relative to their “capacity of being used by the public for purposes of transportation and commerce.” Hickok v. Hine, 23 Ohio St. 523, 527 (Ohio 1872).


119. Id. at 949 (citing Sloan v. Biemiller, 34 Ohio St. 492 (Ohio 1878)).


122. Id. at 594–95.

As in other states, courts held that the primary rights protected by the public trust doctrine were related to navigation and fishing. However, some case law has recognized other rights in public trust waters, including gathering stones, gravel, and sand, taking fish, ice, or driftwood, and bathing (with certain limitations). Under Pennsylvania law, “[i]f a body of water is navigable, it is publicly owned and may only be regulated by the Commonwealth; ownership of the land beneath would not afford any right superior to that of the public to use the waterway.” The application of the public trust in such waterways therefore results in use rights that extend to the high-water mark, although recreational or tourism use is not sufficient for purposes of attempting to establish navigability. It is also the law of the Commonwealth that “[r]ivers are not determined to be navigable on a piecemeal basis. It is clear that once a river is held to be navigable, its entire length is encompassed.”

Wisconsin

In *Hilton ex rel. Pages Homeowners’ Assoc. v. Dep’t of Natural Resources*, the Supreme Court of Wisconsin recognized that the public trust doctrine in the state is “rooted in” the following provision of the state Constitution:

The state shall have concurrent jurisdiction on all rivers and lakes bordering on this state so far as such rivers or lakes shall form a common boundary to the state and any other state or territory now or hereafter to be formed, and bounded by the same; and the river Mississippi and the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall

---


125. See, e.g., *Shrunk v. Schuylkill Navigation Co.*, 1826 WL 2218 (Pa. 1826) (holding that fish cannot be entirely owned by an owner of the banks of a lake); *Yoffee v. Pa. Power & Light Co.*, 123 A.2d 636 (Pa. 1956) (holding that air space is generally viewed to be a public property apart from certain federal and state regulations); *Hunt v. Graham*, 15 Pa. Super. 42 (Pa. Super. Ct. 1900) (holding that bathing is a public right though not absolute); and *Solliday v. Johnson*, 38 Pa. 380 (Pa. 1861) (holding that gravel and stone gathering is a public right).


130. *Hilton ex rel. Pages Homeowners’ Ass’n v. Dep’t of Natural Res.*, 717 N.W.2d 166, 173 (Wis. 2006).
be common highways and forever free, as well to the inhabitants of the state as to the citizens of the United States, without any tax, impost or duty therefore.\textsuperscript{131}

Wisconsin’s public trust doctrine is well developed and protects a broad array of uses of public trust waters, including navigation, fishing, swimming, enjoyment of scenic beauty, hunting, recreation, “any other lawful purpose,” and the right to “preserve natural resources such as wetlands.”\textsuperscript{132} The courts have developed a number of core public trust standards, including the principle that the state is prohibited from making a substantial grant of a lake bed for a purely private purpose, and the state cannot physically alter a waterbody in a way that will destroy its character.\textsuperscript{133} The public is even held to have an “interest in navigable waters, including promoting healthful water conditions conducive to protecting aquatic life and fish,”\textsuperscript{134} while the state’s duty under the trust doctrine has been held to include “a duty to eradicate the present pollution and to prevent further pollution in its navigable waters.”\textsuperscript{135} The Wisconsin’s Supreme Court recently ruled that the state’s public trust doctrine imposes an affirmative duty upon the Department of Natural Resources to “consider whether a proposed high capacity [groundwater] well may harm waters of the state.”\textsuperscript{136}

The public trust doctrine has been determined to apply “to land under the stream of the navigable water so long as . . . [it] constitutes part of the bed of the stream,”\textsuperscript{137} but this is not applicable where an artificial lake or body of water is concerned,\textsuperscript{138} unless it involves “artificial waters that are directly and inseparably connected with natural, navigable waters.”\textsuperscript{139} The courts have also recognized that “the state ‘holds the beds underlying navigable waters in trust for all of its citizens,’” and that the state’s “title to submerged lands beneath natural lakes” extends “up to the ordinary high-

\begin{itemize}
\item \textsuperscript{131} WIS. CONST. art. IX, § 1. There is a close resemblance to the Northwest Ordinance of 1787. See Northwest Ordinance, \textit{supra} note 57.
\item \textsuperscript{132} \textit{Just} v. Marinette Cnty., 201 N.W.2d 761, 768 (Wis. 1972); see also, Meunch v. Pub. Serv. Comm’n., 53 N.W.2d 514, 519 (Wis. 1952); State v. Trudeau, 408 N.W.2d 337, 343 (Wis. 1987).
\item \textsuperscript{133} \textit{See, e.g., State v. Pub. Serv. Comm’n}, 81 N.W.2d 71, 74 (Wis. 1957) (citing Priewe v. Wis. State Land & Imp. Co., 67 N.W. 918; \textit{In re Crawford Cnty. Levee & Drainage Dist.}, 196 N.W. 874); see Scanlan, \textit{supra} note 21, at 142.
\item \textsuperscript{134} \textit{FAS, LLC v. Bass Lake}, 733 N.W.2d 287, 295 (Wis. 2007).
\item \textsuperscript{135} \textit{Just}, 201 N.W.2d at 768.
\item \textsuperscript{136} \textit{Lake Beulah Mgmt. Dist. v. St. Dep’t Natural Res.}, 799 N.W.2d 73, 76 (Wis. 2011).
\item \textsuperscript{137} \textit{Meunch}, 53 N.W.2d at 518.
\item \textsuperscript{138} \textit{Mayer v. Grueber} 138 N.W.2d 197, 203 (Wis. 1965).
\item \textsuperscript{139} \textit{Klingeisen v. St. Dep’t Natural Res.}, 472 N.W.2d 603, 606 (Wis. Ct. App. 1991).
\end{itemize}
A waterbody is determined to be navigable if the water body is “capable of floating any boat, skiff, or canoe, of the shallowest draft used for recreational purposes.” The state also has a number of statutory provisions recognizing the importance of the public trust doctrine, and governing its application with respect to public trust resources in Wisconsin.

C. The Right to Public Use of Navigable Waters in Canada

The principles of public trust have been historically recognized in Canada, and in recent years there has been growing momentum calling for the express adoption of the doctrine.

The *jus publicum* or paramount right of the public to use navigable waters for navigation, boating, and fishing has been recognized by Canadian common law since the Constitution Act of 1867. While the right of public use and protection of these waters has not been expressly labeled a “public trust” as it has in the United States, in the late 1800s and early 1900s Canadian courts recognized a paramount public right to use navigable waters and imposed a “trust for the public uses which nature intended of them.”

Canadian court decisions around the time of the Boundary Waters Treaty and the U.S. Supreme Court’s 1892 decision in *Illinois Central* recognized that the public’s right to use navigable waters was protected by a legally enforceable trust:

---

140. *In re Annexation of Smith Prop.*, 634 N.W.2d 840, 843 (Wis. Ct. App. 2001) (citing *State v. Trudeau*, 408 N.W.2d 337, 337; *Meunch*, 53 N.W.2d at 517; *R.W. Docks & Slips v. State* 628 N.W.2d 781 (Wis. 2001)).

141. *Meunch*, 53 N.W.2d at 518.

142. The following statutes recognize and govern the application of the public trust doctrine in Wisconsin: WIS. STAT. ANN. §§ 30.01–30.99 (West 2011) (“Navigable Waters, Harbors and Navigation”); WIS. STAT. ANN. §§ 31.06(3)(c) (West 2011) (“Regulation of Dams and Bridges Affecting Navigable Waters”); WIS. STAT. ANN. §§ 33.01–33.60 (West 2011) (“Public Inland Waters”); WIS. STAT. ANN. §§ 281.11–281.35 (West 2011) (“Water and Sewage”). It is this last provision, in fact, which defines “navigable waters” as follows:

   Lake Superior, Lake Michigan, all natural inland lakes within this state and all streams, ponds, sloughs, flowages and other waters within the territorial limits of this state, including the Wisconsin portion of boundary waters, which are navigable under the laws of this state.

WIS. STAT. ANN. § 281.31 (West 2011).

143. Constitution Act, 1867, 30 & 31 Vict. c. 3 (U.K.).

144. *Queen v. Meyers*, [1853] 3 U.C.C.P. 305, 357 (Can.); see also *Vancouver v. Canadian Pac. Ry.*, [1894] 23 S.C.R. 1, 6 (Can.) (determining that cities public use of property was not subordinate to railroad companies).
The Great Lakes and the streams which are in fact navigable, and which empty into them in these provinces, must be regarded as vested in the Crown in trust for the public uses for which nature intended them—that the Crown, as the guardian of public rights, is entitled to prosecute and to cause the removal of any obstacle which obstruct the exercise of the public right and cannot by force of its prerogative curtail or grant that which it is bound to protect and preserve for public use.\footnote{Queen v. Meyers, 3 U.C.C.P. at 305, 357 (Can.). The Canadian Court recognizes its “guardian” responsibility, and that it cannot itself violate the limitation on its power to alienate these Great Lakes navigable waters to private persons or purposes. Guardianship implies duty and responsibility, and the limitation on alienation or interference implies a right in citizens, at least those whose use has been or is threatened with harm and would have standing. See generally Jackson et al., supra note 29.}

Indeed, the public right to use waters like the Great Lakes and their tributary streams was as much alive in Canada at the time of the signing of the Treaty as the public trust doctrine in the United States. Although these background principles were recognized by Canadian courts, the legal framework governing water rights and evolution of public trust law differs somewhat from the American system. In Canada, the Crown owns the water.\footnote{Constitution Act, supra note 143 at art. III § 9 (stating “[t]he Executive Government and Authority of and over Canada is hereby declared to continue and be vested in the Queen.”).} Ownership and control of public water is distributed by the Constitution Act between the federal government and provinces, with some delegation of control to local governments. Under the Constitution Act, Provinces have power over local works, property, natural resources, and electrical energy production.\footnote{Constitution Act, supra note 143.} The federal government has ownership and control for purposes of navigation and shipping, sea coast and fisheries, federal works, canals and harbors, and lake improvements.\footnote{Constitution Act, supra note 143.}

Significantly, the Constitution Act does not authorize any private ownership of water. In Ontario, navigable waters are determined by a “navigability” test that consists of several factors which indicate both flexibility and a range of uses such as fishing, small watercraft use, and recreation in addition to navigation.\footnote{Canoe Ont. v. Reed, [1989] 69 O.R. 2d 494, 501 (Can.). (Ontario Supreme Court sets out seven factors to determine navigability, which in sum suggest a flexible test for navigability and recognition that public access and navigation include recreational uses [e.g. “small craft” and “fishing”].)} Private rights to use of water are generally gained by a license or grant for a specific limited purpose consistent with the right of public use, except for common law rights to use a lake or stream associated with ownership of riparian property. In Quebec, the government

\footnote{145. Queen v. Meyers, 3 U.C.C.P. at 305, 357 (Can.). The Canadian Court recognizes its “guardian” responsibility, and that it cannot itself violate the limitation on its power to alienate these Great Lakes navigable waters to private persons or purposes. Guardianship implies duty and responsibility, and the limitation on alienation or interference implies a right in citizens, at least those whose use has been or is threatened with harm and would have standing. See generally Jackson et al., supra note 29.  
146. Constitution Act, supra note 143 at art. III § 9 (stating “[t]he Executive Government and Authority of and over Canada is hereby declared to continue and be vested in the Queen.”).  
148. Constitution Act, supra note 143.  
149. Canoe Ont. v. Reed, [1989] 69 O.R. 2d 494, 501 (Can.). (Ontario Supreme Court sets out seven factors to determine navigability, which in sum suggest a flexible test for navigability and recognition that public access and navigation include recreational uses [e.g. “small craft” and “fishing”].)}
has enacted a “patrimoine commun” principle in its new water law that declares water a “collective resource” of “common heritage,” protected by a principle l’état gardien, making the province “custodian” of its water resources.\(^\text{150}\)

Although Canadian courts did not historically do so, the idea of expressly adopting the public trust doctrine has received growing support in recent years. Leading water and natural resource law scholars, lawyers, policy experts and government leaders have encouraged the adoption of modern public trust principles to fulfill the government’s obligation to protect the quality, flows and levels, and natural resources that make up living hydrological systems that include lakes, rivers, and other bodies of water such as groundwater.\(^\text{151}\) John Maguire noted that public trust principles could be effective in imposing a duty on the Crown to protect and manage Canada’s water and public resources.\(^\text{152}\) Ralph Pentland, water policy expert and former co-chair of the IJC Water Studies Board, has urged Canada to more fully develop the public trust doctrine as an important principle to manage and protect water resources and the environment in the face of the complex transboundary water issues faced by the Great Lakes and North America.\(^\text{153}\) The Polis Institute has also called for adopting public trust principles for Canada as a means of ensuring strong governance through a fiduciary duty to ensure long-term protection of water and ecosystems.\(^\text{154}\)

The public trust doctrine and public trust principles have also started appearing in Canadian law. Recently, the Canadian Supreme Court has suggested the public trust doctrine may be worthy of exploration in cases involving public resources such as water and forests.\(^\text{155}\) Public trust principles have also been incorporated into more recent Canadian legislation. The Yukon Territory declared the government “the trustee of the public trust” to protect the natural environment in its Environment

---

\(^{150}\) Jackson et al., supra note 29.

\(^{151}\) BRANDES & CHRISTENSEN, supra note 24, at 3; Maguire, supra note 24; Pentland, supra note 24.

\(^{152}\) Maguire, supra note 24; Pentland, supra note 24.


\(^{154}\) BRANDES & CHRISTENSEN, supra note 24, at 2–3, 8 (explaining that “centuries-long recognition of these [public] rights is not mere historical happenstance and goes beyond just public access. The Public Trust Doctrine recognizes and reflects the fundamental need to safeguard public rights and interests by ensuring long-term protection of limited and vulnerable resources necessary for survival and well-being.”).

The Northwest Territory Environmental Rights Act declared that there is a “collective interest of the people of the Territories in the quality of the environment and the protection of the environment for the future generations,” and granted residents the right to bring an action in court to protect the “public trust.”

Given the historical and modern legal and political support for public trust principles in Canada, and the consistency of those principles with Canadian law, there should be no theoretical or doctrinal impediment for a legislative or governmental body like the IJC to adopt or follow public trust principles. In fact, as observed by water policy experts, the time may be ripe to implement public trust principles—a “Magna Carta Natura”—to ensure the quantity and quality of our water for present and future generations.

D. The Public Trust and Treaty Rights of Indigenous People

The public trust doctrine is compatible with and would protect the rights of the indigenous peoples who inhabited the Great Lakes region before settlement by Europeans. The rights of these Canadian First Nations and American Indian Tribes to preservation of the quality and quantity of Great Lakes Waters was never relinquished under their numerous treaties involving the lands and adjacent waters within the Great Lakes and St. Lawrence River basins. These indigenous Nations strongly believe that water must be protected and preserved for future generations.

---

156. Environment Act, R.S.Y. 2002, c. 76, preamble (Can.) (stating “the Government of the Yukon is the trustee of the public trust and is therefore responsible for the protection of the collective interest of the people of the Yukon in the quality of the natural environment”).

