

**U.S. FRESH WATER LAW & GOVERNANCE IN THE
ANTHROPOCENE: A CRITIQUE OF THE RIPARIAN
RIGHTS LEGAL FRAMEWORK AS A BASIS FOR WATER
GOVERNANCE IN VERMONT**

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INTRODUCTION

The era of the Anthropocene¹ will challenge governments, legal frameworks, and resource management regimes to reexamine underlying

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1. The “Anthropocene” is a proposed term to describe the current geological epoch to capture “the central role of mankind in geology and ecology.” It was first suggested as a new geological epoch by P. J. Crutzen & E. F. Stoermer’s *The “Anthropocene.”* See Paul J. Crutzen & Eugene F. Stoermer, *The “Anthropocene,”* GLOBAL CHANGE NEWSL. (Int’l Geosphere-Biosphere Programme (IGBP),

structures and assumptions from the perspective of environmental limits.² One such system that will challenge these structures is the global hydrologic cycle.³ Within the U.S., issues of water use are traditionally viewed as relating to the concepts of ownership and property rights, and water use is primarily allocated to achieve economic development.⁴ As such, the legal framework and policy for addressing issues of water allocation, use, and quality is inadequate in the face of the ecological crises of the Anthropocene, and in fact played a direct role in creating these same crises.⁵

In this Essay, I examine the legal system of riparian rights, one of the primary doctrines in the U.S. for governing water rights, and its evolution to the regulated riparian system.⁶ Through an investigation into the current state of the riparian water rights system in Vermont, I examine how, in practice, the doctrine and corresponding statutory law do not adequately protect water resources. The system does not accurately account for the ecological limits embedded in the hydrologic cycle in deciding questions of water allocation, use, and quality in Vermont.⁷ Instead, the principle of “reasonable use” is employed to weigh economic development more heavily than ecological limits.⁸ I suggest that the riparian doctrine in Vermont, and in the U.S. more broadly, requires restructuring based on the principles of an environmental ethic in order to face the challenges of the Anthropocene to the hydrologic cycle.⁹

I. THE CHALLENGE OF THE ANTHROPOCENE TO FRESH WATER LAW

“Sic utere tuo, ut non alienum lædas.”

*—Justice Story, Circuit Justice*¹⁰

Stockholm, Swed.), May 2000, at 17 (discussing the reasoning behind coining and using the term “Anthropocene”).

2. See Mary Christina Wood, *Nature’s Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577, 577–78 (2007) (articulating how the current climate crisis requires humans to redefine the government’s obligations to protecting the environment).

3. See *id.* at 577 (stating that climate change will have detrimental effects on water resources).

4. See *infra* Part III (overviewing water law and its origins in the U.S.).

5. See *infra* Part II (analyzing the effect of the current legal regime on water issues).

6. See *infra* Part III.A (examining the evolution of riparian rights in U.S. jurisdictions).

7. See *infra* Part II (discussing the changing hydrologic cycle in the Anthropocene); *infra* Part IV (describing the current problems Vermont faces regarding water quality).

8. See *infra* notes 132–36 and accompanying text (noting that Vermont has long used a “reasonable use” standard when allocating water use permits).

9. See *infra* Part VI.A (explaining the foundational elements of a land ethic); see also *infra* Part VI.B (proposing to modify riparianism to support a land ethic).

10. Tyler v. Wilkinson, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827) (No. 14,312).

As the global community begins to comprehend the social, political, and environmental challenges of the Anthropocene,¹¹ we must bring into question the ability of traditional natural resource laws to allocate resources in a way that respects and restores the ecological boundaries of Earth's biophysical systems.¹² The above quote, *so use your own as not to injure another's property*, is the defining principle of one such set of laws, those based on the riparian doctrine in U.S. water law.¹³ According to the doctrine, a riparian landowner is given certain rights to the use of water abutting the landowner's land, but can only use water to the extent that it does not degrade the quality or quantity of the resource for any other riparian landowner.¹⁴ Due to the global nature of the hydrologic cycle and the fact that water is an essential resource for life, the entire human population, as well as the millions of species making up life on Earth, have a stake in the quantity and quality of fresh water.¹⁵

In this Essay, I explore the question of whether or not the riparian doctrine is capable of facing the threats to the hydrologic cycle—and therefore the threats to humanity's fresh water resources—in the Anthropocene.¹⁶ As I describe in Part II, this challenge consists of two general issues: current and historical levels of environmental degradation, such as water pollution or over-allocation, and increasing risk of extreme weather events and uncertainty in water supplies due to climate change.¹⁷

Through examining the historical foundations of the riparian doctrine and the modern day system of regulated riparianism, I argue that the riparian doctrine will need amendments to protect our water systems in the

11. See, e.g., Will Steffen, Paul J. Crutzen & John R. McNeill, *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature*, 36 *AMBIO: J. HUM. ENV'T*, Dec. 2007, at 614 (stating that “[i]nterest in [the Anthropocene] has escalated rapidly”).

12. See Wood, *supra* note 2, at 592, 595 (discussing how to reframe traditional environmental laws to protect natural resources).

13. See *infra* Part III.A (overviewing the principles of riparian rights in the U.S.).

14. See DAN A. TARLOCK ET AL., *WATER RESOURCES MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY* 111, 116 (5th ed. 2002) (quoting *Meng v. Coffey*, 93 N.W. 713, 717–18 (Neb. 1903)) (discussing the rights of owners of lands abutting waterways and noting that “[t]he law does not regard the needs and desires of the person taking the water solely to the exclusion of all other riparian proprietors”).

15. See *infra* Part II (analyzing the effects of the Anthropocene on the hydrologic system and the U.S. system of government).

16. See *infra* Part II.B (listing requirements for water legislation in the Anthropocene to address climate change).

17. KENNETH D. FREDERICK & PETER H. GLEICK, PEW CTR. ON GLOB. CLIMATE CHANGE, *WATER & GLOBAL CLIMATE CHANGE: POTENTIAL IMPACTS ON U.S. WATER RESOURCES* 2–4 (1999), https://www.c2es.org/site/assets/uploads/1999/09/clim_change.pdf.

Anthropocene. I will begin Part II by exploring the challenges of environmental degradation and deterioration to the global hydrologic system in the Anthropocene. In Part III, I provide an overview of fresh water law and the riparian doctrine in the U.S. In Part IV, I trace the evolution of the riparian doctrine to the current, modern-day system of regulated riparianism, using the fresh water legal system in Vermont as a case study. In Part V, I draw upon evidence—again from Vermont—to demonstrate flaws in implementation of this system for protecting fresh water resources in the State. Finally, in Part VI, I suggest modifications to the doctrine of riparian rights based on legally instating an environmental ethic that prioritizes ecological boundaries and enforces consequences when economic ends are pursued to the detriment of ecosystems.

II. THE HYDROLOGIC CYCLE IN THE ANTHROPOCENE

Humans are now the primary force altering the global freshwater cycle.¹⁸ This manipulation has dramatic impacts, affecting biodiversity, ecological functioning, food production, human health, and the regulation of the global climate system.¹⁹ The human interruption of the hydrologic cycle is one of the primary pieces of evidence cited for the formal recognition of the Anthropocene as the current geological epoch in Earth's history.²⁰ Humans are modifying both the terrestrial water cycle—through altering stream flow—and changing patterns of water evaporation and transpiration—through land use and land cover change.²¹ More specifically,

18. See generally Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, SCIENCE, Feb. 13, 2015, at 1259855-3, 1259855-7 [hereinafter Steffen et al., *Planetary Boundaries*] (depicting models of fresh water boundaries due to human consumption). The USGS provides a concise but important summary of the water cycle. *The Water Cycle: Summary, From USGS Water Science Basics*, U.S. GEOLOGICAL SURV., <https://water.usgs.gov/edu/watercycletouzбек.html> (last visited Apr. 14, 2019). The energy of the sun moves all of Earth's water through the global hydrologic cycle. *Id.* Though the cycle has no end or beginning, a proper explanation has a first step, so we begin with bodies of water, like the ocean or freshwater lakes. *Id.* Evaporation removes water particles from these bodies of water and transforms the water into vapor. *Id.* Then, as water precipitates in the form of rain or snow, it either enters a stream as surface runoff, infiltrates the ground, or solidifies into a snowpack, which may eventually melt as spring runoff or stay frozen as a glacier. *Id.* The water that infiltrates the ground may enter groundwater, or will be taken up by plants. *Id.* Next, water molecules either reenter the atmosphere through evaporation from a water body or the soil, or reenter the atmosphere through evapotranspiration. *Id.* Finally, gaseous water in the atmosphere condenses into clouds and the precipitation cycle begins anew. *Id.* The key point of this cycles is that it is global and it is not restricted to political boundaries. *Id.*

19. See Steffen et al., *Planetary Boundaries*, *supra* note 18, at 1259855-2 (explaining the changes in the Earth system and their various impacts).

20. Will Steffen et al., *The Anthropocene: Conceptual and Historical Perspectives*, 369 PHIL. TRANSACTIONS ROYAL SOC'Y A 842, 843 (2011) [hereinafter Steffen et al., *The Anthropocene*].

21. *Id.*

human development modifies the quantity and quality of runoff, infiltration rates of water into groundwater, general flow of water, and the spatial and temporal patterns of evapotranspiration of water back into the atmosphere.²² Humans are also significantly altering the nitrogen and phosphorous biogeochemical cycles, which are intricately tied to the water cycle and have dramatic effects on the health of lake ecosystems.²³

In the context of the Anthropocene, it is important to recognize that current and historical governance regimes allowed for the actions that significantly altered the planet's biophysical processes, such as the hydrologic cycle.²⁴ Therefore, to face the challenge of the Anthropocene to the hydrologic cycle, water governance regimes must restore the health of rivers, streams, and lakes to allow ecosystems to function. Furthermore, they must curtail current actions that continue to degrade water quality and quantity.²⁵ In addition to these issues, climate change exacerbates ecosystem degradation and deterioration in the Anthropocene due to increased concentrations of greenhouse gases in the atmosphere.²⁶

Climate Change and the Hydrologic Cycle

The most recent assessment report of the International Panel on Climate Change states that changes in precipitation and snow melt are altering the quantity and quality of hydrological systems.²⁷ According to a report on climate change and U.S. water resources, climate change will have large impacts on the spatial and temporal variability of precipitation, evapotranspiration, and runoff.²⁸ This translates into changes in the frequency, intensity, and cost of extreme events, such as a potential increase in the occurrence of and devastation due to flooding.²⁹ As temperature rises, rates of evapotranspiration will increase, which could lead to changes in

22. FREDERICK & GLEICK, *supra* note 17, at 7.

23. See Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14 *ECOLOGY & SOC'Y*, no. 2, 2009, Article No. 32, <http://www.ecologyandsociety.org/vol14/iss2/art32/> (explaining the effect that altering the nitrogen and phosphorus cycles has on lakes).

24. *Id.*

25. See *id.* (outlining the consequences of what happens when the hydrologic cycle is allowed to degrade).

26. *Climate Change and Environmental Degradation*, EUROPEAN COMM'N, https://ec.europa.eu/knowledge4policy/foresight/topic/climate-change-environmental-degradation_en (last visited Apr. 14, 2019).

27. Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2014: Impacts, Adaptation, and Vulnerability, Part A: Global and Sectoral Aspects* 4 (Christopher B. Fields et al. eds., 2014).

28. FREDERICK & GLEICK, *supra* note 17, at 4.

29. *Id.* at 23.

patterns of precipitation, runoff, and, paradoxically, an increase in both drought and flooding throughout the country.³⁰ With regard to water quality, climate change could contribute to warmer water temperatures and increased storm events.³¹ Warmer water temperatures threaten aquatic ecosystems.³² Additionally, the increase of urban and agricultural runoff from storm events increases pollution and sediment runoff into water bodies, which also threatens aquatic ecosystems.³³ Uncertainty in climate models makes it difficult to predict precise regional impacts of climate change, but it is clear that runoff is sensitive to variation in both temperature and precipitation.³⁴

Therefore, in the Anthropocene, we require water legislation that: (1) acts to curtail current environmental degradation; (2) acts to restore deteriorated ecosystems; and (3) addresses the potential increase of extreme events and water quality issues due to climate change.³⁵ Therefore, the question that I will explore in the remainder of this Essay is: Will the riparian doctrine, and the modern regulated riparian system of statutory permitting, be capable of protecting our fresh water resources and ecosystems in the Anthropocene?

III. BRIEF SURVEY OF FRESH WATER RESOURCE LAW IN THE U.S.

Water governance regimes are diverse and highly contextualized within historical, geographical, and political contexts.³⁶ In the U.S., water law was born out the increase of water-driven mills during the Industrial Revolution and the need to apply consistent law to disputes over access to water and the flow of the stream.³⁷ With a relatively sparse early population in the Eastern U.S. and abundant water sources, most states had few restrictions on water use as long as the diversion or use did not obstruct the natural flow of the river.³⁸ The doctrine of riparian rights emerged in this water abundant region, which gives certain rights under law to riparian

30. *Id.* at 7.

31. *Id.* at 29.

32. *See id.* (explaining that warm water holds less oxygen, which threatens aquatic life).

33. *Id.* at v.

34. *Id.*

35. *Id.* at 22, 29.

36. Joseph W. Dellapenna, *United States: The Allocation of Surface Waters*, in *THE EVOLUTION OF THE LAW AND POLITICS OF WATER* 189 (Joseph W. Dellapenna & Joyeeta Gupta eds., 2009) [hereinafter *The Allocation of Surface Waters*] (providing context for the state of U.S. governance regimes).

37. DAVID GETCHES ET AL., *WATER LAW IN A NUTSHELL* 16 (5th ed. 2015).

38. *Id.* at 18.

landowners bordering a watercourse.³⁹ The riparian doctrine is the basis of water law in twenty-nine states.⁴⁰

This stands in contrast to the other dominant water governance doctrine in the U.S.: prior appropriation.⁴¹ Under the doctrine of prior appropriation, water rights are afforded to an individual when that person puts a quantity of water to a “beneficial” use, landowner or not.⁴² The doctrine of prior appropriation follows the principle of “first in time, first in right,” giving superiority of rights to the earliest, or earlier users, whereas riparian rights treats all riparian landowners as equal in terms of right to water quality and quantity.⁴³

In all water governance regimes in the U.S., the nature of water as a moving resource challenges the traditional legal notions of property.⁴⁴ Tarlock, Corbridge, Jr., and Getches suggest that “[b]ecause of the physical nature of water, all water rights—riparian or appropriative—are correlative; the use of water must be shared among a wide class of claimants and water rights have a greater dimension of non-exclusivity compared to rights to land or to personal property.”⁴⁵ The courts invented these original doctrines to meet society’s needs at the time and place where they were needed.⁴⁶ Over the last century, as society’s needs changed, U.S. water law evolved.⁴⁷ Water law has transitioned from a basis in customary law and judicial decisions to a system of statutory law governing water allocation.⁴⁸ As legislatures started passing statutory law to govern water, building on the original common law doctrines, the systems of riparian rights and prior appropriation have become more difficult to discern.⁴⁹

39. *Id.* at 19.