157. Environmental Rights Act, R.S.N.W.T. 1988, c. 83 (Can.). Only one court has interpreted the provision, in a case involving the duties under a wildlife hunting act. The court noted that government and the hunter had a public trust responsibility. “[W]ith special privileges comes the special responsibility” (quoted in Jackson et al., supra note 29).

158. RALPH PENTLAND & CHRIS WOOD, DOWN THE DRAIN: HOW WE ARE FAILING TO PROTECT OUR WATER RESOURCES 10 (2013); Pentland, supra note 24, at 13.


160. Frank Ettawageshik, The Boundary Waters Treaty and Protecting Freshwater Resources in North America: Remarks of Tribal Chairman Frank Ettawageshik, 54 WAYNE L. REV. 1477, 1477 (2008) (stating “What first comes to my mind is to speak of the value that we place in the water. We are taught that water is the life-flood of Mother Earth and that water is essential to life . . . Water is different from other things that we consider; water is not a commercial commodity, but rather it is required for our very existence; it flows in our veins; we all spend time in the water in our mother’s womb; it flows in the veins of Mother Earth.”); WATER DECLARATION OF THE ANISHINAABEK, MUSKEGOWUK AND ONKWEENWE IN ONTARIO 1 (Oct. 2008) (stating that the waters include “rain waters, waterfalls, rivers, streams, creeks, lakes, mountain springs, swamp springs, bedrock water veins, snow, oceans, icebergs, the sea” and “women are the keepers of the waters . . . they have the responsibility to care for the land and water”).
The doctrine of federal reserved water rights, commonly known as the Winters doctrine, is another powerful restraint on private water rights that protects the water rights of indigenous peoples. The doctrine, first articulated in the Supreme Court case of Winters v. United States, allows the federal government to reserve water rights on certain federal lands such as Indian Reservations. To date, the courts have recognized Winters rights solely in the prior appropriation context. Only one case exists where an Indian tribe has attempted to assert Winters rights in a fully riparian jurisdiction. However, scholars agree that the Winters doctrine could apply in riparian jurisdictions. One strong argument for this is that tribal reserved rights exist for two purposes and "neither purpose is confined to a line west of the 100th meridian." These purposes are: (1) to allow tribes to continue pre-existing or aboriginal practices, and (2) to allow tribes to accomplish the purposes for which the government established its reservation. Furthermore, in the Mattaponi Indian Tribe case the Circuit Court of Virginia concluded that, "[b]ecause reserved water rights hinge on the question of necessity, it is plausible that even in a riparian jurisdiction it may be necessary to imply reserved water pursuant to an Indian reservation or treaty-granted right." The court reasoned such because "[c]ommon law riparian only grants a riparian owner [reasonable use of water]," and not "sufficient water for a particular purpose," as does the Winters doctrine. Accordingly, if a tribe could show that "riparian law would not provide [it] with the quantity or quality of water sufficient to sustain its Indian reservation, protect [its treaty rights], or preserve its aboriginal practices," then the tribe would most likely satisfy Winters' necessity requirement and therefore be able to assert reserved water rights.

In the past decade Canadian First Nations and American Indian Tribes have asserted that existing legal mechanisms, such as the Winters doctrine, do not adequately protect their indigenous rights. Embracing the public trust doctrine would be a means of addressing those concerns. While

164. Royster, supra note 163, at 191; see also Babcock, supra note 161, at 1234–39.
165. Babcock, supra note 163, at 1239.
166. Mattaponi, 72 Va. Cir. at *14.
167. Id.
168. Id. at *15.
determination of Canadian First People or American Indian tribal treaty rights in water may not be within the jurisdiction of the IJC, \textsuperscript{169} the adoption of public trust principles may well be compatible with and protect their treaty rights and uses of the Great Lakes in the same way that these principles would protect the rights of the public to use these waters. \textsuperscript{170}

\textit{E. Public Trust in International Agreements and Great Lakes}

The public trust has also been recognized in several international declarations and agreements. \textsuperscript{171} The words “held in trust” were incorporated into the Great Lakes Charter, \textsuperscript{172} and the originally proposed draft Annex 2001, an addendum to the Charter negotiated by the governors and provinces as part of an effort to adopt a compact to implement the Charter’s goals. This phrase is also found in the Federal Water Resources Development Act, which bans diversions or exports from the Great Lakes basin unless all eight governors of the Great Lakes states consent. \textsuperscript{173} Similarly, the Great Lakes-St. Lawrence River Basin Water Resources Compact, signed by all eight Great Lakes states, finds that the waters of the basin are “a public resource held in trust.” \textsuperscript{174} However, the public trust does

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{170} See Ettawageshik, supra note 160; Memorandum from William Rastetter to IJC (Nov. 23, 2011), in IJC PUBLIC TRUST REPORT, app. Tab 5 at 1-2.
\item \textsuperscript{172} See Council of Great Lakes Governors, Great Lakes Charter: Principles for the Management of Great Lakes Water Resources, Findings, Feb. 11, 1985, available at http://www.cglg.org/projects/water/docs/GreatLakesCharter.pdf. The Great Lakes Charter is an agreement signed by all eight states and Ontario and Quebec, addressing flows, water levels, and environmental issues in the Great Lakes basin. Other than this general “finding” of “held in trust” the Charter is silent about applying public trust principles as a standard, even though the doctrine’s principles are embedded in the common law and several constitutional and statutory provisions of the states.
\item \textsuperscript{173} Water Resources Development Act of 1986, Pub. L. No. 99-662, § 1125, 100 Stat. 4082, 4244 (1986); 42 U.S.C. 1963d-20(d) (2006). The diversion ban and governor’s consent made findings, but did not impose standards, and was silent about public trust in Great Lakes waters as recognized by the courts.
\end{enumerate}
\end{footnotesize}
not appear in the decision making standard of the Compact, despite the fact that rights of public use or public trust in the Great Lakes and navigable waters remain a substantive limitation on use and diversions, and is deeply anchored in the common law and sovereignty of both countries, the states, and provinces.\textsuperscript{175}

III. THE MODERN REACH OF THE PUBLIC TRUST DOCTRINE

A. Basic Principles of the Public Trust Doctrine

Although public trust principles have been adopted in many different contexts, several identifiable principles repeatedly emerge. As stated by Professor Sax in his seminal article on public trust law, courts take a dim view of actions that attempt “either to reallocate that resource to more restricted uses or to subject public uses to the self-interest of private parties.”\textsuperscript{176} There are three fundamental substantive public trust principles that are often recognized.\textsuperscript{177}

i. Non-Alienation and Need for Valid Public Purpose

First, under Illinois Central, the Canadian Supreme Court’s decision in Vancouver v. Canadian Pacific Railroad and earlier cases, and state and provincial court decisions, navigable waters are held in trust for public use and, therefore, cannot be alienated by government or owned and exclusively occupied by private persons.\textsuperscript{178} This has been characterized by the courts as prohibiting the sale, transfer, or control of public trust waters or natural resources for private purposes, or stated conversely, as requiring that a proposed use or transfer of public trust waters be for a primarily public purpose.\textsuperscript{179}

ii. No Interference or Impairment

Second, neither the government nor a private person can authorize or engage in a use that would interfere with or impair public trust waters or the

\textsuperscript{175} See Olson, supra note 21, at 1121.

\textsuperscript{176} Sax, supra note 15, at 490. People ex rel. Scott v. Chi. Park Dist, 360 N.E.2d 773, 781 (Ill. 1976) (holding a disposition of parklands for business and jobs was not a public purpose).

\textsuperscript{177} Other water and public trust law experts have classified the principles differently under public trust law. See Scanlan, supra note 21, at 129. For discussion of principles in Michigan and Wisconsin, see James M. Olson, The Public Trust Doctrine: Procedural and Substantive Limitations on the Governmental Reallocation of Natural Resources, 1975 Det. Col. L. Rev. 161, 173, 190–99 (1975).

\textsuperscript{178} BARLOW & OLSON, supra note 19.

\textsuperscript{179} Sax, supra note 15.
public’s use of such waters and their bottomlands and foreshore.\textsuperscript{180} An ancillary principle is that even if a private person enjoys a right to use water resources, such as a riparian owner’s right to a dock or a landowner’s right to remove groundwater, the private right or use, known as the \textit{jus privatum}, sits side-by-side with the public right, \textit{jus publicum}, so long as the private use does not interfere with or impair the public use or rights.\textsuperscript{181}

iii. Duty to Account for Protection of Public Trust Waters and Uses

Third, as is implied necessarily from the public purpose and no impairment principles, government has a duty to ensure, based on facts and findings, that a proposed use of public trust waters or resources will not violate these standards.\textsuperscript{182} For this reason, courts in the United States have recognized and enforced this principle as a fundamental component of the public trust doctrine, although courts have recognized the duties in differing ways.\textsuperscript{183} Courts in Hawai‘i have imposed a number of duties on the state to assure that the water would be used in the public interest, not impair the public trust, and not serve an improper private or public purpose, and to engage in long term planning to protect the public trust waters, uses, and the ecosystem.\textsuperscript{184} In North Dakota, the Supreme Court ruled that this duty included a duty to evaluate and establish a long term water plan to ensure no impairment of water resources under the state’s public trust responsibility.\textsuperscript{185} In Michigan, courts have imposed a procedural duty to ensure that public trust standards or principles have been met based on duly recorded findings of fact.\textsuperscript{186} California courts have also consistently recognized a duty to protect the integrity of flows, water levels, and aquatic ecosystems.\textsuperscript{187}

\begin{itemize}
  \item \textsuperscript{180} BARLOW & OLSON, supra note 19.
  \item \textsuperscript{181} Tweedie v. R., [1916] 52 S.C.R. 197, 214 (Can.).
  \item \textsuperscript{182} See, e.g., Obrecht v. Nat’l Gypsum Co., 105 N.W.2d 149–51 (Mich. 1960) 149–51 (holding Michigan’s public right is greater than National Gypsum’s wharfage rights unless the state provides regulatory assent).
  \item \textsuperscript{183} See Lake Beulah Mgmt. Dist. v. St. Dep’t Natural Res., 799 N.W.2d 73, 76 (Wis. 2011) (imposing a duty on the state DNR to consider the effects of a high capacity well on a nearby navigable lake); Ariz. Ctr. for Law in the Pub. Interest v. Hassell, 837 P.2d 158, 170 (Ariz. Ct. App. 1991) (holding that the state had a duty and obligation to maintain the public trust and uses for the enjoyment of present and future generations).
  \item \textsuperscript{184} \textit{Waihole II}, 9 P.3d 409, 451–51 (Haw. 2000); Kelly v. Oceanside Partners, 140 P.3d 985, 1002–03 (Haw. 2006) (recognizing state’s affirmative duty to implement adequate water protection measures to assure developer’s stormwater plan did not violate or impair public trust in adjacent waters).
  \item \textsuperscript{185} United Plainsmen Ass’n v. N.D. St. Water Conservation Comm’n, 247 N.W.2d 457, 463 (N.D. 1976).
  \item \textsuperscript{186} \textit{Obrecht}, N.W. 2d at 149.
\end{itemize}
B. Corollary Principles

In addition to the basic principles, several corollary principles have been widely recognized.

i. Burden of Proof

Courts have readily imposed a burden of proof on the person proposing the use or transfer of a public trust resource. The burden is based on the government’s duty to ensure there is no improper alienation or impairment, and the fact that the public value of public trust waters or resources is presumed to be substantial or immeasurable. This derives from the fact that the public value and uses cannot be subordinated, so an applicant who wants to use public trust waters must affirmatively demonstrate public purpose and no harm. This is akin to the precautionary principle, in that it would require, as a result of the nature of the public trust itself, a denial of the application to use until adequate information was submitted to establish no violation of the basic public trust principles would occur.

ii. “Nibbling” or Cumulative Effects

Some courts have ruled that the government’s affirmative duty to protect the public trust includes the duty to take into account the cumulative effects of a use that would impair the public trust waters or uses. This, in effect, is related to the burden of proof, because the presumption is that if the entity proposing the use cannot show that there are no cumulative effects, and if there is a lack of scientific data, studies, or other information to show “nibbling” or cumulative effects, then there can be no recorded finding that the use will not impair the public trust waters or uses.

For example, the Michigan Supreme Court rejected a developer’s argument that filling a few lots was de minimis in relation to the whole of Lake St. Clair and the Great Lakes, and ruled “[a]pplication of the [de

---


189. Obrecht, 105 N.W.2d at 149–51; see Illinois Central, 146 U.S. at 453.


191. Waihole II, 93 P.3d at 658.
minimis] doctrine . . . may involve making it equally so elsewhere. In total consequence, the state’s trust interests . . . public rights could be affected to an extent . . . considerably more than a trifling matter.”192 Similarly, in Hawai‘i’s Waihole water diversion cases the court held that “the public trust compels the state duly to consider the cumulative impact of existing and proposed diversions on public trust purposes.”193

iii. Affirmative Duty to Protect Flows, Level, and Water Quality

Government also has a continuing substantive duty to protect public trust waters, their flows, levels, quality, and the integrity of the ecosystem itself.194 Thus, in addition to basic principles, the duty to consider and determine effects on public trust resources and uses includes effects on flows, levels, quality, and the integrity or purity of waters or ecosystems connected to the public trust resources at issue.

iv. Accommodation or Balancing Uses

Courts balance competing public uses, assuring that traditional public trust uses, such as boating, swimming, and recreation, are not harmed by other public use. In cases where courts have recognized a public trust in groundwater or non-navigable water, which are not traditionally protected by the public trust, courts have accommodated or balanced uses so long as any one use does not alienate or impair a public purpose or use that is protected by the public trust.195 In other words, under these circumstances courts exercise strict scrutiny over competing uses to ensure compliance with public trust obligations. This is particularly the case in western appropriation or modified allocation water law jurisdictions and in reasonable use jurisdictions in the east applying a balancing test of private and public uses.196 However, a similar balancing approach is generally applied to private uses and protected public uses regardless of the water law regime.197

193. Waihole II, 9 P.3d at 455.
195. See Hassell, 837 P.2d at 170–71; Waihole II, 93 P.3d at 657.
C. Flexible Nature of the Public Trust Doctrine

As reflected in *Illinois Central*, the scope and form of the public trust doctrine is flexible and has evolved over time.\(^{198}\) The body of the trust traditionally applied to navigable waters and their bottomland, shoreline, fish, and aquatic habitat such fish spawning areas and wetlands. Today it has been extended to all aspects of the inextricably connected ecosystem that is part of or essential to the common body of water and the public’s use of the resource.\(^ {199}\) This is in keeping with the broader characterization of public trust resources by the U.S. Supreme Court in *Illinois Central*, “[s]o with trusts connected with public property, or with property of a special character, like lands under navigable waters, they cannot be beyond the entire direction and control of the state.”\(^ {200}\) Further, as aptly stated, “[t]he public trust doctrine . . . should not be considered fixed or static, but should be molded and extended to meet the changing conditions and needs of the public it was created to benefit.”\(^ {201}\)

As a result, the public trust doctrine or its principles have been applied to non-navigable waters,\(^ {202}\) groundwater,\(^ {203}\) beaches,\(^ {204}\) wetlands,\(^ {205}\) and other uses of special public resources, or to protect swimming, recreation, parklands, and other special or unique public lands.\(^ {206}\) Moreover, where public trust resources have been recognized by state constitutional or statutory provisions as falling within the purview of public trust, almost without exception, modern courts have accepted and applied the public trust doctrine to uses of non-traditional waters or other public natural resources.