40. *See id.* at 5–8 (describing the states’ varied implementations of the riparian doctrine).

41. *See id.* at 4. The doctrine of prior appropriation was developed in the Western states during the 19th century as miners and farmers expanded into an arid territory made up mostly of federally held lands. *Id.* at 4–6. Riparian rights, besides restricting rights to property owners, also restricted rights to those lands bordering a stream, river, or lake. *Id.* These restrictions did not make sense in the West with less water available and less private property. *Id.* This led to the development of a different set of governing principles. *Id.*

42. *Id.* at 5.

43. *Id.*

44. *Id.* at 1.

45. TARLOCK ET AL., *supra* note 14, at 388.

46. *See id.* at vii (addressing why the various states have developed different water regimes).

47. *See* GETCHES ET AL., *supra* note 37, at 1 (explaining how water law is a dynamic and ever-changing field).

48. *Id.* (highlighting how agencies and legislatures are the driving forces behind water law).

49. TARLOCK ET AL., *supra* note 14, at 262–63.

A. *The Nature of Riparian Rights and the Principle of Reasonable Use*

The riparian rights doctrine developed into a uniquely American doctrine primarily through tort cases in the eastern states.⁵⁰ The doctrine is a form of common property in which all individuals with legal access, based on riparian land ownership, are entitled to use the resource so long as they do not impinge on another riparian land owner's right to do the same.⁵¹

The nature of the riparian rights doctrine is well established.⁵² A riparian landowner's rights to water use include:

[T]he right to the flow of the stream; the right to make a reasonable use of the waterbody, provided reasonable uses of other riparian users are not injured; the right of access to the waterbody; the right to fish; the right to wharf out; the right to prevent erosion of the banks; the right to purity of the water; the right to claim title to the beds of non-navigable lakes and streams.⁵³

Theoretically, the right to the flow of the stream prescribes the American doctrine of riparian rights to a rule of "natural flow."⁵⁴ This declares that every riparian has the right to undiminished quantity and quality of water that flows past a given property.⁵⁵ Therefore, embedded within a riparian landowner's rights to use water is the duty to respect other riparian landowners' rights.⁵⁶ Additionally, because of the historical importance of navigation to commerce, the public has the right to use any navigable waters.⁵⁷ A landowner's riparian rights are subject to the landowner's duty to the public's common needs.⁵⁸

The principle of natural flow and the duty to respect other riparian landowner's rights would presumptively ban any development or use of the

50. See Joseph W. Dellapenna, *The Evolution of Riparianism in the United States*, 95 MARQ. L. REV. 54, 57–58, 60 (2011) [hereinafter *The Evolution of Riparianism*] (describing the tort case, *Merritt v. Parker*, 1 N.J.L. 460 (1795), and subsequent cases that defined riparianism in the U.S.).

51. *The Allocation of Surface Waters*, *supra* note 36, at 192.

52. GETCHES ET AL., *supra* note 37, at 21.

53. *Id.* at 21–22.

54. See *The Allocation of Surface Waters*, *supra* note 36, at 193 (explaining the theoretical and historical basis for "natural flow" in American jurisprudence).

55. *Id.*

56. See *id.* (inferring that permission must be given by all who have riparian rights, because A's riparian rights cannot "compel" B to submit B's riparian rights to A's riparian rights).

57. Merritt Starr, *Navigable Waters of the United States—State and National Control*, 35 HARV. L. REV. 154, 154 (1921).

58. *Id.* at 162.

water.⁵⁹ However, even in early expression of the riparian doctrine, as courts defined water law in response to the burgeoning number of new industrial uses of water in the 19th century, the “natural flow” principle was subject to exceptions on the basis of economic development.⁶⁰

A case in 1827, *Tyler v. Wilkinson*, remedied this issue by introducing the principle of “reasonable use.”⁶¹ In this dispute, a number of riparian mill owners claimed that the construction of an upstream dam diminished the quantity of water available to them.⁶² In deciding the case in favor of the defendants, Justice Joseph Story stated:

There may be, and there must be allowed of that, which is common to all, a reasonable use. The true test of the principle and extent of the use is, whether it is to the injury of the other proprietors or not. There may be a diminution in quantity, or a retardation or acceleration of the natural current indispensable for the general and valuable use of the water, perfectly consistent with the existence of the common right. The diminution, retardation, or acceleration, not positively and sensibly injurious by diminishing the value of the common right, is an implied element in the right of using the stream at all The maxim is applied, “Sic utere tuo, ut non alienum lædas.”⁶³

The principle of reasonable use is a deliberate departure from the natural flow principle, but an essential element of the U.S.’s riparian rights doctrine.⁶⁴ Therefore, owners of land abutting a watercourse are entitled to make “reasonable use” of the water, so long as the use does not cause unreasonable harm to another riparian landowner.⁶⁵

The American Restatement Second of Torts formalizes the standard principles applicable to defining “reasonableness” in riparian tort cases today, which are as follows:

(a) The purpose of the use,

59. See GETCHES ET AL., *supra* note 37, at 19 (explaining the natural-flow-uses effect on riparianism during the industrial revolution).

60. Anthony Scott & Georgina Coustalin, *The Evolution of Water Rights*, 35 NAT. RES. J. 821, 891–92 (1995).

61. *Tyler v. Wilkinson*, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827) (No. 14,312).

62. *Id.* at 472.

63. *Id.* at 474.

64. See GETCHES ET AL., *supra* note 37, at 18–19 (overviewing the transition from natural flow to reasonable use).

65. *Id.*

- (b) the suitability of the use to the watercourse or lake,
- (c) the economic value of the use,
- (d) the social value of the use,
- (e) the extent and amount of the harm it causes,
- (f) the practicality of avoiding the harm by adjusting the use or method of use of one proprietor or the other,
- (g) the practicality of adjusting the quantity of water used by each proprietor,
- (h) the protection for existing values of water uses, land, investments and enterprises, and
- (i) the justice of requiring the user causing harm to bear the loss.⁶⁶

In the application of the reasonable use principles—the purpose, the suitability, the economic value, and the social value of the use (principles (a) through (d))—are used to determine if a use is reasonable.⁶⁷ However, as evidenced in principles (e) through (i), reasonableness is also determined in relation to other riparian land owners and competing uses of water.⁶⁸ All riparian states follow some form of the reasonable use principle today.⁶⁹

B. Riparian Rights Today: Regulated Riparianism

Around the middle of the 20th century, increased demand on water due to urbanization and industrialization challenged the judicial-based enforcement and limitation of water rights solely for riparian landowners.⁷⁰ Additionally, in the 1970s, recognition of water's instream and ecological needs forced states to amend the traditional riparian doctrine.⁷¹ In response, many eastern states began to implement a new form of the riparian doctrine: regulated riparianism.⁷² Regulated riparianism takes a public property approach to allocating water systems that allows for more comprehensive water management.⁷³ Under regulated riparianism, water is allocated through a collective decision-making process; typically a state agency or

66. TARLOCK ET AL., *supra* note 14, at 124 (quoting RESTATEMENT (SECOND) OF TORTS: REASONABLENESS OF USE OF WATER § 850A (AM. LAW INST. 1979)).