\(^{198}\) *Illinois Central*, 146 U.S. at 436.


\(^{200}\) *Illinois Central*, 146 U.S. at 454.


\(^{202}\) See Mono Lake, 658 P.2d at 721.


\(^{204}\) *See generally* Just v. Marinette Cnty., 201 N.W.2d 761 (Wis. 1972) (holding that protection of wetlands are within a states police power under the idea that their lands held for the public).

For example, the public trust doctrine has been applied in the context of non-navigable streams as well as ground water, either because of the effects on navigable water or because statutory or constitutional provisions recognized the waters as being protected by the public trust. For example, in California's notable Mono Lake case, the court held that diversion of water from non-navigable tributaries violated the public trust because the diversions detrimentally impacted water levels in the connected navigable lake. Mono Lake was already overdrawn, and the additional diversions would have depleted the lake to levels that no longer served the public interest. Additionally, courts have readily applied the public trust doctrine to non-traditional waters or other public natural resources where protected by state constitutional or statutory provisions. For example, the Wisconsin Supreme Court recently ruled that, under its common and

207. Jack Tuholske, Trusting the Public Trust: Application of the Public Trust Doctrine to Groundwater Resources, 9 VT. J. ENVT. L. 189, 221–26 (2008) (stating that given the pressure human consumption has placed on groundwater resources, a new legal framework is necessary to protect these resources. The author argues that it is only logical, given the interconnected nature of water and related resource issues, that the public trust should expand beyond the traditional protection of real property (i.e. tidelands, lakeshores, and the beds and banks of navigable streams) to include the protection of groundwater. The traditional notions limiting the public trust doctrine to those waters which are navigable in fact is eroding, in recognition of the fact that the water itself as a single connected whole is the common resource that warrants protection. Moreover, even if protections are limited to navigable or connected tributary waters, those protections can provide a basis to reach conduct upstream or upgradient that are shown to impair or subordinate the navigable or other protected public trust waters or natural resources based on the Mono Lake case discussed below, n. 208 infra, and accompanying text.

208. Mono Lake, 658 P.2d at 721; see also Hassell, 837 P.2d at 165–66 (protecting non-navigable waters as public trust).

209. Mono Lake, 658 P.2d at 711.

210. See, e.g., CAL. CONST. art. X, § 4 (stating that no person or entity "shall be permitted to exclude the right of way to such water whenever it is required for any public purpose, nor to destroy or obstruct the free navigation of such water"); HAW. CONST. art. IX, § 1 ("All public resources are held in trust by the State for the benefit of the people"); ALASKA CONST. art. VIII, § 3 ("wildlife, fish, and all waters are reserved to people for common use"). See also Robin K. Craig, A Comparative Guide to the Western States’ Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust, 37 ECOLOGY L.Q. 53 (2010) (providing a state-by-state analysis of the application of the Public Trust Doctrine in western states); Craig, supra note 5 (providing a state-by-state analysis of the application of the Public Trust Doctrine in eastern states).

211. See, e.g., ARIZ. REV. STAT. ANN. § 37-1130 (1992) ("[t]his state may obtain any water that is necessary to maintain and protect public trust values."); VT. STAT. ANN. tit. 10 § 1390 (5) (2008) ("the groundwater resources of the state are held in trust for the public" and “manage groundwater resources . . . for the benefit of citizens who hold and share rights in those waters"); N.H. REV. STAT. ANN. § 233-A:1 (1993) ("bodies of freshwater . . . [more than 10 acres] . . . held in trust by the state for public use"); N.H. REV. STAT. ANN. § 481:1 (1985) ("[W]ater of New Hampshire whether located above or below ground constitutes . . . invaluable public resource which should be protected, conserved, and managed in the interest of present and future generations. The state as trustee . . . careful stewardship over all the waters"); N.J. STAT. ANN. § 58:11A-2 (West 1977) ("to restore and maintain the chemical, physical and biological integrity of the waters of the state, including groundwaters, and the public trust therein"); N.Y. ENVTL. CONSERVATION LAW § 15-1601 (McKinney 1989) ("All the waters of the state are valuable public natural resources held in trust by this state, and this stage has a duty as trustee to manage its waters for the use and enjoyment of present and future residents.").
constitutional law, the public trust doctrine imposed a duty on the state when reviewing a proposal for a high capacity groundwater well to consider the effects of its actions on public trust waters or uses.\textsuperscript{212} Similarly, in 2008, Vermont passed a statute recognizing that “groundwater resources of the state are held in trust for the public.”\textsuperscript{213} The first court to interpret the law ruled that, in light of the statute, groundwater was subject to the state’s common law public trust doctrine, and remanded for application of public trust principles.\textsuperscript{214} These applications of public trust principles demonstrate the inherent flexibility in the doctrine as is necessary to fulfill the fundamental purposes of the public trust.

Recent decisions from the Hawai’i Supreme Court further illustrate the flexible and evolving nature of the public trust. In Hawai’i the public trust is a constitutional doctrine,\textsuperscript{215} and state courts have interpreted the doctrine liberally, finding it applicable in a number of situations. In the seminal \textit{Wai’hole Ditch} case, pitting the interests of land developers against the interests of the public, the Hawai’i Supreme Court found that state constitutional protection of public natural resources applies to the groundwater of the state.\textsuperscript{216} The court stated in its opinion, “[b]ased on the plain language of our constitution and a reasoned modern view of the sovereign reservation, we confirm that the public trust doctrine applies to all water resources, unlimited by any surface-ground distinction.”\textsuperscript{217}

In the recent \textit{Iao Groundwater Management Area} decision, the Hawai’i Supreme Court built on the \textit{Wai’hole} decision and further expanded the reach of the public trust.\textsuperscript{218} The court rejected the Commission on Water Resource Management’s decision in setting Interim Instream Flow Standards (IIFS) for four major streams, holding that the Commission had failed to consider traditional Native practices, as well as other instream uses, when it set the IIFS.\textsuperscript{219} In particular, the court found that the Commission must carefully balance instream and non-instream uses in order to protect the public trust, and has a duty to “protect instream values to the extent practicable.”\textsuperscript{220} The idea that a variety of instream water uses, including traditional Native Hawaiian practices, would be protected

\begin{thebibliography}{9}
\bibitem{212} Lake Beulah Mgmt. Dist. v. St. Dep’t Natural Res., 799 N.W.2d 73, 76 (Wis. 2011); Scanlan, supra note 21, at 139.
\bibitem{214} \textit{In re Omya}, No. 96-6-10 Vtec, at 3–5.
\bibitem{215} HAW. CONST. art. XI.
\bibitem{216} \textit{Waihole II} 93 P.3d 445, 489 (interpreting Haw. Const. art. XI, “all public natural resources are held in trust by the State for the benefit of the people”).
\bibitem{217} \textit{Waihole II} 93 P.3d 447.
\bibitem{218} \textit{In re Iao Ground Water Mgmt. Area High-Level Source Water Use Permit Applications}, 287 P.3d 129, 190 (Haw. 2012).
\bibitem{219} \textit{Id.} at 149, 190.
\bibitem{220} \textit{Id.} at 159.
\end{thebibliography}
by the public trust, implicates an expanding public trust doctrine, in this instance the inclusion of a broader range of instream users.

The *Iao Groundwater* decision was also noteworthy for the Court’s finding that the Commission violated the public trust in its treatment of diversions. The Court noted that the Commission must consider “system losses,” as well as available alternative sources of water that will minimize damage to public trust resources, when setting the IIFS. Notably, the court found that the Commission had a duty to protect the public trust, and fulfillment of that duty required the Commission to justify any permitted diversion of public trust waters with substantial factual analysis demonstrating that the Commission considered the diversion’s impact on the public trust.

The critical point articulated by the court in both the *Iao* and *Wai’hole Ditch* cases is that private rights in water do not trump the public trust doctrine, which is intended to protect the water resource itself, and not just certain uses of the water. The public trust in Hawai’i now extends to protect the economic and ecological value of whole water systems, in recognition of the fact that a healthy watershed depends on the health of the entire water system and not simply the volume of water in a particular river or stream.

Even the U.S. Supreme Court weighed in on the flexible nature of the public trust, in the case of *PPL Montana, LLC v. Montana*. That case involved controversy over state ownership of riverbeds under existing hydroelectric power plants. The State’s argument in *PPL Montana* was based on the flawed contention that Montana holds title to the riverbeds under the non-navigable waters in question under the equal footing doctrine, and the discussion focused on determining navigability under that doctrine. But Justice Kennedy’s opinion pays a brief yet significant homage to the public trust doctrine. In a last ditch effort to establish title, the State argued that the public trust doctrine would be undermined if the State is denied title to the riverbeds. Justice Kennedy responded by drawing a distinct line between the equal footing doctrine and the public trust doctrine. The equal footing doctrine has a constitutional basis. Under the equal footing doctrine, state title to riverbeds is determined using the

---

221. *Id.* at 133.
222. *Id.* at 163.
223. *Id.* at 159.
225. *Id.* at 1222.
226. *Id.* at 1233.
federal navigability for title test. The public trust doctrine on the other hand has a common law basis, and “remains a matter of state law.”

Kennedy writes, “[u]nder accepted principles of federalism, the States retain residual power to determine the scope of the public trust over waters within their borders, while federal law determines riverbed title under the equal-footing doctrine.

The critical implication here is that a body of water does not have to meet the federal navigability for Title test in order to fall under the public trust; the public trust is determined by state law and states have the authority to determine “the contours” of the public trust. The opinion implies that even if the state doesn’t hold title to the riverbed, it still holds in trust the water in the river. This decision essentially separates the public trust from the property-based equal footing doctrine, and frees the public trust from the archaic navigability requirement. Kennedy’s opinion affirms states’ authority to determine the scope of the public trust, and refuses to limit the trust to navigable waterways.

The PPL Montana decision also cites to the Mono Lake case in its discussion of the public trust. Mono Lake, decided in 1983, firmly established the State of California’s authority to determine the scope of the public trust within its borders. In Mono Lake, California determined that the public trust extends to non-navigable tributaries of navigable waterways, and the state has authority under its public trust power to prevent anyone from acquiring or using a vested water right in any way that might harm the interests (scenic, ecological, recreational, etc.) protected by the public trust. In other words, vested water rights are still subject to the public trust; the private owner of a water right “can claim no vested right to bar recognition of the trust or state action to carry out its purposes.”

Although decided in the California Supreme Court, the Mono Lake decision is cited by the Supreme Court in the Montana PPL decision as an example of a legitimate exercise of the state’s authority to decide the scope of the public trust. Both Mono Lake and Montana PPL affirm that the states’ public trust authority exists independently of other legal doctrines or statutory schemes governing the use and protection of water. Both decisions give the states broad authority to determine the scope of the public trust within their borders. For example, both decisions support the Hawai’i

---

228. *The Daniel Ball*, 77 U.S. 557, 563 (1870) (stating that navigability is determined by the “susceptibility” of a water body for use as a highway for commerce at the time that statehood is acquired).


230. *Id.*


232. *Id* at 723.
Supreme Court decision in Iao Groundwater Management, which extends the public trust to protect whole water systems. For our purposes, these decisions, particularly the Supreme Court’s decision in Montana PPL, allow us to argue persuasively that the public trust extends to resources not traditionally covered by the doctrine, such as groundwater.

IV. THE IJC, BOUNDARY WATERS TREATY, AND PUBLIC TRUST PRINCIPLES

A review of the IJC’s history and the Boundary Waters Treaty supports the idea that a commons framework and public trust principles are consistent with, and perhaps inherent in, the authority, purposes, and principles of the Treaty, as well as Canadian and United States public trust law. In addition, such a framework and principles are compliant with the goals and special concerns of the IJC’s work in implementing the Great Lakes Water Quality Agreement. Public trust principles are inherent in the Treaty and could expressly be blended into the guiding principles adopted by the IJC and the provisions of the Great Lakes Water Quality Agreement.

A. Public Trust Principles Inherent in the Boundary Waters Treaty

Under the Boundary Waters Treaty, the Great Lakes common boundary waters are shared equally by the two countries and their respective states and provinces and citizens. The purpose of establishing the IJC was to prevent disputes regarding the use of boundary waters, and the Preamble states that the Treaty was designed to prevent disputes and settle questions “involving rights, obligations, and interests” of both countries, their state governments, and the citizens who are inhabitants of these countries. This, by itself, seems to contemplate some integration of public trust principles to the extent that they arise out of the common law right of public use of navigable waters. More generally, public trust principles, or principles consistent with the public trust, are found...
throughout the treaty, and the adoption of the public trust doctrine would blend well with the principles inherent in the treaty.

To begin with, Article I of the Treaty reflects the background public trust principle of the *jus publicum*—the paramount right of the public to use these navigable waters for navigation, boating, fishing and other public uses under English common law—which was recognized in court decisions from both countries at the time of the signing of the Treaty in 1909. Article I declares that this general right of the public to use the boundary waters is to be preserved and continue forever free and open:

> [T]he navigation of all navigable boundary waters shall forever continue free and open for the purposes of commerce to the inhabitants and to the ships, vessels, and boats of both countries equally, subject, however, to any laws and regulations of either country, within its own territory, not inconsistent with such privilege of free navigation and applying equally and without discrimination to the inhabitants, ships, vessels, and boats of both countries.

Article III of the Treaty requires that decisions on proposed uses, obstructions, or diversions “affecting the natural level or flow of the boundary waters” or waters crossing the boundary must be approved by the IJC. Public works for navigation and commerce can continue but cannot “affect the flow and level of the boundary waters of the other” or “interfere with the ordinary use of such waters for domestic and sanitary purposes.” This principle has been applied in a manner consistent with public trust principles. In its first decision under the Treaty, in 1913, the IJC characterized the principles in Article III as “plain, simple and direct.” In 1965, St. Croix Paper Company requested that the IJC approve a replacement storage dam and fish passage facility at the base of Spednic Lake that would lower water levels of the lake and impair fish habitat,

---

237. *See, e.g., supra* note 11.
238. *Boundary Waters Treaty, supra* note 9, at 2608. This is strikingly similar to both common law recognitions of the right of public use for navigation, boating, and fishing—the primary uses of navigable waters in the 1800s and 1900s. Article I of the Treaty is similar to the 1787 Northwest Ordinance, from which the boundaries of the five Great Lakes were established on their admission as states.
239. *Boundary Waters Treaty, supra* note 9, at 2609.
240. *Id.*
water quality, and downstream recreation. In approving the project as “one of a kind,” the IJC imposed a condition requiring “remedial protective works” that would protect these public interests and use from harm.

Article IV of the Treaty unequivocally directs that waters defined as boundary waters and waters flowing across the boundary “shall not be polluted.” The IJC has used its powers of “Reference” under Article IX to implement the “no pollution” standard to prevent harm to public health, drinking water, and exposure to those who swim or use the waters. In one of its first decisions under the Treaty, the IJC determined that this included a “probability” of harm to life, health, and property from pollution. Several of these uses, such as boating, fishing, bathing, recreation, farming, supply for industry, and riparian activities, are uses that are protected by the public trust doctrine.