67. GETCHES ET AL., *supra* note 37, at 34.

68. *Id.* at 34–35.

69. *The Allocation of Surface Waters*, *supra* note 36, at 194.

70. GETCHES ET AL., *supra* note 37, at 60–61.

71. *The Evolution of Riparianism*, *supra* note 50, at 83.

72. *Id.*

73. *See id.* at 87 (highlighting that states have moved from a common property approach to a public property approach).

department issuing permits for time-limited uses based on the reasonableness of the proposed use.⁷⁴ These permit systems are founded upon the principles of riparian rights and adopted the principle of reasonable use as an essential criteria for allocating a permit.⁷⁵

Another important evolution in this regime is that regulated riparianism determines the reasonableness of a use before a use is granted.⁷⁶ This is in contrast to the traditional structure of the riparian doctrine, where courts determine reasonableness of use only after use is challenged.⁷⁷ In a system of regulated riparianism, the state holds water in trust for the public.⁷⁸ State agencies enact this responsibility in planning for and protecting the public interest in waters and provisioning the water for public use.⁷⁹ In provisioning a body of water for public use, the State relies on the key principles of reasonable use: the purpose, the suitability, the economic value, and the social value of the use.⁸⁰

In 1997, the American Society of Civil Engineers published *The Regulated Riparian Water Code* to provide a blueprint for a modernized riparian system.⁸¹ The Society developed the Code specifically to face the challenges of population growth, environmental degradation, climate change, and increased water demand—without the availability of new water sources—in the 21st century.⁸² About half of the country's riparian states now allocate water using regulated riparianism, but most riparian states have implemented some degree of regulated riparianism through statutory permitting systems.⁸³

74. *The Allocation of Surface Waters*, *supra* note 36, at 200.

75. *Id.*; GETCHES ET AL., *supra* note 37, at 62.

76. See GETCHES ET AL., *supra* note 37, at 62 (explaining that states have shifted from common law, which is retroactive, to statutory law, which is adopted ahead of time).

77. See *The Evolution of Riparianism*, *supra* note 50, at 87 (emphasizing that reasonableness is determined ahead of time rather than at the time of a challenge in court).

78. *Id.*

79. *The Allocation of Surface Waters*, *supra* note 36, at 200.

80. See RESTATEMENT (SECOND) OF TORTS: REASONABLENESS OF USE OF WATER § 850A (AM. LAW INST. 1979) (setting out the listed factors as well as five other considerations).

81. See THE REGULATED RIPARIAN MODEL WATER CODE: FINAL REPORT OF THE WATER LAWS COMMITTEE OF THE WATER RESOURCES PLANNING AND MANAGEMENT DIVISION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS iii–iv (Joseph W. Dellapenna ed., 1997) (stating that the goal of the Model Water Code Project “was to develop proposed legislation for adoption by state governments” and attempting to, as much as possible, standardize the disparate language used by Eastern and Western states).

82. Robert E. Beck, *The Regulated Riparian Model Water Code: Blueprint For Twenty First Century Water Management*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 113, 113 (2000).

83. *The Allocation of Surface Waters*, *supra* note 36, at 200.

IV. THE CURRENT LEGAL AND REGULATORY FRAMEWORK FOR WATER RIGHTS IN VERMONT

As shown in the previous section, the traditional riparian doctrine and the evolving system of regulated riparianism consider public value, economic value, and suitability of a use in allocating water. As compared to private property systems, where a proprietor has nearly unlimited freedom in determining whether or not to develop an owned resource, both a common property (traditional riparian doctrine) and public property (regulated riparianism) system appear better suited for tackling the social and ecological challenges of the Anthropocene.⁸⁴ In order to better understand the modern day riparian system and the mechanisms through which water in the Anthropocene is allocated in the U.S., this section looks at the current state of the riparian doctrine in Vermont.

The State of Vermont abides by the riparian rights doctrine and allocates water today through a form of regulated riparianism.⁸⁵ Notably, in an 1827 Vermont Supreme Court decision, the State played a key role in the formation of the early riparian doctrine.⁸⁶ In *Martin v. Bigelow*,⁸⁷ the Vermont Supreme Court found that the need to develop the economy superseded the protection of prior uses of water.⁸⁸ Today, the Agency of Natural Resources and the Agency of Agriculture, Food and Markets share the governing of water allocation in Vermont through statutory permitting systems.⁸⁹ Additionally, federal legislation and acts affecting the environment are important components of water law in Vermont.⁹⁰

The Vermont Statutes prescribe the State to both the principle of natural flow and reasonable use in governing the regulation of stream

84. See *The Evolution of Riparianism*, *supra* note 50, at 86 (discussing the acceleration of pressure on water systems due to climate change and the shortcomings exhibited by traditional riparian systems).

85. See *Johns v. Stevens*, 3 Vt. 308, 315–16 (1830) (establishing that the State of Vermont would follow the riparian rights doctrine).

86. See *Martin v. Bigelow*, 2 Aik. 184, 197 (Vt. 1827) (defining Vermont's jurisprudence in favor of riparian rights and rejecting the common law approach).

87. *Id.*

88. *The Allocation of Surface Waters*, *supra* note 36, at 194 (citing *Martin v. Bigelow*, 2 Aik. at 187).

89. See Gail Osherenko, *Understanding the Failure to Reduce Phosphorus Loading in Lake Champlain: Lessons for Governance*, 15 VT. J. ENVTL. L. 97, 128 (2013) (stating that the Vermont Agencies of Natural Resources and Agriculture, Food and Markets are responsible for enforcement under a memorandum of understanding).

90. See L. Kinvin Wroth, *Six Flags Over Champlain: Starting Points for a Comparative Analysis*, 38 J. GREAT LAKES RES. 167, 167–68 (2012) (discussing the six legal regimes and various federal frameworks that affect water quality in Vermont).

flow.⁹¹ The State then enforces this policy through a permit system, certified by the Agency of Natural Resources, for any artificial regulation or alteration of stream flow.⁹² Prior to granting a permit, the Agency of Natural Resources determines if the permit is warranted by weighing whether the change will adversely affect public safety, significantly damage fish or wildlife, significantly damage the rights of riparian owners, or adversely affect those waters designated as outstanding resource waters.⁹³ Title 10 of the Vermont Statutes describes a similar permitting process for other water uses and creates the Department of Conservation at the Agency of Natural Resources to establish the State's water management policy.⁹⁴

With regard to water quality, Chapter 47 of the Vermont Statutes defines the State's water quality policy and the statutory permitting system for water pollution control.⁹⁵ The water quality policy of Vermont is to:

- (1) protect and enhance the quality, character and usefulness of its surface waters and to assure the public health;
- (2) maintain the purity of drinking water;
- (3) control the discharge of wastes to the waters of the State, prevent degradation of high quality waters and prevent, abate or control all activities harmful to water quality;
- (4) assure the maintenance of water quality necessary to sustain existing aquatic communities;
- (5) provide clear, consistent, and enforceable standards for the permitting and management of discharges;
- (6) protect from risk and preserve in their natural state certain high quality waters, including fragile high-altitude waters, and the ecosystems they sustain;

91. VT. STAT. ANN. tit. 10, § 1001 (2018).

92. *Id.* § 1022.

93. *Id.* § 1023.