Article VIII takes a common and shared use approach to boundary waters by adopting principles that govern the IJC’s decisions when passing on matters affecting flows or levels under Articles III and IV. Generally, each party has “equal and similar rights” in the use of waters on their side of the international boundary. However, this principle is subject to an order of preference, with the exception that existing uses on either side of the boundary are not subject to these preferences. A lower-ordered use may not materially conflict with the higher preferred use in the following order of preference: (1) domestic and sanitary uses, (2) navigation and servicing of canals for navigation, and (3) use for power and irrigation. All other uses, presumably, are based on the general shared “equal and similar right”


244. Boundary Waters Treaty, supra note 9, at 2609. Article IV also requires IJC approval for remedial and protective works in waters across the boundary, or in waters at a lower level than the boundary in rivers flowing across the boundaries, that raise the water level.


246. Id. at 27.


248. See BARLOW & OLSON, supra note 19 at §§ I and II.

249. Boundary Waters Treaty, supra note 9, at 2611.

250. Id.
principle, unless a temporary diversion is required based on local conditions and does not diminish the amount of water available for use on the other side. Finally, in matters that involve temporary variation in the equal use principle or public works that affect the natural level of water, the IJC can impose conditions or remedial orders that guard against injury to “any interests on either side.”

As articulated above, the Boundary Waters Treaty treats the boundary waters, including the Great Lakes, as a commons that is to be shared equally by both countries and their inhabitants. Moreover, IJC Decisions and References under the Treaty over the past 100 years frequently have shown an interest in applying the principles of equal and shared use, protecting public uses, and balancing public and private uses, many of which are recognized under the public trust doctrine. The IJC has looked, at least in some cases, to the equality of uses, the common law of the provinces or states where the use or effects would occur, and the protection of public uses, fish, wildlife, and ecosystems. As a result, the IJC’s explicit recognition of public trust principles would be consistent with principles inherent in the Treaty itself. In addition, the express adoption of the public trust principles could provide a needed framework for the IJC’s evaluation and decision-making regarding a number of critical issues facing the Great Lakes and the boundary waters today.

B. Integration of Public Trust Principles into the Boundary Waters Treaty and Great Lakes Water Quality Agreement

Based on the foregoing discussion of the IJC’s framework and scope of regulatory authority, the public trust doctrine could be integrated into either the implementing principles of the Treaty or the Great Lakes Water Quality Agreement (hereinafter “GLWQA”). Under either the Boundary Waters Treaty or the GLWQA and its integrated ecosystem approach, the adoption of a public trust principle could be instrumental in promoting research, exploration, public education, and oversight of the affects of uses, diversions, exports, obstructions, climate change, and other activities on the

251. Id.
252. See, e.g., Memorandum from Molly Krauza to Jim Olson (Nov. 11, 2011) in IJC PUBLIC TRUST REPORT app Tab 4 at 1–9 (referencing the IJC’s policies including summary examples such as the IJC’s Report on the Pollution of the Red River and the Raisin River) (citing Report on the Commission of the Pollution of Red River, Docket 81, p. 30 (April 1968); In the Matter of the Application of the Raisin Region Conservation Authority for Approval of Diversion into River Raisin Watershed in Ontario, Order of Approval, Docket 88A (Dec. 31, 1968) and Further Regulation of the Great Lakes, Reference, Docket 82R (June 3, 1976)).
253. Id.
254. Boundary Waters Treaty, supra note 9, at 2608.
255. GLWQA, supra note 10.
flows, levels and ecosystem of the Great Lakes.\textsuperscript{256} It would also form a basis to integrate water quantity, quality and ecosystem protection, because protection of public trust waters and aquatic resources or uses would require government to address all threats that converge to interfere with or impair these uses and resources.\textsuperscript{257} Finally, it would provide a basis for the IJC to demand that parties, states, provinces, and others be more accountable consistent with the duty under public trust law to consider and determine effects and harms before approving any use, diversion, obstruction, or other proposed action.\textsuperscript{258}

The basis for evaluating these claims has already begun. The pioneering work of the IJC and its Science Advisory and Water Quality Boards has focused on critical water pollution issues, including phosphorous, toxics, non point and direct discharges, sewage, invasive species, and shipping impacts.\textsuperscript{259} More recently, the focus has turned to the integrity of the ecosystem or “interacting components of air, land, water, and living organisms, including humans . . . within the drainage basin . . . .”\textsuperscript{260} One of the IJC’s specific goals adopts an “Ecosystem Objective” that seeks to “maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem.”\textsuperscript{261} In addition, the underlying goal of the GLWQA is a long-term effort to protect the boundary waters, and it has evolved into an ecosystem approach that integrates water quality with water and land uses, air deposition, direct and non point discharges, and overland stormwater drainage and run-off.\textsuperscript{262} The GLWQA recognizes that flows and levels, whether induced or caused by human activities, are an integral part of water quality and the health and integrity of the Great Lakes ecosystem.\textsuperscript{263} Public trust principles would provide a framework to continue to build upon this work and more fully integrate protection of

\textsuperscript{256} See infra III. A. Basic Principles of the Public Trust Doctrine.

\textsuperscript{257} Id.

\textsuperscript{258} Id. Because the public trust imposes a duty on the government to prevent or remedy harm or impairment of the public trust waters or resources, the government would need to consider these impacts before approving permits.

\textsuperscript{259} See Agreement Between the United States of America and Canada on Great Lakes Water Quality, U.S.-Can., Sept. 7, 2012, T.I.A.S. No. 13-212 (detailing an agreement by the International Joint Commission specifically concerning itself with severally related threats to the Great Lakes in its ecosystem, including: invasive species, nutrients, chemical substances, climate change impacts, discharge from vessels, and impacts on habitats and species).


\textsuperscript{261} Id. at Art. II (1).

\textsuperscript{262} Id. at Art. II (4)(f); Art. III (1)(b)(i).

\textsuperscript{263} Id. at Art. III (3) (describing the IJC’s monitoring activities to ensure Ecosystem Objectives are achieved).
water quantity, quality, and ecosystems. At the same time, these principles would declare as a background principle the paramount inalienable right of public use or trust that exists in these waters as a safeguard against unforeseen claims and challenges by special or private interests. This would protect the Great Lakes and their uses from threats of diversions or exports and ensure government control and protection for the many public and private users that enjoy the Great Lakes and St. Lawrence River.

Additionally, the IJC has recently had to face increasing tensions over dramatic and possibly unprecedented drops in water levels. Scientific studies indicate that if these drops continue, the water levels will be at record lows in Lake Michigan and Lake Huron, a single lake system. All indications point to lack of ice cover, snow pack, drought, and increased evaporation due to climate change as a contributing cause. If this trend continues, evidence will show that climate change is perhaps the single largest diversion or transfer of water out of the Great Lakes basin. Given the serious impairment or interference with navigation, boating, shipping, swimming, fishing, harbors and marinas, and other public and private riparian uses, climate change impacts could be shown to be a violation of the public trust doctrine. If this conclusion is reached, then the public trust doctrine can be used to address human actions that affect the water cycle, such as releases of CO2 and other greenhouse gases. “Upstream” actions that affect water levels to a degree that violate the public trust standards or

264. One example of how public trust principles fit within the existing work of the IJC is “Plan 2007,” the Order of Approval for a hydropower project on the St. Lawrence River below Lake Ontario. Evaluation of the proposed order has involved passing on changes in flow patterns and lake levels, including the order of preference for domestic uses, hydroelectric power, and a number of existing uses and new conditions and effects on the ecosystem. The public trust doctrine provides a backdrop on which all of these issues could be considered in the context of the sovereign duty to hold the waters in trust for public use. See generally INT’L JOINT COMM’N, YOUR GUIDE TO THE IJC’S PROPOSED NEW ORDER OF APPROVAL AND PLAN (2007), available at http://www.ijc.org/files/publications/L42.pdf (last visited Nov. 19, 2013).


principles could be remedied by the courts through government, individual, or non profit organizations who have standing as legal beneficiaries of the public trust.\footnote{268}{FLOW, supra note 266, at 10–11.}

C. Potential Application of the Public Trust Doctrine

The public trust doctrine could help address current gaps in the IJC’s ability to systemically address threats facing the Great Lakes and the boundary waters. The IJC’s mission and goals are centered on the protection of water quantity, water quality, and the chemical, biological and physical integrity of the ecosystem.\footnote{269}{Guiding Principles, supra note 189.} The IJC’s work involves decisions regarding flows and levels and related water and ecosystem effects directly under the Boundary Waters Treaty or the GLWQA.\footnote{270}{Protocol Amending the Agreement Between Canada and the U.S. on Great Lakes Water Quality, art. I, c & art. II, 1, c, available at http://www.ec.gc.ca/Publications/9DD80B8C-7E7A-4131-8055-D47B0B3E004F/EN-Canada-USA-GLWQA--FINAL_web.pdf.} Overall, the IJC has evolved objectives focused on both water quality and ecosystem to implement its responsibilities and programs under the Treaty and GLWQA, but the IJC has not formally integrated water quantity with water quality issues.\footnote{271}{Id.} Yet in the past ten years, the magnitude and layers of threats, some systemic like climate changes, water levels, and nutrient loading, to waters of the Great Lakes have become so overwhelming and multi-dimensional that IJC finds itself in a position of having to put out the fires of specific or localized threats, while larger threats gather overhead. The size, rate of change, intensity, and transboundary nature of many systemic threats to the Great Lakes and ecosystem overwhelm the existing framework.\footnote{272}{As concluded in a recent, troubling study on the difficulty of protecting local and regional place features in light of the decline in overall biodiversity, the pressures and demand on water and natural resources is so great that “the problem is running away from the solution.” Leahy, supra note 1.} The IJC could be even more effective at performing its overall responsibilities to protect flows and levels and prevent pollution if it adopted an overarching framework or principles in this century by which to evaluate issues in order to fill the gaps and compliment existing programs.\footnote{273}{BLUMM & WOOD, supra note 6, at 333–413; Michael C Blumm, The Public Trust Doctrine: A Twenty-First Century Concept, 14 HASTINGS W.-NW J. ENVTL. L. & POL’Y (2009).}

Adopting the public trust doctrine as an overarching guideline could be just such a proactive step. It would ensure that the background principles of the waters being held in trust for public use are always part of the discussion, and it could provide a mechanism for integrative and
comprehensive consideration of risks to the public trust based on the sovereign duty of the government to ensure protection of the water and ecosystem for both present and future generations. Public trust principles impose solemn and perpetual limits and duties to protect public trust waters, uses, and ecosystem, and offer an approach and principles to catch up to or get ahead of the problem. By imposing public trust principles to protect the Great Lakes, its public uses, and ecosystem, the IJC can work closer to the source of the threats, including those threats yet unknown.274 At the same time, it can provide an umbrella or backstop protection from unanticipated demands or claims on the public trust in these waters and public natural resources.

The influx of invasive species into the Great Lakes provides one example of how the public trust doctrine could be integrated with the Treaty and the GLWQA to address current challenges facing the Great Lakes and the IJC. Invasive species threaten the Great Lakes ecosystem as well as the regional economy.275 Public trust principles, read in conjunction with the Treaty, could provide the IJC with a comprehensive framework for advising and recommending governmental actions. Evaluating uses such as fishing and navigation in light of public trust principles would encourage an overall integrative look at the impacts of uses, diversions, obstructions or dams under Article I and Article III of the Treaty in the context of water levels, flows, or biological pollution, as well as a consideration under public trust principles of the magnitude of the risk of harm and alternative measures that would prevent that risk in the context of future generations.276 This requires viewing the costs and risks of exchanging ballast water beyond the St. Lawrence and Great Lakes, not just in terms of economics or even scientific markers, but in light of what the outer limit is on the risk and magnitude of harm that the Basin can withstand. It perhaps provides an

274. Henquinet & Dobson, supra note 20, at 346–47 (suggesting the public trust doctrine would better address multi-jurisdictional and layered water and ecosystem problems like fisheries).


276. Supra, note 268 at art. II, 2 & art. III, 1, (m).
outer limit on what magnitude of threatened harm is acceptable based on public trust principles.

As another example, the Great Lakes face increasing risks of large-scale water diversions. Although a 2002 Report from the IJC International Water Use Task Force concluded that diversions from the Great Lakes were not on the horizon and would not likely happen, this conclusion must now be reevaluated in light of the increasing demand on freshwater for the production of energy and food, and shifts in water law regimes in the Great Lakes states. Changing demands have greatly increased the potential for diversions or exports of water to the west or elsewhere, particularly as the United States contemplates producing oil from shale rock in the western states. In addition to increases in demand, changes in law over the past decade and international treaties such as NAFTA and the GATT have created increased legal risk for large-scale water diversion from the Great Lakes. The public trust doctrine could provide a framework by which to evaluate and prioritize these issues against the backdrop of the government’s duty to protect the Great Lakes for public uses. Indeed, now more than ever it will be valuable for an international body like the IJC to expressly declare that any use, diversion, or obstruction of navigable waters is subject to the limitations of the public trust, and to the inherent rights of public use in these waters. Finally, it is time for the IJC to affirm the

280. Under the “Harmonizing Code System” in the General Agreement on Tariffs and Trade, Oct. 30, 1947, 55 U.N.T.S. 194, as amended in the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, 33 I.L.M. 1125 (1994), a “good” is defined to include water, and all water other than the sea, whether or not clarified or purified. A side agreement to the North American Free Trade Agreement (NAFTA), signed by the U.S.-Can.-Mex., Dec. 17, 1992, 32 I.L.M. 289 (1993), itself does not expressly make “water” a “good” or “product,” a side agreement, between Canada, Mexico, and the United States may do so. See Jon R. Johnson, NORTH AMERICAN FREE TRADE AGREEMENT: A COMPREHENSIVE GUIDE 109 (1994) (explaining that “[u]nexploited resources such as . . . water in lakes, rivers, or aquifers are not ‘products’ and therefore are not subject to . . . NAFTA provisions . . . The governments of the NAFTA countries expressly confirmed this point with respect to water in a joint declaration issued in December, 1993.”).
281. For example, the Great Lakes-St. Lawrence River Basin Water Resources Compact, as adopted in the United States, bans diversions of water from the Great Lakes but also creates a couple of significant exceptions that leave the potential for significant diversions from the Lakes as a “product.” See Olson, supra note 21, at 1123.
continuing duty of governments to protect these waters for the health, safety, and welfare of its citizens.

V. CONCLUSION: AN OVERARCHING GUIDING PRINCIPLE IN PUBLIC TRUST

Based on the above, the Council of Canadians and Flow for Water (FLOW) ask the IJC to adopt, or at least study and recommend for adoption, a declaration or guiding principle that the Great Lakes Boundary waters and its connected public natural resources are held in public trust for the benefit of those citizens who live in the Great Lakes basin, and for those who visit and use and enjoy the waters of the Great Lakes Basin. In addition, or in the alternative, it is submitted that the IJC should adopt and include provisions that first recognize public trust principles and second, integrate the public trust principles into decisions and references and all matters and programs under the Great Lakes Water Quality Agreement and the Treaty, so that water quantity issues under Article III of the Treaty and water quality issues under Article IV of the Treaty and the Great Lakes Water Quality Agreement are integrated and made part of the ecosystem approach of the Great Lakes Water Quality Agreement.

A. Public Trust Principles for Waters of the Great Lakes Basin

If the IJC (or states, or other governmental bodies or agencies) adopts public trust doctrine principles, or encourages governments and private persons to recognize the principles of the doctrine as guidelines, within the scope of IJC’s jurisdiction under the Treaty and Great Lakes Water Quality Agreement, the IJC will have adopted a new unifying principle that comprehensively addresses the threats to the waters of the Great Lakes Basin, and the ecosystems, economies, and quality of life and health dependent on those waters. Even in the absence of an express declaration or recognition by the IJC, the federal and state governments, local governments, and citizens should insist that the principles and rights under the public trust doctrine undisputedly apply to these magnificent waters are honored and enforced.

But public trust principles are not only important for protecting the sustainable limits of the Great Lakes and connected or tributary waters and water resources. The reasons described in this article calling for universal adoption of public trust principles for the Great Lakes under the framework of the IJC could be applied with equal force to many of the threats to our earth’s water, air, and ecosystems so vital to health, a sustainable economy, quality of life and well being. Just as the waters of the Great Lakes Basin
are a single whole, so too are all of the waters of the earth through the hydrologic cycle or through what might characterized as the “hydrosphere.” The examples of the threats to the Great Lakes are part of the same natural processes and human behavior that threaten the planet everywhere. In order to better comprehend and address the threats simultaneously, scientists are beginning to connect the dots, and look at all inputs and outputs, impacts and effects of the entire water cycle in a given watershed. By doing this, the various actions causing harm or benefit to the water cycle and ecosystem can all be considered at once. As science begins to do this, there is a corresponding dynamic living snapshot of how human activities and natural processes interact in the air, on the earth, under the ground, in wetlands, creeks, streams, lakes, and the oceans—in effect showing these interactions at every arc of the water cycle or hydrosphere. If the public trust in water, particularly navigable or other waters and natural features recognized as such by law, has any basic value at all, it is the outside limitation or umbrella on any actions by government or others that might effect protected public trust uses so vital to every person, individually and as a member of the community.

A good example is the relationship between climate change and the impacts of dislocation or diversion of water from the Great Lakes Basin demonstrated by the recent nearly unprecedented drops in water levels in Lake Michigan and Lake Huron.

As described in Section IV above, if the scientific evidence shows that climate change, that is, the effect of greenhouse gases on the atmosphere, is impacting the water cycle by altering precipitation patterns and causing water levels to drop, it would violate the no subordination or significant impairment standard of the public trust doctrine. Another example is the 3,000 square kilometer “dead zone” in Lake Erie that developed during the summer of 2011. The dead zone was caused by increased warming and nutrient run-off and discharges that resulted in closed beaches, upended recreational boating and tourism, and shut down a large portion of the local fishery for the season. Fishing, boating, swimming and recreation are

---

282. Interview with Jack Tuholske, Visiting Professor, Vermont Law School, at the On the Commons Great Lakes Conference, Notre Dame, Ind. (Oct. 1–2, 2012); see also BLUM & WOOD, supra note 6; PENTLAND & WOOD, supra note 158; see generally MAUDE BARLOW, BLUE FUTURE: PROTECTING WATER FOR PEOPLE AND THE PLANET FOREVER (2013).


284. ANNA MICHALAK ET AL., RECORD-SETTING ALGAL BLOOM IN LAKE ERIE CAUSED BY AGRICULTURAL AND METEOROLOGICAL TRENDS CONSISTENT WITH EXPECTED FUTURE CONDITIONS 2 (2013), available at http://www.pnas.org/content/early/2013/03/28/1216006110.full.pdf+html; see also id.
protected uses, and fisheries and water resources are protected public trust resources.

In both examples, public trust law and principles could be used to address and remedy harm or seek equitable relief against those causing the harm, or used to force government to take affirmative actions consistent with its duty to protect these public trust uses and resources. And in both instances, the public trust doctrine would be used to mitigate conduct that affects the hydrosphere through its direct affect on the hydrologic cycle. Theoretically, the approach is no different than the California Supreme Court or other courts extending the reach of the public trust doctrine to tributary streams or groundwater. Moreover, the approach is within the traditional scope of the doctrine, because under the earliest cases neither government or private persons could interfere with the public rights of navigation, fishing, or boating. As the scope of public trust resources or public uses of these resources have been extended, the remedies to protect them—damages, equitable remedies, or enforcement of affirmative duties—are extended accordingly.

B. Toward a Public Trust in the Hydrologic Cycle

Water passes through the atmosphere as vapor, precipitates to earth as rain, snow, or something in between, runs over the surface and percolates into the ground, enters the roots of plants through uptake, transpires and evaporates back into the atmosphere, or percolates downward into underground moving lakes or pools or streams known as groundwater or aquifers. Water moves through saturated soil or rock, collects and rises forth as springs or seeps and forms wetlands, creeks, streams, ponds, lakes, and rivers and larger lakes, and runs to the sea, all the while evaporating back into the atmosphere, around and around in a cycle, everywhere in some form and at some rate of movement all at once. At every arc of the cycle, water gives back and absorbs—to and from plants, wildlife, human beings. Water gains and loses through the natural hydrological cycle that flows continuously. As recognized by the eminent 19th century jurist Thomas


286. The following statutes recognize and govern the application of the public trust doctrine in Wisconsin: WIS. STAT. ANN. §§ 30.01 to 30.99 (West 2011) ("Navigable Waters, Harbors and Navigation"); WIS. STAT. ANN. §§ 31.06(3)(c) (West 2011) ("Regulation of Dams and Bridges Affecting Navigable Waters"); WIS. STAT. ANN. §§ 33.01 to 33.60 (West 2011) ("Public Inland Waters"); WIS. STAT. ANN. §§ 281.11 to 281.35 (West 2011) ("Water and Sewage").

287. Supra note 186.
Cooley, “water is a moveable, wandering thing, and must of necessity continue common by the law of nature.”

In the words of the U.S. Supreme Court in the Illinois Central case, nullifying a deed to part of Lake Michigan given by the State of Illinois to a private railroad company, “this trust cannot be abdicated or alienated.” It cannot be impaired, not the water, not the public purposes. The principles mean that the resource and its uses are to remain in public control, for the public good and purposes, and without substantial interference or impairment. If the public trust is applied to every arc of the water cycle that affects public trust waters, especially traditional navigable waters, the waters and these uses cannot be subordinated or harmed. If they are harmed or impaired, then the human actions that contribute to or cause such subordination or harm are necessarily limited because of the overarching duty to protect the integrity of the waters and uses for the beneficiaries of this and future generations.

For these reasons, a possible answer is the immediate adoption of a new narrative, with principles grounded in science, values, and policy, that view the systemic threats we face as part of the single connected hydrological whole, a commons governed by public trust principles. The public trust is necessary to solve these threats that directly impact traditional public trust resources like the Great Lakes and its tributary waters. The most obvious whole is not a construct of mind, but the one in which we live—the hydrosphere, basin, and watershed through which water flows, evaporates, transpires, is used, transferred, and is discharged in a continuous cycle. Every arc of the water cycle flows through and affects and is affected by everything else, reminiscent of what Jacques Cousteau once said, “We forget that the water cycle and the life cycle are one.”

---

288.  SIR WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND, BOOK THE SECOND 18 (9th ed. 1783).
290.  This is not much different that existing case law that is reflected in the California Mono Lake and Wisconsin Lake Beulah decisions. From a hydrologic cycle point of view, everything is “upstream” and “downstream” and so is necessarily tributary; and the impacts to this cycle that significantly impair or impact directly navigable or other public trust waters, aquatic resources, or protected uses could be shown to violate the public trust. See Mono Lake, 658 P.2d at 721; see also Lake Beulah Mgmt. Dist., 799 N.W.2d at 76.
INTRODUCTION

In July 2010, in reaction to the financial crisis that triggered the Great Recession, Congress passed, and the President signed, The Dodd-Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank”). Congress intended Dodd-Frank, “[t]o promote the financial stability of the United States by improving accountability and transparency in the financial system, to end ‘too big to fail,’ to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.” Much of the 848-page Act addresses financial institutions, instruments, and practices, and calls for further rulemaking by agencies including the U.S. Securities and Exchange Commission.
Back on the (Supply) Chain Gang: 419

(“SEC”). Uniquely, § 1502, however, does not deal with financial matters. For the first time, Congress granted the SEC authority over what appears to be purely humanitarian concerns. Section 1502 addresses the importation of conflict minerals—such as tantalum, tin, gold, and tungsten—used in some electronics. Many of these resources are mined in the Democratic Republic of Congo (DRC). Section 1502 requires companies that may use conflict minerals as a necessary part of manufacturing to analyze their supply chain for the source, and report the results of their analysis to the SEC. On August 27, 2012, the SEC issued its Final Rule (Final Rule) for such disclosure. The Final Rule includes a due diligence process and third party certification of a company’s disclosure.

Part I of this article is an overview of SEC disclosure at large. A general look at SEC disclosure requirements provides foundational knowledge of the SEC’s purpose and practices. The SEC regulatory framework situates the requirements of § 1502 and the Final Rule into the disclosure regime already in place. An understanding of the SEC generally contextualizes how current and potential environmental disclosure requirements function as part of the whole. The framework for how the SEC regulates the capital market clarifies how regulation does and may require environmental and humanitarian disclosure.

Part II explores the SEC Final Rule for § 1502 by discussing what it requires for manufacturing companies in the United States that use conflict minerals as a necessary part of their production process. It explores the burdens for boards of directors and executive management in complying with the Final Rule.

Part III describes environmental and humanitarian disclosure both here in the United States and abroad. Part III.A explains environmental disclosure the SEC currently requires. Part III.B demonstrates the progression foreign jurisdictions made from financial disclosure to humanitarian and environmental disclosures, such as Great Britain, France, Japan, and Brazil. Finally this article concludes by analyzing the Final

3. Id.
4. Id. § 1502. Sections 1503 and 1504 fit into this category, requiring mine safety and natural resource use disclosure. A proposed rule was promulgated by the SEC, but no final rule was released, therefore, this article only explores the final rules for § 1502.
5. Id.
Rule’s potential to be the beginning of purely social and environmental disclosure for U.S. companies.

I: SEC DISCLOSURE REQUIREMENTS

In response to the stock market crash in 1929, Congress passed and President Roosevelt signed the Securities Act of 1933 (“’33 Act”). Congress later passed the Securities Exchange Act of 1934 (“’34 Act”), which created the SEC to regulate capital markets. The mission of the SEC is “to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.” The ’34 Act requires companies that offer securities that are publicly traded on a national exchange, or with over 2,000 non-employee shareholders and over $10 billion in assets, to adhere to a nexus of regulatory disclosures. Professor Cynthia Williams states that these disclosure requirements “bring to bear public pressure to change the actions and attitudes of corporate managers, bankers, and other insiders,” and “encourage corporate managers to exercise their power with a greater sense of fiduciary obligation, both toward shareholders and toward the public.” Chairman of the Securities and Exchange Commission, Mary Jo White, similarly characterized the disclosure requirements.

Chairman White said:

[Disclosure is indeed a key ingredient in the securities arena. It gives investors the information they need about their investments. It provides them with information about the operations, management and financial condition of the companies they invest in... It allows informed investors to participate in a free and fair market.]

Or as Justice Brandeis so eloquently put it in his book, Other People’s Money and How Bankers Use It, “[p]ublicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of

15. Id.
Back on the (Supply) Chain Gang:

disinfectants; electric light the most efficient policeman.”¹⁶ Essentially, the goal is to prevent fraud and allow investors of all types the informational opportunity to make financially sound decisions.¹⁷

The SEC requires four major forms of disclosure under its framework titled Regulation S-K.¹⁸ Companies must register with the SEC when they wish to issue securities, and thus companies are referred to as “issuers.”¹⁹ A potential issuer registers through a prospectus document and registration statement.²⁰ SEC-registered companies must also disclose financial reports at the end of each fiscal quarter and at the close of their fiscal year in Forms 10-Q and 10-K, respectively.²¹ Forms 10-Q and 10-K must be certified by an independent public accountant to ensure accuracy and honesty.²² Companies must also report changes in the business that may materially affect investors using Form 8-K, which must be filed within a set number of days after the material change, depending on the situation.²³ Materiality is a term of art that issuers and regulators must consider on a case-by-case, factual basis of a total mix of quantitative and qualitative information that a reasonable investor might find important in making investment decisions.²⁴

A company must disclose not only quantitative data, but must qualitatively explain the numbers.²⁵ The managers of a company must discuss and analyze “information that the registrant believes to be necessary to an understanding of its financial condition, changes in financial condition and results of operation.”²⁶ This portion of Form 10-K is appropriately named “Managers Discussion & Analysis” (“MD&A”).²⁷ Within MD&A, managers must discuss potential market risk factors and forward-looking information that are reasonably based and made in good faith.²⁸ Forward-looking statements may contain

¹⁶. LOUIS BRANDEIS, OTHER PEOPLE’S MONEY AND HOW BANKERS USE IT 92 (1914).
¹⁸. 17 C.F.R. §§ 229.10 & 240.13a–1 (2013). The SEC requires other forms of disclosure. These four, however, are the most prevalent for the discussion of this Note.
¹⁹. Id. § 240.13a–1 (2013).
²⁰. See Geltman, supra note 17 (explaining that a prospectus is a securities sales document which outlines the terms of an offering and explaining that not all securities require registration; exemptions exist).
²². Id.
²³. Id. § 240.13a–11 (2013).
²⁶. Id.
²⁷. Id.
²⁸. Id. § 230.175 (2013).
a projection of revenues, income (loss), earnings (loss) per share, capital expenditures, dividends, capital structure or other financial items; [a] statement of management's plans and objectives for future operations; [a] statement of future economic performance contained in management's discussion and analysis of financial condition and results of operations. 29

Market risk factors tend to outline potential scenarios, including environmental risk factors that would negatively impact a company’s financial standing should they occur. 30

Section 10b of the ’34 Act protects against fraudulent or misleading statements or omissions. 31 SEC Rule 10b-5 is the corresponding regulation. 32 Rule 10b-5 makes it illegal:

(a) [t]o employ any device, scheme, or artifice to defraud, (b) [t]o make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (c) [t]o engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person. 33

The SEC or private individuals who have purchased or sold shares based on fraudulent information have standing under 10b-5 and may bring a suit. 34

The ’34 Act has been amended over the years, most recently with the Sarbanes-Oxley Act of 2002 (Public Company Accounting Reform and Investor Protection Act) 35, Dodd-Frank 36, and the Jumpstart Our Business Startups (“JOBS”) Act of 2012. 37 These acts contain many provisions, some of which create new sections of the ’34 Act, others of which amend sections that already exist. 38 In doing the former, Dodd-Frank granted the SEC the authority to promulgate the Final Rule for conflict mineral supply chain disclosure. 39

---

29. Id. § 240.3b–6(c)(1) through (4) (2013).
30. Id. § 229.10(b)(1) (2013).
33. Id.
38. Id.
Section 1502 of Dodd-Frank amended the ‘34 Act to include section 13(p), “Disclosures Relating to Conflict Minerals Originating in the Democratic Republic of the Congo.” As previously mentioned, SEC disclosure is intended to allow the public to invest on an informed basis and, through public and market pressure, sway how companies behave. Dodd-Frank, therefore, regulates capital market disclosure in an attempt to affect social and public policy. Section 1502 gave the SEC 270 days to create a rule for conflict mineral supply chain disclosure. The SEC issued its initial proposed rule on December 15, 2010. The proposed rule included a three-part process for conflict mineral disclosure. It required comment on the rule by March 2, 2011.