94. Lara D. Guercio, *Struggle Between Man and Nature—Agriculture, Nonpoint Source Pollution, and Clean Water: How to Implement the State of Vermont's Phosphorous TMDL Within the Lake Champlain Basin*, 12 VT. J. ENVTL. L. 455, 493–94 (2010) (discussing Vermont's Title 10 in the context of the State's stormwater management program).

95. *See* VT. STAT. ANN. tit. 10, § 1250 (detailing Vermont's water quality policy); *Id.* §§ 1263, 1265, 1267–68 (detailing Vermont's permitting system).

- (7) manage the waters of the State to promote a healthy and prosperous agricultural community, to increase the opportunities for use of the State's forest, park, and recreational facilities, and to allow beneficial and environmentally sound development.

It is further the policy of the State to seek over the long term to upgrade the quality of waters and to reduce existing risks to water quality.⁹⁶

Vermont's water quality policy can be seen as a reinterpretation of the principle of reasonable use.⁹⁷ It is evident from the above policy that the water legislation in the State seeks to accomplish the following: protect the usefulness and quality of water for societal use; control pollution of waterways for ecological communities; and regulate pollution to promote economic value through "environmentally sound development."⁹⁸ Furthermore, the policy explicitly goes above and beyond the principle of reasonable use to improve water quality over the long term.⁹⁹

To enforce the State's water quality policy, the Agency of Natural Resources has the power to grant discharge permits.¹⁰⁰ The Agency of Natural Resources vets and grants applications based on an investigative process similar to the previously described stream-flow-alteration permit.¹⁰¹ The applications are also subject to the federal Clean Water Act's National Pollution Discharge Elimination System.¹⁰²

Current State of Water in Vermont

As illustrated in the previous sections, the statutory language defining Vermont's modern regulated riparianism suggests that it is well equipped to balance the needs of ecosystems, society, and the economy in the Anthropocene. However, if we shift our perspective from the legislation and language defining the system to the actual functioning of the system in

96. *Id.* § 1250.

97. *See supra* Part III.B (exploring the modern changes to the reasonable use doctrine).

98. *See* VT. STAT. ANN. tit. 10, § 1250 (describing the goals of Vermont's water quality policy, including the ability to provide standards for permitting and managing discharges).

99. *Compare* note 96 and accompanying text (quoting Vermont's water quality policy), *with* notes 65–69 and accompanying text (summarizing the reasonable use principle).

100. VT. STAT. ANN. tit. 10, § 1263.

101. *See supra* notes 91–94 and accompanying text (describing Vermont's stream-flow-alteration permitting system).

102. *See, e.g.*, 33 U.S.C. § 1313 (2012) (discussing the National Pollution Discharge Elimination System permitting system and the requirements it places on states).

practice, we see a different picture emerge of regulated riparianism in the Anthropocene.

The State of Vermont has a serious water quality problem in the Lake Champlain Basin due to excessive phosphorous loading.¹⁰³ Lake Champlain is located on the northwestern border of Vermont and spans the international boundary between the U.S. and Canada, and, within the U.S., between Vermont and New York.¹⁰⁴ The lake is one of Vermont's most prized natural resources, but for the last few decades it has faced major environmental threats, including mercury pollution, invasive species, and, most notably, eutrophication from phosphorous pollution.¹⁰⁵ Eutrophication is the process in which excess phosphorous in a lake leads to an increase in plant and algae growth, producing algae blooms.¹⁰⁶ Algae blooms, in turn, negatively affect other aquatic life as the decomposition of the plant and organic matter decreases oxygen and sunlight levels in the lake.¹⁰⁷ This process continues to cause seasonal beach closures and threatens or kills fish throughout lake segments.¹⁰⁸ The primary sources of phosphorous in the Basin are discharges from wastewater treatment facilities, stormwater runoff from developed areas, and agricultural runoff.¹⁰⁹

On top of the statutory laws governing water pollution in the State, multi-party efforts have been made to tackle the issue of excess phosphorous in Lake Champlain.¹¹⁰ In 1988, the U.S. and Canada signed a Memorandum of Understanding to develop a joint approach to environmental protection of the Basin.¹¹¹ Then, in 1996, the Lake Champlain Basin Program was established to facilitate a basin-wide management approach to reducing phosphorous pollution.¹¹² Ultimately, in 2002, Vermont and New York created a joint phosphorous Total Maximum Daily Load (TMDL), or nutrient budget, for Lake Champlain as required by

103. LAKE CHAMPLAIN BASIN PROGRAM, 2018 STATE OF THE LAKE AND ECOSYSTEM INDICATORS REPORT 1 (2018), http://lcbp.org/sol18dev/wp-content/uploads/2018/06/2018-State-of-the-Lake_web.pdf.

104. Osherenko, *supra* note 89, at 97–98.

105. Daniel D. Dutcher & David J. Blythe, *Water Pollution in the Green Mountain State: A Case Study of Law, Science, and Culture in the Management of Public Water Resources*, 13 VT. J. ENVTL. L. 705, 712 (2012).

106. William Bowden, *Background Facts: Role of Phosphorus in Lake Champlain Pollution*, 17 VT. J. ENVTL. L. 501, 502 (2016) (explaining that high phosphorous content can lead to algae blooms).

107. Osherenko, *supra* note 89, at 99.

108. *Id.* at 98.

109. *Id.* at 99.

110. *See* Wroth, *supra* note 90, at 172 (discussing the multiple players on the federal, state, and international levels, involved in lowering the phosphorous levels in Lake Champlain).

111. *See id.* (describing the 1988 Memorandum of Understanding).

112. *See id.* (reviewing the establishment of the Lake Champlain Basin Program).

the Federal Clean Water Act.¹¹³ Then, in 2011, the Environmental Protection Agency, which oversees implementation of the Clean Water Act, disapproved Vermont's portion of the TMDL for Lake Champlain over concerns that it did not provide sufficient reasonable assurances that the plan would achieve its target reductions in phosphorus runoff levels.¹¹⁴ Finally, in 2016, the State produced a new TMDL to achieve a clean Lake Champlain, and also passed legislation in 2015—Act 64: the Vermont Clean Water Act—to achieve the targets in the new TMDL.¹¹⁵ In Act 64, there are a number of new permits for water quality, such as a general permit for stormwater discharges from municipal roads¹¹⁶ and a general stormwater permit for discharges from impervious surfaces three acres or larger in area.¹¹⁷ It should also be noted that a recent 2018 update to the Title 10 statute includes revisions to the Department of Environmental Conservation's permitting process, such as standards for public notice, public meetings, and other forms of transparency in permitting decisions.¹¹⁸ However, these new permits, permitting procedure revisions, and the legislation do not alter the principles upon which permits are approved and allocated.¹¹⁹

With multiple decades of work, and millions of dollars of investment, many of Lake Champlain's thirteen lake segments still have average phosphorous concentrations in excess of established targets.¹²⁰ We expect this to be the case for many years, even if land management improves, due to time lags in the movement of phosphorus throughout the watershed.¹²¹ Additionally, flooding in 2011 caused phosphorous levels to spike to some of the highest concentrations observed since 1990.¹²²

Despite Vermont's efforts to create socially, ecologically, and economically sound legislation, the regulated riparian system has been failing Vermont in protecting the State's water from phosphorous

113. *Id.*

114. Kari Dolan, *The Importance of Inter-Agency Collaboration and Public Engagement in the Development of the Implementation Plan for the Nonpoint Source-Focused Vermont Lake Champlain Phosphorus TMDL*, 17 VT. J. ENVTL. L. 663, 664, 667 (2016).

115. *Id.* at 676–77.

116. VT. STAT. ANN. tit. 10, § 1264(g)(1)–(2) (2018).

117. *Id.* § 1264(g)(3).

118. *See id.* § 7701 (detailing permitting procedures for the Department of Environmental Conservation).

119. *See* Osherenko, *supra* note 89, at 111 (giving an example of an agency issuing permits based on compliance with technological standards rather than based on the receiving water conditions).

120. LAKE CHAMPLAIN BASIN PROGRAM, *supra* note 103, at i, 10–11.

121. Donald W. Meals et al., *Lag Time in Water Quality Response to Best Management Practices: A Review*, 39 J. ENVTL. QUALITY 85, 85 (2010).

122. N.Y. STATE DEP'T OF ENVTL. CONSERVATION, LAKE CHAMPLAIN PHOSPHORUS REDUCTION PLAN NEW YORK 11 (2014), http://www.dec.ny.gov/docs/water_pdf/lcbprp2014draft.pdf.

pollution.¹²³ This suggests that regulated riparianism—as implemented in Vermont—is not yet capable of protecting freshwater resources in the State given the challenges of the Anthropocene.¹²⁴ I explore this further in the following section.

V. DECONSTRUCTION OF THE PRINCIPLE OF REASONABLE USE IN VERMONT

Recall the three necessities introduced earlier for water law in the Anthropocene: (1) curtailing current environmental degradation; (2) restoring deteriorated ecosystems; and (3) addressing the potential increase of extreme events and water quality issues due to climate change.¹²⁵ The regulated riparian system in Vermont is struggling to meet these three requirements.¹²⁶ Vermont statutory permitting systems have yet to significantly decrease the current level of phosphorous entering Lake Champlain (requirement 1).¹²⁷ The permitting systems have not restored deteriorated lake ecosystems from the damage of historical phosphorous pollution (requirement 2).¹²⁸ Finally, the system has yet to protect against the potential impacts of climate change, including increased eutrophication from rising lake temperatures and increased stormwater runoff from extreme weather events (requirement 3).¹²⁹ Although there have been significant updates, both in legislation to protect clean water and in increased capacity of agencies to track and enforce the State’s clean water laws, there have not been significant changes to the regulated riparianism permitting process in the State.¹³⁰

Daniel Dutcher and David Blythe suggest that in Vermont, the legal structure for regulating water use and pollution is sound, but the implementation of the regulatory framework is flawed.¹³¹ This flaw in implementation, they suggest, is due to the fact that the development policy of the State heavily influences decision making regarding water policy:

123. See Wroth, *supra* note 90, at 172 (discussing how Vermont state law still allows an excess of phosphorous to enter into Lake Champlain).

124. See *infra* Part V (analyzing the effects of regulated riparianism in Vermont and its effectiveness in protecting freshwater resources).

125. See *supra* note 35 and accompanying text (listing three requirements to fix the water system in the Anthropocene).

126. See *infra* notes 127–29 and accompanying text (examining limitations in Vermont’s efforts to prevent degradation, restore ecosystems, and prepare for issues caused by climate change).

127. LAKE CHAMPLAIN BASIN PROGRAM, *supra* note 103, at 11.

128. *Id.* at 14.

129. Dutcher & Blythe, *supra* note 105, at 713, 715.

130. See *supra* Part VI (analyzing the current state of Vermont’s water laws).

131. Dutcher & Blythe, *supra* note 105, at 723.

“For a generation, government officials have been telling Vermonters what they have wanted to hear—that the state is working to bring Vermont’s waters back, but that, at the same time, government regulation and planning will not stand in the way of anyone’s economic interest.”¹³²

This preference can be traced back to the early riparian doctrine in the State of Vermont.¹³³ In the case of *Martin v. Bigelow*, the Vermont Supreme Court defined economic value as a key component of the principle of reasonable use.¹³⁴ As shown in Part IV above, the statutory permitting system regulating water quality in Vermont employs the principle of reasonable use to determine whether or not to allocate a water use or discharge permit.¹³⁵ Theoretically, the four core considerations of the principle of reasonable use (the purpose, suitability, and economic and social values of the use) are to be weighed equally in determining if a given use is reasonable.¹³⁶ However, if a state agency, elected official, or administration favors economic development over the ecological boundaries and public interest in a water body, the test of reasonable use is the legal tool through which the permit granting authority can legally enforce this bias.¹³⁷

During Vermont Governor Jim Douglas’s 2003–2011 administration, a very heated time for water quality policy in the State, the governor promoted a “Third Way” of managing environmental problems in the State.¹³⁸ Douglas’s “Third Way” is one in which “protecting the environment would not interfere with economic growth.”¹³⁹ Dutcher and Blythe¹⁴⁰ and Gail Osherenko¹⁴¹ both point to a series of court cases in the early 2000s that clearly demonstrate this preference for economic development over the purpose, suitability, and social value of water uses on behalf of the administration. While this series of lawsuits occurred a number of years ago and should not be taken as an example of the current administration in Vermont, it does clearly demonstrate the challenges in

132. *Id.* at 754.

133. *See, e.g.,* *Martin v. Bigelow*, 2 Aik. 184, 185, 187 (Vt. 1827) (reasoning that the right to operate a mill was within “the ordinary purposes of life”).

134. *The Allocation of Surface Waters*, *supra* note 36, at 194 (citing *Martin v. Bigelow*, 2 Aik. at 187).

135. VT. STAT. ANN. tit. 10, § 1001 (2018).

136. *See supra* text accompanying note 68 (explaining how these principles of reasonable use are weighed by a decision maker when determining reasonable use).

137. *See* VT. STAT. ANN. tit. 10, § 1011 (stating that administration of water policy is to be consistent with reasonable use of riparian rights).

138. Dutcher & Blythe, *supra* note 105, at 738.

139. *Id.*

140. *Id.* at 724, 728, 732.

141. Osherenko, *supra* note 89, at 111.

applying the reasonable use principle in a regulated riparianism system to protect water resources.¹⁴²

In the 2001 *In re Hannaford* case, the Conservation Law Foundation sued the Vermont Agency of Natural Resources over a stormwater discharge permit issued for a proposed commercial shopping development in South Burlington.¹⁴³ The Conservation Law Foundation contended that the new development would discharge into stormwater impaired waters that did not have cleanup plans in place, as required under the Clean Water Act.¹⁴⁴ The Water Resources Board decided in favor of the Conservation Law Foundation and no new discharges permits would be allowed that discharge into impaired streams in the absence of a TMDL.¹⁴⁵ In response, developers went up in arms claiming that the decision would shut down all new development.¹⁴⁶

Following the *Hannaford*¹⁴⁷ decision, the Vermont Legislature created new stormwater laws to allow the Agency of Natural Resources to issue Watershed Improvement Permits.¹⁴⁸ This permit process bypasses the need for a cleanup plan or TMDL for impaired streams and allows continued issuing of stormwater discharge permits to new developments.¹⁴⁹ Then in 2002, again environmental groups challenged the Agency of Natural Resources in the case *In re Morehouse Brook*, this time with regard to issuance of Watershed Improvement Permits.¹⁵⁰ The environmental groups claimed that Watershed Improvement Permits essentially allowed the Agency to issue discharge permits into impaired waters without a cleanup plan.¹⁵¹ Again, the Water Resources Board sided with environmental groups and required the Agency of Natural Resources to develop TMDLs.¹⁵²

The Agency of Natural Resources finally agreed to undertake the time-consuming process of developing TMDLs for stormwater-impaired

142. See Dutcher & Blythe, *supra* note 105, at 724–25, 728 (discussing the *Hannaford Bros.* and *Morehouse Brook* decisions by the Vermont Water Resource Board); see also Osherenko, *supra* note 89, at 112 (examining the Conservation Law Foundation’s attempt to force the Vermont Water Resource Board to adopt a TMDL).