Conflict minerals are elements that are essential to the production of many electronics used every day in the U.S., such as cellular phones. Generally, elements that qualify as conflict minerals are tin, tungsten, and tantalum (“the three ‘T’s”) and gold. These minerals exist in great quantity in the eastern part of the DRC. For purposes of §13(p), conflict minerals include “cassiterite, columbite-tantalite, gold, wolframite, or their derivatives, or any other minerals or their derivatives determined by the Secretary of State to be financing conflict in the DRC.” The word “conflict” is ascribed to these minerals because militant groups mine, tax, and sell them on the black market in order to fund the enslavement of the local population. Many people are familiar with this concept in the context of “blood diamonds.” Blood diamonds, similarly, resourced civil...
wars throughout Africa and, most infamously, the apartheid system in South Africa.\textsuperscript{52} The goal of the Final Rule would be to elicit public pressure on companies to ensure that their products are “conflict free.”\textsuperscript{53} Doing so would curb the international cash flow to brutal regimes of eastern DRC, and thus diminish the oppression of the Congolese people.\textsuperscript{54}

The first part of the proposed process required a company to determine if the new rule applies to them.\textsuperscript{55} Applicability may be determined by whether a company is a “registrant that files reports with the Commission under [Exchange Act Sections 13(a) or 15(d)]” and for which “conflict minerals…are necessary to the functionality or production of a product manufactured or contracted to . . . be manufactured” by such issuer.\textsuperscript{56}

The second part of the proposed process required any such company to perform a “reasonable country of origin [for conflict minerals] inquiry.”\textsuperscript{57} If, through the inquiry, an issuer determined that no conflict minerals used came from the DRC, the company would disclose that information and the process by which it was determined in their annual filing of Form 10-K and on the company’s website.\textsuperscript{58} If a company determined that conflict minerals used were, in fact, from the DRC, or if the company was unable to determine their origin, it would have included this information in its annual Form 10-K and on its website.\textsuperscript{59}

The third part of the proposed process required those companies using conflict minerals from the DRC or undeterminable origin to complete a Conflict Minerals Report (“CMR”). The CMR would include the due diligence measures taken to discover “the source and chain of custody of its conflict minerals” for each product manufactured or contracted for manufacture for which it could not determine.\textsuperscript{60} The proposed rule required an independent, private sector auditor to certify the CMR.\textsuperscript{61} In the CMR, an issuer would include due diligence measures to ensure that any scrap or recycled conflict minerals were truly from scrap or recycled sources.\textsuperscript{62} Issuers would attach the CMR as an exhibit to the annual form 10-K and

\textsuperscript{52} \textit{Id.}
\textsuperscript{53} Gobrecht, \textit{supra} note 47, at 419; Conflict Minerals, 77 Fed. Reg. at 56,286.
\textsuperscript{54} Gobrecht, \textit{supra} note 47, at 420.
\textsuperscript{55} 17 C.F.R. § 240.13q–1 (2013).
\textsuperscript{56} \textit{Id.} § 240.13p–1.
\textsuperscript{57} Conflict Minerals, 77 Fed. Reg. at 56,299.
\textsuperscript{58} \textit{Id.} A company would have to include in Form 10K that this information is available on its website and the web address for that information.
\textsuperscript{59} \textit{Id.} As above, a company would have to include in Form 10-K that this information and is available on its website and the web address for that information.
\textsuperscript{60} Conflict Minerals, 77 Fed. Reg. at 56,313.
\textsuperscript{61} 17 C.F.R. § 240.10A–2 (2013).
make it available on their website. The proposed rule also required issuers to maintain business records that are related to their reasonable country of origin inquiry.

On October 18, 2011, after interested parties submitted public comments on the proposed rule, the SEC held a public round table of “investors, affected issuers, human rights organizations, and other stakeholders.” The SEC reports that a majority of commentators supported the proposed rule, or at least the human rights motivation of the statutory provision. The SEC also reported only one commentator outright opposed the provision and rule. Other commentators expressed concerns for potential economic decline due to boycotts and embargos of non-conflict-free products, adverse effects on U.S. employment, and first amendment violations in the form of compelled speech.

The SEC adopted the three-step process as proposed with changes to the mechanisms of implementation. Through these changes, the SEC sought to reduce the cost of compliance. The first step for identifying whether a company is subject to the rule remains essentially intact. Companies for which “conflict minerals are necessary to the functionality or production of a product manufactured by such person” are considered a “person described” in § 13(p). The Final Rule includes guidance to determine whether they have a qualifying “contract to manufacture” based on the degree of influence an issuer has over another party’s operations. A company is considered to have adequate influence for purpose of the first step if it does any more than:

(1) [specify] or [negotiate] contractual terms with a manufacturer that do not directly relate to the manufacturing of the product (unless it specifies or negotiates taking these actions so as to exercise a degree of influence over the manufacturing of the product that is practically equivalent to contracting on terms that directly relate to the

63. Id. at 56,314. A company would also be required to include in form 10-K that the CMR was attached as an exhibit, the name of the independent auditor in the body, that the CMR was available on their website, and the web address for the CMR.
64. Id.
65. Id. at 56,277.
66. Id. at 56,278.
67. Id.
68. Id. at 56,278–79.
69. Id. at 56,279.
70. Id. at 56,345.
71. Id. at 56,279.
73. Conflict Minerals, 77 Fed. Reg. at 56,279. Operations such as materials, parts, ingredients or components are included in “manufacture.”
manufacturing of the product); (2) the [company] affixes its brand, marks, logo, or label to a generic product manufactured by a third party; or (3) the [company] services, maintains, or repairs a product manufactured by a third party.74

The Final Rule also clarifies what it means for a conflict mineral to be “necessary to the functionality” or “necessary to the production.”75 Conflict minerals are considered necessary to the functionality if:

(1) the conflict mineral is intentionally added to the product or any component of the product and is not a naturally-occurring by-product; (2) the conflict mineral is necessary to the product’s generally expected function, use, or purpose; and (3) [the] conflict mineral is incorporated for purposes of ornamentation, decoration or embellishment, whether the primary purpose of the product is ornamentation or decoration.76

Conflict minerals are considered necessary to production if:

(1) the conflict mineral is intentionally included in the product’s production process, other than if it is included in a tool, machine, or equipment used to produce the product (such as computers or power lines); (2) the conflict mineral is included in the product; and (3) the conflict mineral is necessary to produce the product . . . [T]he mineral must be both contained in the product and necessary to the product’s production. [It is not considered] “necessary to the production” of a product if the conflict mineral is used as a catalyst, or in a similar manner in another process, that is necessary to produce the product but is not contained in that product.77

The Final Rule also narrows the scope of required compliance by excluding companies that mine conflict minerals.78 It also allows a company a one-year reporting grace period if it “acquires or otherwise obtains control over a company that manufactures or contracts to manufacture products with conflict minerals.”79 The Final Rule creates a new reporting form, Form SD, in lieu of including conflict mineral supply

74. Id.
75. Id.
76. Id.
77. Id. at 56,279–80.
78. Id. at 56,280.
79. Id. at 56,301.
certification as part of Form 10-K. Issuers will include the CMR as an exhibit to this specialized disclosure form. Therefore, the form is subject to ’34 Act liability. Civil liability under the ’34 Act often results in money damages for impacted investors.

The second step of the rule requires a reasonable country-of-origin inquiry for conflict minerals. The Final Rule allows an issuer to conduct an inquiry that is unique to its facts and circumstances. The Final Rule includes a good faith requirement. It maintains that if an issuer, through its reasonable country of origin inquiry, discovers that conflict minerals used are not from one of the “covered countries,” then the issuer must disclose the finding and process for its reasonable country of origin inquiry in Form SD.

The trigger for whether an issuer proceeds to the third step of the rule changed when the SEC handed down the Final Rule. The third step under the proposed rule required issuers, whether they could or could not determine whether necessary conflict minerals originated in one of the covered countries, to conduct due diligence on the source and chain of custody of its conflict minerals and provide a CMR. The Final Rule narrows the scope of step three slightly. It requires issuers to conduct due diligence and file a CMR only if they know or reasonably believe that necessary conflict minerals originated in a covered country and do not come from recycled or scrap sources. The Final Rule creates a waiver from filing a CMR if, in the course of conducting due diligence, the issuer discovers that necessary conflict minerals do not originate in a covered country nor are from recycled or scrap sources. The issuer, however, is still required to file Form SD.

The Final Rule includes some instruction for the due diligence process. Unlike the proposed rule, the Final Rule requires that issuers follow a nationally or internationally recognized framework for each

80. Id. at 56,281.
81. Id. at 56,302.
82. Id. at 56,280.
83. Id. at 56,303.
84. Id. at 56,311.
85. Id.
86. Id. at 56,312.
87. Id.
88. Id. at 56,280.
89. Id.
90. Id.
91. Id.
92. Id.
93. Id.
94. Id. at 56,281.
conflict mineral in question, assuming one exists.\textsuperscript{95} The SEC claims that this will enhance quality, allow for comparability, and ensure more accurate auditing of due diligence processes taken.\textsuperscript{96} The SEC further suggests that this will “make the rule more workable and less costly than if no framework was specified.”\textsuperscript{97} The SEC concedes, however, that only one due diligence framework exists and thereby incorporates it by reference.\textsuperscript{98}

The single due diligence framework that currently exists is disseminated by the Organisation for Economic Co-operation and Development (“OECD”).\textsuperscript{99} The OECD promotes policies that will improve the economic and social well-being of people around the world.\textsuperscript{100} The framework provides guidance for detailed due diligence as a basis for responsible global supply chain management of tin, tantalum, tungsten, their ores and mineral derivatives, and gold.\textsuperscript{101} The framework is a “result of a collaborative initiative among governments, international organizations, industry and civil society to promote accountability and transparency in supply chain of minerals from conflict affected and high-risk areas.”\textsuperscript{102} The three goals of the framework are to:

identify the factual circumstances involved in the extraction, transport, handling, trading, processing, smelting, refining and alloying, manufacturing or selling of products that contain minerals originating from conflict-affected and high-risk areas; identify and assess any actual or potential risks by evaluating the factual circumstances against standards set out in the company’s supply chain policy (see the Model Supply Chain Policy, Annex II); [and] prevent or mitigate the identified risks by adopting and implementing a risk management plan. These may result in a decision to continue trade throughout the course of risk mitigation efforts, temporarily suspend trade while pursuing ongoing risk mitigation, or disengage with a supplier either after failed attempts

\textsuperscript{95} Id.
\textsuperscript{96} Id.
\textsuperscript{97} Id.
\textsuperscript{98} Id.
\textsuperscript{100} About the OECD, Org. for Econ. Co-operation and Dev., http://www.oecd.org/about/ (last visited Oct. 20, 2013).
\textsuperscript{101} Due Diligence Framework, supra note 99, at 12. The framework for gold was released as a supplement in 2011.
\textsuperscript{102} Id.
at mitigation or where the company deems mitigation not feasible or the risks unacceptable.103

The framework contains five steps, each step with its respective sub-parts.104 The first step is for companies to “[e]stablish strong company management systems,” so an entire enterprise works together to ensure accuracy in a reasonable country of origin inquiry.105 Step two is to examine the supply chain and identify risk areas and points where conflict minerals may be entering the supply chain.106 The third step is to “[d]esign and implement a strategy to respond to identified risks.”107 The fourth step is to acquire a third-party, independent auditor to ratify the due diligence taken by the issuer.108 The fifth and final step is to report the results of supply chain due diligence.109 The framework provides general guidance for due diligence; however, separate supplements exist instructing how to implement the framework when dealing with either the “three T’s” or gold.110

The first step of the framework includes five sub-parts to establish a strong system of management.111 Sub-part A instructs companies to “[a]dopt, and clearly communicate to suppliers and the public, a company policy for the supply chain of minerals originating from conflict-affected and high-risk areas.”112 Sub-part B requires structuring internal management to support supply chain due diligence.113 Sub-part C is intended to “[e]stablish a system of controls and transparency over the mineral supply chain.”114 In order to do this, a company needs to create a system through which it traces the chain-of-custody or to identify “upstream actors.”115 An “upstream actor” includes “miners (artisinal and small-scale or large-scale producers), local traders or exporters from the country of mineral origin, international concentrate traders, mineral re-processors and smelters/refiners.”116 Sub-part D instructs companies to

103. Id. at 14. 104. Id. at 17. 105. Id. 106. Id. at 18. 107. Id. 108. Id. at 19. 109. Id. 110. Id. at 12, 31. 111. Id. at 17. 112. Id. The framework includes standards for such a policy. Id. at 20. 113. Id. 114. Id. 115. Id. 116. Id. at 32. The framework distinguishes artisanal small-scale minors as “producing enterprises, rather than individuals or informal working groups of artisanal miners.” Id.
incorporate their supply chain policies “into contracts and/or agreements with suppliers,” and “assist suppliers [where possible] in building capacities...to [improve] due diligence performance.”\footnote{117} Sub-part E requires “a company-level, or industry-wide, grievance mechanism as an early-warning risk-awareness system.”\footnote{118}

The second step of the framework—to identify and assess risk in the supply chain—is relatively simple and self-explanatory.\footnote{119} It reads that “[c]ompanies should: A) [i]dentify risks in their supply chain as recommended in the Supplements; [and] B) [a]ssess risks of adverse impacts in light of the standards of their supply chain policy consistent with [the framework] and the due diligence recommendations in this Guidance.”\footnote{120}

The third step, designing and implementing a strategy to respond to identified risks, contains four sub-parts.\footnote{121} Sub-Part A simply requires that a company report findings of a supply chain risk assessment to particular members of its senior management.\footnote{122} Sub-part B, adopting a risk management plan, is a bit more complicated, and requires companies to formulate a plan for reducing the risk of conflict minerals entering the supply chain.\footnote{123} The framework suggests that companies may accomplish this in one of three ways, by: “i) continuing trade throughout the course of measurable risk mitigation efforts; ii) temporarily suspending trade while pursuing ongoing measurable risk mitigation; or iii) disengaging with a supplier after failed attempts at mitigation or where a company deems risk mitigation not feasible or unacceptable.”\footnote{124} The framework urges companies to exert influence and leverage over their suppliers, stakeholders, governments, and non-governmental organizations to reduce the quantity of conflict minerals in the supply chain.\footnote{125}

Sub-part C includes implementing, monitoring, and tracking performance of the risk management plan and reporting results to designated senior management.\footnote{126} The framework suggests that this sub-part may be accomplished independently by the company or in conjunction with local, state, federal or foreign governments, non-governmental

\footnote{117}{Id. at 17.}
\footnote{118}{Id.}
\footnote{119}{Id. at 18.}
\footnote{120}{Id.}
\footnote{121}{Id.}
\footnote{122}{Id.}
\footnote{123}{Id.}
\footnote{124}{Id.}
\footnote{125}{Id.}
\footnote{126}{Id.}
organizations, suppliers, or affected third parties. Sub-part D simply requires that companies take any additional measures in assessing the supply chain and risk factors, mitigating circumstances, and adapting to changing circumstances.