143. *In re Hannaford Bros. Co.*, No. WQ-01-01, at 1 (Vt. Water Res. Bd. June 29, 2001).

144. *Id.* at 2; see 33 U.S.C. § 1313(d) (2012) (discussing the TMDL requirements in the Clean Water Act that were at the heart of the Conservation Law Foundation’s suit).

145. Dutcher & Blythe, *supra* note 105, at 725.

146. Osherenko, *supra* note 89, at 111–12.

147. *In re Hannaford Bros. Co.*, No. WQ-01-01, at 1.

148. Dutcher & Blythe, *supra* note 105, at 727.

149. *Id.*

150. *In re Morehouse Brook*, Nos. WQ-02-04, WQ-02-05, WQ-02-06, WQ-02-07, at 1 (Vt. Water Res. Bd. Dec. 19, 2002).

151. See *id.* at 3–4 (discussing how the State issued Watershed Improvement Permits without the required compliance plans).

152. Osherenko, *supra* note 89, at 112.

streams.¹⁵³ Ever conscious of shutting down the development process, the Agency immediately set to work developing an interim permitting process during TMDL development.¹⁵⁴ The Legislature agreed to allow permits to be issued and allowed for the use of offsets to maintain the standard of no new or increased pollution.¹⁵⁵ Essentially, the Agency of Natural Resources achieved the goal of allowing stormwater discharge permits for new development at the expense of water quality.¹⁵⁶

Under regulated riparianism, it is illegal for a landowner to discharge stormwater into polluted waters or to degrade the quality of a watercourse without proving “reasonable use.”¹⁵⁷ In these two cases, the judicial system acted in an effort to uphold the social and ecological principles of reasonable use, but the Agency of Natural Resources and the legislative branch continued to create work-arounds to favor economic development.¹⁵⁸ With the weight of “reasonableness” first in the hands of agencies issuing permits, society must pay greater attention to how reasonable use is applied in practice in order to prevent ecological degradation before it begins.¹⁵⁹

Reasonable Misuse

The current articulation of riparian rights in Vermont allows agencies to use a broad range of interpretations in deciding what constitutes a reasonable use.¹⁶⁰ This flexibility of interpretation—if the State’s goal is environmental protection and restoration combined with, but never at the cost of, economic development—allows agencies to continue to grant permits that increase discharges into the State’s impaired waters.¹⁶¹

153. See Dutcher & Blythe, *supra* note 105, at 731 (stating that the Agency of Natural Resources agreed to develop TMDLs).

154. See *id.* (explaining that the Agency of Natural Resources had to develop interim permitting while developing TMDLs); *cf.* VT. STAT. ANN. tit. 10, § 1264c (2010) (providing for the interim nature of § 1264c by including a date of repeal).

155. Dutcher & Blythe, *supra* note 105, at 731.

156. *Id.*

157. See *The Evolution of Riparianism*, *supra* note 50, at 85–87 (explaining how reasonable use works in regulated riparianism).

158. See Dutcher & Blythe, *supra* note 105, at 728–29 (discussing how the Agency of Natural Resources attempted to work around environmental law requirements in favor of economics).

159. See GETCHES ET AL., *supra* note 37, at 4 (highlighting how agencies have the authority to allocate permits in most riparian systems).

160. Evan Mulholland, *Groundwater Quantity Regulation in Vermont: A Path Forward*, 8 VT. J. ENVTL. L. 1, 1–12 (2006).

161. See *id.* (noting the leniency in Vermont’s water permitting system); see also Wood, *supra* note 2, at 592 (examining the issues with today’s permitting system).

Discharge permits are in essence the right to pollute.¹⁶² In the context of the Anthropocene, this right to pollute must be determined by the hydrologic cycle's ability to absorb and dilute nutrients or pollutants to a degree that it is not harmful to the ecosystems or the social systems dependent on the water.¹⁶³ The right to pollute should also include consideration of the potential alterations in the hydrologic cycle due to climate change.¹⁶⁴

This preference for economic development is not new in water resource policy, nor is it unique to regulated riparianism in Vermont.¹⁶⁵ In the 1990s, water policy analyst David Lewis Feldman defined the nation's water resource problems as "caused by a reliance upon narrow and often inappropriate acquisitive values that are harmful to nature and to the satisfaction of a wide range of human needs, including biological exigency and living in harmony with nature and in community with other people."¹⁶⁶ Therefore, the current model of regulated riparianism and the principle of reasonable use must be modified in order to create a water doctrine appropriate for protecting our global freshwater resources in the Anthropocene.¹⁶⁷

VI. ALTERNATIVE DIRECTIONS FOR VERMONT WATER LAW IN THE ANTHROPOCENE

Mary Christina Wood suggests that rather than create new environmental legislation to face our climate crisis, we reframe the role of government into a trust framework.¹⁶⁸ In doing so, we could utilize the current legal framework to transition the government's discretion to destroy the environment into an obligation to protect nature under the auspices of collective property rights.¹⁶⁹ In a similar way, Cormac Cullinan, in his book *Wild Law*, expresses a need to reframe our whole perception of the legal

162. See Clean Water Act, 33 U.S.C. § 1342 (2012) (describing the structure of the National Pollutant Discharge Elimination System).

163. See *supra* Part VI (explaining the importance of shifting legal frameworks in the Anthropocene).

164. See *supra* Part VI (discussing the importance of these considerations within the context of the Anthropocene).

165. See Jarret C. Oeltjen & Loyd K. Fisher, *Allocation of Rights to Water: Preferences, Priorities, and The Role of the Market*, 57 NEB. L. REV. 245, 247, 254–55 (1978) (detailing the theory of choosing economic development over water rights).

166. DAVE FELDMAN, WATER RESOURCES MANAGEMENT: IN SEARCH OF AN ENVIRONMENTAL ETHIC 2 (1995).

167. See Wood, *supra* note 2, at 594–95 (arguing that the future of the nation's resources depends on reframing the government).

168. *Id.*

169. See *id.* at 595 (arguing that by drawing on ancient trust concepts in property law, rather than statutory law, the government can more easily focus on protecting nature's rights).

system and society.¹⁷⁰ Cullinan advocates shifting focus from the welfare of humans to the welfare of the Earth Community.¹⁷¹

As a public property system, regulated riparianism is already imbued with a stronger sense of public trust than the traditional private property regimes, as referred to by Mary Christina Wood.¹⁷² The legal framework exists in Vermont to support water allocation that balances social, ecological, and economic well-being.¹⁷³ But in practice, the principle of reasonable use is vulnerable to interpretation by economically biased decision makers.¹⁷⁴ This economic preference has led to the current state of environmental degradation and continuing deterioration that we see in Lake Champlain.¹⁷⁵ To resolve this flaw in the doctrine, I propose two modifications that seek to reframe the role of water law in riparian states, while working within the existing regulatory structure: (1) legally define and enforce an environmental ethic, and (2) reintroduce the expanded concept of riparian into regulated riparianism.