Step three appears to require more than due diligence in assessing the supply chain, but also suggests steps for companies to change their supply chains. This step of the process extends beyond disclosure to discontinuing the use of conflict minerals entirely. As the only due diligence framework available, and as a required portion of the Final Rule, it appears § 1502 and the Final Rule go beyond applying market pressure to reduce the use of conflict minerals, and skips directly to curbing the use of conflict materials through the due diligence framework. As Congress expands the SEC’s power to regulate social and environmental concerns, the SEC, through final rules, might dictate issuers’ behavior directly rather than through market forces.

Steps four and five of the framework, which require companies to audit and disclose the due diligence process, are both required as part of the Final Rule. Neither of the final two steps has sub-parts nor provides much guidance. Step four simply reads, “[c]ompanies at identified points (as indicated in the Supplements) in the supply chain should have their due diligence practices audited by independent third parties. Such audits may be verified by an independent institutionalized mechanism.” Likewise, step five contains no sub-parts and plainly states that, “[c]ompanies should publicly report on their supply chain due diligence policies and practices and may do so by expanding the scope of their sustainability, corporate social responsibility or annual reports to cover additional information on mineral supply chain due diligence.”

There is consensus among commentators that the Final Rule would impact an estimated 5,994 issuers. There is not, however, consensus

127. Id.
128. Id.
129. Id.
130. Id.
132. DUE DILIGENCE FRAMEWORK, supra note 99, at 19.
133. Id.
134. Id.
135. See Conflict Minerals, 77 Fed. Reg. at 56,333 (stating that the company must briefly describe the reasonable country of origin in the Form SD).
136. Id. at 56,336.
around how much it will cost issuers to implement the Final Rule.\textsuperscript{137} The National Association of Manufacturers ("NAM") estimated that the cost to issuers of implementing risk-based programs with control processes to verify the credibility of information suppliers are providing would be $300 million.\textsuperscript{138} NAM also estimated performing due diligence would cost $1.2 billion.\textsuperscript{139} NAM approximated that it would cost $6 billion to develop new information technology systems. \textsuperscript{140} Lastly, NAM calculated that an independent, private sector audit would range from $25,000–$100,000, depending on the size of the company and the complexity of its supply chain. \textsuperscript{141}

Tulane University, as part of a group of universities ("University Group"), submitted an estimate of the costs of the Final Rule for issuers as well.\textsuperscript{142} The University Group estimated that strengthening governance systems would equate the largest cost to issuers.\textsuperscript{143} Under the University Group’s model, issuers would pay an aggregate cost of $26 million.\textsuperscript{144} The University Group estimated the aggregate cost of updating technology to facilitate the Final Rule at $2.56 billion.\textsuperscript{145} The estimated cost of acquiring an independent, private sector audit would cost $207 million.\textsuperscript{146}

Claigan Environmental Inc. predicted the lowest cost of compliance.\textsuperscript{147} Claigan predicted issuers would spend an average of $1 billion per year.\textsuperscript{148} Claigan estimated the corporate governance costs: where organizational adjustments, consultants, and CMR writing would cost $60,000; implementation of a senior management program would cost $75,000; and an independent, private sector audit would cost $30,000; totaling

\textsuperscript{137} \textit{Id.}  
\textsuperscript{139} Id at 56,337.  
\textsuperscript{140} \textit{Id.}  
\textsuperscript{141} \textit{Id.}  
\textsuperscript{142} See \textit{id.} at 56,338 n.756 (stating "the staff of Senator Richard J. Durbin, one of the co-sponsors of the Conflict Minerals Statutory Provision, contacted this commentator ‘with a specific request for help in providing a detailed estimate of what it would cost companies to implement the Congo Conflict Mineral Act’ ").  
\textsuperscript{143} \textit{Id.} at 56,338.  
\textsuperscript{144} \textit{Id.}  
\textsuperscript{145} \textit{Id.}  
\textsuperscript{146} \textit{Id.}  
\textsuperscript{148} Letter from Claigan Environmental Inc., supra note 147.
Claigan estimated the data-gathering costs: where the cost of
gathering data is $100 per supplier; that a given issuer would require data
from half of its suppliers, an average of 1,000 suppliers per issuer, totaling
$100,000. Finally, Claigan estimated that the cost of upgrading
technology systems would range from $30,000 to $150,000, averaging
$40,000. The technology systems would require $10,000 in IT support,
sub-totaling an average of $50,000 per year for software system upgrades
and maintenance.

The SEC estimates, based on comments received, “that the initial cost
of compliance is approximately $3 billion to $4 billion, while the annual
cost of ongoing compliance will be between $207 million and $609
million.” This is based on a range of $387.65 million to $16 billion.
Regardless of the metric, issuers and their boards of directors will spend
time, money, and manpower complying with the Final Rule. The
expenditures outlined above may only account for a portion of an issuer’s
annual assets and liabilities. One can only assume, however, that similar
expenditures would accumulate as the SEC requires other varying types
of social and environmental disclosure.

Industry did not receive the Final Rule well when the SEC released it
on August 22, 2012. On October 22, 2012, NAM, the U.S. Chamber
of Commerce, and the Business Roundtable (“Industry Group”) filed an
amended petition for review of the Final Rule in the U.S. Court of Appeals
of the D.C. Circuit. The Industry Group requested “that this rule be
modified or set aside in whole or in part,” on the grounds that the Final
Rule was arbitrary and capricious under the Administrative Procedure Act,
and that the Final Rule disclosure requirements violate the First

149. Id.
150. Id.
151. Id.
152. Id.
153. Id.
155. Id. at 56,336.
156. Id. at 56,365.
157. Amended Petition for Review, National Association of Manufacturers, Chamber of
“The U.S. Chamber of Commerce is the world’s largest business organization representing the interests
of more than 3 million businesses of all sizes, sectors, and regions. Our members range from mom-and-
pop shops and local chambers to leading industry associations and large corporations.” About the U.S.
20, 2013). “Business Roundtable is an association of chief executive officers of leading U.S. companies
with more than $7.3 trillion in annual revenues and nearly 16 million employees.” About Us, BUS.
Amendment. The District Court for the D.C. Circuit dismissed NAM’s motion for summary judgment, and granted the SEC’s cross-motion for summary judgment. The Industry Group filed an Appeal in September of 2013. The D.C. Circuit Court of Appeals granted expedited scheduling since effected issuers will be filing their first Form SD around May 2014. Oral Argument is set for February 20, 2014.

Scholars spoke out about the SEC’s involvement in humanitarian, rather than financial, issues as well. The Final Rule’s requirements create additional governance and financial burdens for issuers that use conflict minerals as a necessary part of their manufacturing. Scholars believe these burdens will negatively impact commerce “without demonstrating market-based reasons for doing so.”

The burden lies in the timeline for implementation of the Final Rule. Issuers were expected to comply with the Final Rule for the fiscal year of 2013. Such a timeline granted an issuer five months to implement new governance procedures, account for the fiscal cost of implementation, install or upgrade technology systems, and begin to gather data from suppliers. The financial cost is undetermined. Financial estimates by various parties leave issuers with no basis for business planning. The SEC estimates a cost of $71.2 million, while the University Group estimate totals $7.93 billion. The University Group claims that the discrepancy results from the SEC underestimating “the implementation cost, in part because it

159. NAM v. SEC, No. 13cv-635 (RLW), slip op., at 2.
162. See generally Conflict Minerals, 77 Fed. Reg. at 56,279–82 (recognizing that these burdens of compliance are all too apparent).
163. Seay, supra note 161, at 11.
165. Id. at 56,274.
166. Id. at 56,336.
167. Id. at 56,338; Seay, supra note 161, at 12.
does not take into account the range of actors affected by the statutory law.”

One major flaw in § 1502 and the Final Rule is a governmentally sanctioned private solution to a foreign problem. That is, the United States Congress is requiring private sector manufacturers to disclose supply chains for conflict minerals in order to mitigate the corruption in the DRC. As the Information Technology Industry Council stated, “the terrible conflict [in the DRC] is rooted in the wholesale absence of basic governance, security and accountability in the DRC, which allows age-old ethnic tensions and conflicts over land rights to rage unabated.” Surely, the private sector in the U.S. cannot solve an age-old conflict. In fact, the passage of § 1502 caused further militarization of the mining industry in the DRC. As a result of § 1502, the Malaysian Smelting Corporation (“MSC”) refuses to purchase Congolese tin. This deleteriously affects Congolese artisanal miners and, by proxy, their families. Miners work under poor conditions for a pittance of pay. Mining jobs, however, are often the only paid jobs available in the Eastern regions of the DRC. These workers are left with few options as a result of the MSC de facto boycott of Congolese tin. Options for most Congolese are: attempt surviving on subsistence farming; join the militia; or shift to mining gold, which is easier to smuggle than other conflict minerals. Section 1502 and the Final Rule forced an estimated 5–12 million Congolese civilians into dire economic straits. Parents cannot afford school for their children and the sick cannot afford their medical bills. Furthermore, while limiting tin mining in the DRC, gold smuggling continued or increased. Though the Final Rule has yet to be implemented, it appears to have had an adverse

169. Id. at 12.
170. Id.
172. Seay, supra note 161, at 12.
173. Id. at 13.
174. Id. at 14. “The MSC Group is currently one of the world’s leading integrated producers of tin metal and tin based products and a global leader in custom tin smelting since 1887.” About Us, MALAYSIA SMELTING CORP. BERHAD, http://www.msmelt.com/abt_cp.htm (last visited June 20, 2013).
175. Seay, supra note 161, at 12–16.
176. Id. at 14.
177. Id.
178. Id. at 15.
179. Id.
180. Id.
181. Id.
182. Id.
effect. In passing § 1502 and the Final Rule, Congress and the SEC undoubtedly intended to improve the lives of Congolese people; however, it has yet to have a positive effect. Could other forms of social and environmental disclosure have similarly counterproductive economic impacts?

III. ENVIRONMENTAL AND SOCIAL DISCLOSURE AT HOME AND ABROAD

A. SEC Required Environmental Disclosure

The SEC required no specific environmental disclosure until the 1970s. This was primarily due to a general lack of broad public interest or pressure to address environmental issues and concerns. Congress implemented environmentally minded regulation, and required registered issuers to disclose environmental information as relates to environmental litigation liabilities and regulatory compliance and how each materially affects finances. Professor Mark Latham, a former environmental litigator, explains in his article, Environmental Liabilities and the Federal Securities Laws: A Proposal for Improved Disclosure of Climate Change Related Risks, how environmental law and regulation evolved to require environmental disclosure to the SEC.

The combination of new federal environmental legislation, greater state responsibility for environmental protection, and heightened public awareness resulted in the need for businesses subject to the federal securities laws now to consider potential liabilities arising from the new body of federal and state environmental protection programs in the information included in required disclosures to the SEC and investors.

On May 9, 1973 the SEC published a Federal Register notice to comply with the National Environmental Policy Act (“NEPA”). NEPA amended Forms S-1, S-7, S-9, 10-K, and 8-K. The SEC acknowledged “future

---

184. Id.
185. Id. at 677–78.
186. Id. at 647.
187. Id. at 679.
189. Id.
environmental compliance may have a material effect on the issuer’s expenditures, earnings or competitive position in the industry."\textsuperscript{190} It went on to require that “[e]xpenditures solely attributed to compliance with environmental provisions should be disclosed if material.”\textsuperscript{191} Item 101 of Regulation S-K, promulgated in 2002, gave guidance for following the aforementioned disclosure requirements.\textsuperscript{192}

Item 103 of Regulation S-K requires issuers to disclose “any material pending legal proceedings, other than ordinary routine litigation incidental to the business, to which the registrant or any of its subsidiaries is a party or of which any of their property is the subject.”\textsuperscript{193} Item 103 contains five guiding instructions.\textsuperscript{194} The fifth instruction requires that any proceeding:

arising under any Federal, State or local provisions that have been enacted or adopted regulating the discharge of materials into the environment or primary for the purpose of protecting the environment shall not be deemed “ordinary routine litigation incidental to the business” and shall be described if: (A) [s]uch proceeding is material to the business or financial condition of the registrant; (B) [s]uch proceeding involves primarily a claim for damages, or involves potential monetary sanctions, capital expenditures, deferred charges or charges to income and the amount involved, exclusive of interest and costs, exceeds 10% of the current assets of the registrant and its subsidiaries on a consolidated basis; or (C) [a] governmental authority is a party to such proceeding and such proceeding involves potential monetary sanctions, unless the registrant reasonably believes that such proceeding will result in no monetary sanctions, or in monetary sanctions, exclusive of interest and costs, of less than $100,000; provided, however, that such proceedings which are similar in nature may be grouped and described generically.\textsuperscript{195}

The SEC interpreted Item 103 of regulation S-K to specifically require disclosure of environmental liabilities as a part of MD&A.\textsuperscript{196}

Perhaps Item 103 was the opening salvo of the SEC’s socially-minded disclosure. Item 103 requires issuers to consider environmental litigation

\textsuperscript{190} Id.
\textsuperscript{191} Latham, supra note 183, at 681; Disclosure With Respect to Compliance With Environmental Requirements 38 Fed. Reg. at 12,100.
\textsuperscript{192} 17 C.F.R. § 229.101 (2013).
\textsuperscript{193} Id. § 229.103 (2013).
\textsuperscript{194} Id.
\textsuperscript{195} Id.
\textsuperscript{196} Latham, supra note 183, at 684–85.
and regulation compliance costs in its financial disclosure.\textsuperscript{197} The inclusion of these environmental factors, however, seems to align with the SEC’s purpose of protecting investors; maintaining fair, orderly and efficient markets, and facilitating capital formation.\textsuperscript{198} Issuers must also obtain an independent, certified accountant to audit financial statements issuers report registering securities and filing quarterly and annual statements.\textsuperscript{199} Litigating environmental liability and complying with environmental regulation may have material financial risk and, therefore, are logically included as part of the SEC’s regulatory scheme. This, however, has had effects beyond the SEC.\textsuperscript{200} Accounting practices regulation obligates public companies to disclose environmental information.\textsuperscript{201} The Financial Accounting Standards Board and the American Institute for Certified Public Accountants require accountants to audit the environmental liability and compliance costs securities issuers must disclose in financial statements for annual and quarterly reports under items 101 and 103 of Regulation S-K.\textsuperscript{202} Currently, the SEC requires environmental disclosure only in the traditional context of financial materiality, which means environmental disclosure is part of protecting the financial interests of investors. Congress expanded the scope of the SEC’s purely financial and investor related regulatory authority: Section 1502 of Dodd-Frank directs the SEC to regulate an international humanitarian concern. Perhaps environmental concerns are next.

\textbf{B. Social and Environmental Requirements in Foreign Jurisdictions}

If international trends serve as clues of whether the SEC will ask for non-financial environmental information as part of its disclosure regime, the answer may reasonably be yes. Expansion of regulatory disclosure

\begin{itemize}
  \item \textsuperscript{197} Id. at 685.
  \item \textsuperscript{199} Latham, supra note 183, at 686.
  \item \textsuperscript{200} Id. at 687.
  \item \textsuperscript{201} Id.
  \item \textsuperscript{202} Id. at 685–97. “The Financial Accounting Standards Board (FASB) has been the designated organization in the private sector for establishing standards of financial accounting that govern the preparation of financial reports by nongovernmental entities.” Facts About FASB, Fin. ACCT. STANDARDS Bd., http://www.fasb.org/facts/ (last visited Oct. 20, 2013). “The AICPA is the world’s largest member association representing the accounting profession, with more than 394,000 members in 128 countries and a 126-year heritage of serving the public interest.” About the AICPA, AM. INST. FOR CERTIFIED PUB. ACCCTS., http://www.aicpa.org/About/Pages/About.aspx (last visited Oct. 20, 2013); 17 C.F.R. § 229.101, 229.103.
\end{itemize}
beyond the financial boundaries is not new. Regulatory bodies in foreign jurisdictions began requiring social and environmental disclosure in 1977. Since that time several nations have followed in the same course. Currently, France, the United Kingdom, Sweden, Australia, Denmark, Brazil, Malaysia, China, South Africa, and Argentina all require companies to disclose information about social and environmental matters. These requirements vary, but, nonetheless, indicate a growing trend for increased social and environmental disclosure.

France is a leader in social disclosure. In 1977, France began to require social disclosure—the bilan social—in which companies report on 134 labor and employment related indicators. In 2001, companies trading on the French stock exchange began providing social and environmental information in annual reports. In 2002, the French government began to require sustainability reporting. The 2002 law also created liability for companies. Shareholders have standing if they have been injured by inaccurate or incomplete environmental disclosure. Unfortunately, these disclosure requirements are not well defined, so companies satisfy the requirements to varied extents. Additionally, “the French Government requires employees’ savings funds and public pension funds to define and disclose the social, ethical, and environmental criteria they use when investing.”

Similarly, Sweden established an environmental impact requirement in the annual reports for companies of a certain size in the 1999 Accountants Act. Under the Public Pension Funds Act of 2000, Sweden requires “national pension funds to draw up annual business plans that describe how environmental and ethical issues are considered in their investment decision making.”

---

204. Id. at 3.
205. Id. at 3–5.
206. Id.
207. Id.
208. Id. at 15.
209. Id.
210. Id.
211. Id.
212. Id.
213. Id.
214. Id. at 16.
215. Id. at 29.
216. Id.
Australia’s Corporations Act of 2001 “requires some disclosure by listed companies in their annual reports of violations of environmental legislation.” Since 1996, Denmark requires “companies with significant environmental impacts to publish green accounts.” In 2007, Indonesia passed “Article 74 of Indonesia’s Limited Liability Company Law [mandating] the companies involved in or affecting natural resources create and implement corporate social responsibilities programs.” Indonesian companies that do not implement social and environmental programs are subject to government sanctions. In 2004, Japan began requiring certain companies to report environmental indicators, such as “amount of greenhouse gas emissions, amount of release and transfer of chemical substances, and total amount of waste generation.”

Since 1999, The Netherlands requires companies to publish annual environmental reports outlining a company’s environmental performance, environmental management system, and quantitative data on all relevant pollutants of 170 specified substances emitted. Norway passed the Accounting Act in 1998, which requires Boards of Directors to report on “the external environment, the working environment and gender equality.” In 2007, Norway’s government went a step farther and required “the type and quantity of raw materials and energy used, type and quantity of polluting emissions, type and quantity of waste generated, and environmental degradation due to transportation” as a part of the Norwegian Accounting Standards. The United Kingdom passed the British Companies Act of 2006, which mandates environmental disclosure in the annual Business Review report “to the extent that they are important to understanding the company’s business.” The United Kingdom’s form of disclosure resembles that of the United States most, as it requires environmental information merely as it pertains to financial materiality.

Foreign jurisdictions require varying types and quantities of information. Foreign governments gradually waded into financial

217. Id. at 32.
218. Id. at 33 (internal quotations omitted).
219. Id.
220. Id.
221. Id.
222. Id. at 34.
223. Id.
224. Id.
225. Id. (internal quotations omitted).
226. Id.; Latham, supra note 183, at 684.
227. See generally Lydenberg & Grace, supra note 203 (analogizing to case studies from Brazil, France, Malaysia, South Africa and Sweden).
regulatory waters casting social and environmental nets.\textsuperscript{228} France began the trend with employment and work-place regulation and expanded the scope of social and environmental disclosure.\textsuperscript{229} The United States similarly required environmental disclosure in a single area of securities regulation—environmental disclosure as it relates to finances. Section 1502 of Dodd-Frank moved the SEC completely outside the bounds of capital markets and thereby, Congress expanded the SEC’s purview and empowered the SEC to regulate the humanitarian concerns of conflict minerals.\textsuperscript{230}

CONCLUSION

Section 1502 and the Final Rule are not the SEC’s first foray into social matters.\textsuperscript{231} The Foreign Corrupt Practices Act ("FCPA") addressed social and ethical issues of business dealings with foreign government officials.\textsuperscript{232} Essentially, the FCPA prohibits an issuer from bribing foreign officials to procure benefits or receive preferential treatment.\textsuperscript{233} The distinction between the FCPA and § 1502, however, lies in that the FCPA adheres to the SEC’s mission of ensuring fair markets.\textsuperscript{234} The FCPA pertains to this mission because a market in which an amoral issuer can gain advantage by paying off a foreign government is not fair, while other issuers conduct their business ethically.\textsuperscript{235} Section 1502 and the Final Rule however, fall entirely outside the bounds of the SEC’s investor-protecting mission.\textsuperscript{236} Former SEC Chairperson Schapiro “freely admitted that the subject matter is outside the SEC’s expertise.”\textsuperscript{237}

Support for supply chain disclosure in the context of conflict minerals and beyond also exists.\textsuperscript{238} One supporter of § 1502 and the Final Rule, David Schatsky, Founder of Green Research, states that “the conflict minerals provisions [are] an example of a trend that is affecting all

\begin{itemize}
\item \textsuperscript{228} Id. at 3.
\item \textsuperscript{229} Id.
\item \textsuperscript{230} 15 U.S.C. § 78m(p) (2006).
\item \textsuperscript{232} Id.
\item \textsuperscript{233} Id.
\item \textsuperscript{234} Id.
\item \textsuperscript{235} Id.; Black, supra note 161, at 1094. Black argues that the FCPA is outside the mission, though acknowledges the perspective that it is linked.
\item \textsuperscript{236} Black, supra note 161, at 1119.
\item \textsuperscript{237} Id.
\item \textsuperscript{238} Griffin et al., supra note 161, at 1; Conflict Minerals, 77 Fed. Reg. at 56,278; see generally Letter from David Schatsky, Founder, Green Research to Mary L. Shapiro, Chairwoman of the Sec. and Exch. Comm’n. (October 29, 2011) (outlining the case for stakeholders and policy makers to embrace supply chain disclosure for conflict minerals) (on file at sec.gov) [hereinafter Letter from Schatsky].
\end{itemize}
industries, not just those that rely on the so-called conflict minerals: that is, the obligation of companies to take responsibility for their supply chains.” 239 He goes on to discuss the importance of environmental disclosure in this model. 240 Mr. Schatsky’s comment regarding the Final Rule and conflict mineral disclosure begs the question of whether Congress will further expand the SEC’s ability to require disclosure beyond financial indicators. The question remains whether Congress will influence capital markets through the environmental considerations and concerns of investors.

Many foreign jurisdictions require varying levels of environmental disclosure. 241 The United Kingdom most resembles the United States, in that it requires inclusion of environmental information in annual reports “to the extent that they are important to understanding the company’s business.” 242 Congress passed Dodd-Frank, pushing the SEC past its original regulatory mission. 243 Section 1502 plants the seed for a humanitarian based legal nexus, forcing the private sector to address international humanitarian issues. 244 Similarly, Schatsky’s letter suggests that Congress should continue to grow the SEC beyond the realm of fiscal responsibility. 245 Schatsky recommends that the U.S. should begin to follow the example of foreign jurisdictions that require environmental impact disclosure. 246

Schatsky is not alone; the General Accounting Office (GAO) released a report in 2004, which suggested the SEC require greater environmental disclosure. 247 The GAO reports environmental disclosure strictly as a matter of fiscal materiality and liability limits environmental transparency and accountability. 248 The issue lies in determining “whether a low level of disclosure means that a company does not have existing or potential

240. Letter from Schatsky, supra note 236.
241. See generally Lydenberg & Grace, supra note 203 (highlighting examples of other countries that require forms of environmental disclosure).
242. Lydenberg & Grace, supra note 203, at 34 (internal quotations omitted); Latham, supra note 182, at 684.
243. Black, supra note 161, at 1119.
245. See Letter from Schatsky supra note 238 (arguing for policy makers to embrace the benefits of disclosure in meeting environmental and social goals).
246. Lydenberg & Grace, supra note 203; Schatsky, supra note 238.
247. GENERAL ACCOUNTING OFFICE, HIGHLIGHTS OF GAO-04-808, A REPORT TO CONGRESSIONAL REQUESTERS, ENVIRONMENTAL DISCLOSURE, SEC SHOULD EXPLORE WAYS TO IMPROVE TRACKING AND TRANSPARENCY OF INFORMATION (2004).
248. Id. at 2.
environmental liabilities, has determined that such liabilities are not material, or is not adequately complying with disclosure requirements.\textsuperscript{249} A web-based survey of thirty organizations that use disclosure information and companies that file with the SEC suggests the SEC should increase required environmental disclosure.\textsuperscript{250} Three areas of opportunity appeared to be most prevalent: “modifying disclosure requirements and guidance, increasing oversight and enforcement, and adopting non-regulatory approaches to improving disclosure.”\textsuperscript{251} Ultimately, Congress would have to appropriate additional SEC funds to strengthen its informational and oversight efforts.\textsuperscript{252} Such costs to tax payers would be in addition to the cost for issuers to comply with any heightened environmental disclosure.

One third of the experts surveyed stated that non-regulatory means for environmental disclosure are most appropriate for informing environmentally minded investors.\textsuperscript{253} Voluntary disclosure benefits companies who selectively release information about environmental impacts.\textsuperscript{254} The problem with voluntary environmental disclosure is that there is nothing that requires issuers to disclose all information—positive or negative.

Congress could empower the SEC to require environmental metrics and remove issuer discretion from the equation, as several foreign jurisdictions do.\textsuperscript{255} Japan, for example, requires disclosure of one’s total emission of greenhouse gas, amount of release and transfer of chemical substances, and total amount of waste generated.\textsuperscript{256} Japan’s metrics, however, are not all-inclusive. Other jurisdictions incorporate environmental governance measures, raw material use, and types of waste into reporting requirements.\textsuperscript{257} Japan’s metrics do provide a uniform set of standards.\textsuperscript{258} Congress empowered no agency to require a more concrete set of disclosure requirements, as it does with balance sheets.\textsuperscript{259} If it did, stakeholders would

\textsuperscript{249} Id.
\textsuperscript{250} Id. at 27.
\textsuperscript{251} Id. at 23.
\textsuperscript{252} Id. at 27.
\textsuperscript{253} Id. at 24.
\textsuperscript{255} See generally Lydenberg & Grace, \textit{supra} note 203 (providing examples of other countries that require forms of environmental disclosure).
\textsuperscript{256} Id. at 33.
\textsuperscript{257} Id.
\textsuperscript{258} Id.; Joseph B. Reid, \textit{Japanese Metric Changeover}, U.S. METRIC ASS’N http://lamar.colostate.edu/~hilger/international.html (last visited November 1, 2013); Marquis & Toffel, \textit{supra} note 253 at 1–2.
then be able to more objectively assess and compare companies based on their environmental performance, as opposed to the current statutory or disclosure regimes.\footnote{260}

Governance, compliance issues for boards of directors, and cost to taxpayers aside, the question remains whether the SEC ought to regulate environmental or social matters. The SEC’s mission is “to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.”\footnote{261} It remains to be seen whether purely social and environmental disclosure can help protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.

Congress might consider empowering the Environmental Protection Agency (EPA) with the power to require such disclosure, especially given the EPA’s mission: “to protect human health and the environment.”\footnote{262} The EPA does not have the power to require disclosure.\footnote{263} In 2001, the EPA started to influence public companies to disclose more environmental information, pursuant to Item 103, and to provide the SEC and companies with information about environmental compliance and liabilities.\footnote{264} If the EPA has this information at the ready, efficiency might suggest the EPA is the correct agency for disclosure.\footnote{265}

On the other hand, efficiency might suggest that filing all disclosures with the SEC creates a central place for individual investors to find

\footnote{260. Marquis & Toffel, supra note 254, at 1–2.}
\footnote{262. \textit{About EPA}, U.S. ENVTL. PROT. AGENCY, http://www2.epa.gov/aboutepa/our-mission-and-what-we-do (last visited Oct. 29, 2013) (stating: EPA’s purpose is to ensure that: all Americans are protected from significant risks to human health and the environment where they live, learn and work; national efforts to reduce environmental risk are based on the best available scientific information; federal laws protecting human health and the environment are enforced fairly and effectively; environmental protection is an integral consideration in U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy; all parts of society—communities, individuals, businesses, and state, local and tribal governments—have access to accurate information sufficient to effectively participate in managing human health and environmental risks; environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically productive; and the United States plays a leadership role in working with other nations to protect the global environment).}
\footnote{263. Latham, supra note 183, at 697.}
\footnote{264. Id.}
\footnote{265. Id.}
information they deem relevant. The SEC already has an online filing system called EDGAR.266

The Final Rule, however, distinguishes between financial and social reporting.267 Under the SEC’s traditional disclosure regime, financial information is disclosed in forms 10-Q and 10-K.268 The Final Rule creates Form SD—a separate form with which companies may disclose their conflict mineral supply chains.269 The SEC distinguishes between types of information in particular the types of filings; it seems to follow that issuers could readily report different information to different agencies. Over fifty filing forms exist that the SEC may require of companies, not including Form SD.270 Investors must cull through these forms to obtain the information they need (though the EDGAR system allows searching).271 If the SEC continues to add disclosure forms for every category of non-financial disclosure, or builds on the information required in Forms 10-K and 10-Q, it may become difficult for investors to pinpoint the information that is important to them. Furthermore, not only the quantity of the information, but the quality of information would likely change. If Congress prompts the SEC to expand what it requires in terms of purely social and environmental disclosure, this could fundamentally change the MD&A portion of annual and quarterly reports by changing what type of risk companies must assess. Currently, managers and directors must consider financial risk.272 Once the SEC’s disclosure purview includes social and environmental considerations, managers and directors will likely have to comment on the qualitative impact and risks of quantitative social and environmental impacts. Business executives may not be qualified or the appropriate people to comment on social and environmental matters.

It may help investors if Congress empowered agencies to require the disclosure matching their respective subject matters. Requiring companies to disclose all information—financial, environmental, and social—to the

---

266. See Conflict Minerals, 77 Fed. Reg. at 56,301 (pointing out that the reporting processes are different).
SEC deviates from the SEC’s mission to protect investors. There is great potential for investors to be overwhelmed by the quantity of information flowing into the EDGAR system. Investors may lose sight of their own financial interests in the mix of environmental and social disclosure. As Chairperson of the SEC White points out:

[when disclosure gets to be too much or strays from its core purposes, it can lead to ‘information overload’ – a phenomenon in which ever-increasing amounts of disclosure make it difficult for investors to focus on the information that is material and most relevant to their decision-making as investors in our financial markets.]

This would negate the SEC’s mission of protecting investors, maintaining fair, orderly and efficient markets, and facilitating capital formation. After all, as Frederick II famously said, “He who defends everything defends nothing.”

275. *Id.*