A. Implementing an Environmental Ethic

To reframe regulated riparianism into a doctrine that reduces pollution, restores degraded ecosystems, and decreases vulnerability to climate change, the State of Vermont should implement an environmental ethic and enforce it with an anti-environmental degradation law. To begin, the State could define an environmental ethic based on Aldo Leopold's land ethic.¹⁷⁶

Leopold's foundational principle for guiding a land ethic is: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."¹⁷⁷ Leopold's land ethic reflects a responsibility for the health of the land—a sharp departure from thinking solely based upon economic terms.¹⁷⁸ Instead, the ethic encourages an examination of questions "in terms of what is ethically and

170. CORMAC CULLINAN, *WILD LAW: A MANIFESTO FOR EARTH JUSTICE* 117 (2d ed. 2011).

171. *Id.*

172. Wood, *supra* note 2, at 601–02 (explaining how the trust framework is a property concept, and how the property concepts support environmental protection while affirming one's property rights).

173. *See supra* notes 92–94 and accompanying text (outlining the statutory framework in Vermont that allows reasonable use principles to be applied by agency discretion).

174. *See supra* notes 158–59 and accompanying text (discussing various practices used by Vermont agencies that have enabled the deteriorated lake conditions).

175. *See supra* Part IV (discussing the flexibility in administration of water laws and the historical preference for economic development).

176. *See* ALDO LEOPOLD, *A SAND COUNTY ALMANAC* 239 (Oxford Univ. Press 1966) (proposing that ethics be extended to include the land as well as humans).

177. *Id.* at 262.

178. *Id.* at 262–63.

esthetically right, as well as what is economically expedient.”¹⁷⁹ This is not to say that there is no room for economic thought in the evaluation of a water use: in fact, Leopold recognizes that it is an important consideration.¹⁸⁰ However, economic value should be evaluated in conjunction with, and secondarily to, the impact of a use on the integrity, health, and functioning of the broader ecological community. Leopold suggests that “a system of conservation based solely on economic self-interest is hopelessly lopsided.”¹⁸¹ The current system in Vermont demonstrates the lopsidedness of a system driven by economic value.¹⁸²

However, an environmental ethic will take time and reinforcement to gain legitimacy within society.¹⁸³ To ensure that citizens and corporations act in accordance with the environmental ethic, Vermont could draw from Polly Higgins’s Ecocide Act to legally define a crime against the environment.¹⁸⁴ Higgins proposes to add ecocide as a fifth international Crime Against Peace, joining the already existing crimes of genocide, crimes against humanity, war crimes, and crimes of aggression.¹⁸⁵ Higgins’s Ecocide Act creates a legal framework through which parties can be held accountable and prosecuted for environmental destruction and degradation.¹⁸⁶ Additionally, Higgins has drafted the full text of a legal act to define, describe, and prosecute ecocide.¹⁸⁷ Vermont can draw from Higgins’s Ecocide Act to create a state level anti-degradation act. Such an act would enforce the use of an environmental ethic in defining reasonable use in regulated riparianism and punish individuals that degrade water resources.¹⁸⁸

Finally, to enforce a state-level anti-degradation act, the State must define environmental destruction and degradation based on ecological

179. *Id.* at 262.

180. *Id.* at 263.

181. *Id.* at 251.

182. *See* Osherenko, *supra* note 89, at 111 (discussing how the Agency of Natural Resources favors technology-based effluent limitations over environmental improvement).

183. *See generally* POLLY HIGGINS, *EARTH IS OUR BUSINESS: CHANGING THE RULES OF THE GAME XI* (2012) (explaining all of the steps that are necessary for an environmental ethic to take place in the present economic-oriented legal landscape).

184. *Id.* at 159.

185. *Id.* at XI.

186. *See generally id.* at 171–78 (laying out the sentencing guidelines for those convicted of ecocide).

187. *See generally id.* at 157–78 (outlining how the Ecocide Act defines, describes, and prosecutes Ecocide).

188. *See generally id.* (suggesting various methods the State of Vermont could potentially draw on to craft better anti-degradation legislation).

boundaries.¹⁸⁹ Here, Vermont can refer to planetary boundaries, which include global limits for, among others, climate change, biodiversity loss, the phosphorous cycle, the nitrogen cycle, and global freshwater use.¹⁹⁰ Researchers in the State can work to adapt these global system boundaries to state-level and watershed-level limits. This work is already underway in Vermont under the Clean Water Act.¹⁹¹ The research into the assimilative capacity of water bodies, as mandated under the Clean Water Act, can be used to legally define environmental degradation.¹⁹²

This three-part proposition—environmental ethic, anti-degradation law, and regional ecological-boundaries research—may seem unrealistic in the current political context.¹⁹³ However, small steps can be taken now to initiate a change in course towards a water doctrine that prioritizes the ecological challenges of the Anthropocene and an environmental ethic over economic development.¹⁹⁴ One such change would be to implement a two-stage test for reasonable use that enforces ecological boundaries as the first step in determining reasonable use.¹⁹⁵ In this two-stage test, the first test of reasonable use would be to investigate whether the proposed permit contributes to ecological degradation or inhibits ecological restoration. The test proceeds to the second stage if the permit would not contribute to ecological harm. In the second stage, the Agency considers the remaining three standard principles of reasonable use (the purpose and economic and social values) and determines the permit allocation. This initial change to a two-step test for reasonable use could start the process of transforming the Vermont permitting system into one based on an environmental ethic. Eventually, Vermont will require a legally enforced environmental ethic, anti-degradation law, and clear regional ecological boundaries to support life in the Anthropocene.¹⁹⁶

189. *See id.* (defining environmental destruction and degradation based on ecological boundaries within the context of the Ecocide Act).

190. Rockström et al., *supra* note 23; Steffen et al., *Planetary Boundaries*, *supra* note 18, at 860.

191. *See supra* Part IV (describing and analyzing Vermont's permitting system and how this system complies with the Clean Water Act).

192. *Id.*

193. *See supra* notes 177–88 and accompanying text (discussing Leopold's land ethic and suggesting the Ecocide Act as an enforcement mechanism); *see also supra* notes 187–92 and accompanying text (arguing for the establishment of anti-degradation laws and ecological boundaries).

194. *See supra* Part VI.A (proposing two-stages that can be used to address balancing water quality and the principles of reasonable use in the era of the Anthropocene).

195. *See supra* Part VI.A (proposing a two-stage test for determining reasonable use of water resources).

196. *See supra* Part V (showing the deterioration of reasonable use principles in Vermont that will need to be addressed in the era of the Anthropocene).

B. Expanding the Concept of Riparianism

The second modification I propose to the principle of reasonable use is to reintroduce the concept of a riparian landowner into regulated riparianism and expand the definition to include the whole of Earth's commonwealth of life. This modification works in conjunction with enforcing an environmental ethic.¹⁹⁷

In the transition from the traditional riparian doctrine to regulated riparianism, the concept of a riparian landowner was lost.¹⁹⁸ Although riparian rights still exist in their traditional sense for landowners in riparian states, the rights and duties of a riparian landowner are now embedded in a permit for most water uses.¹⁹⁹ The duty to respect other riparian landowners' rights and the rights of the public is replaced by the threat of a fine.²⁰⁰ As Higgins suggests, “[p]ermits to pollute protect the polluter, not the earth. Fines levied after the event, when caught exceeding acceptable levels of destruction, can be sidestepped, litigated or paid-off.”²⁰¹ By reintroducing the concept of a riparian landowner into the regulated riparian system, the State could reinstate a sense of duty and responsibility for the water user. However, the narrow definition of riparian landowner needs to be expanded to accurately account for the full range of life invested in the fresh water system.²⁰²

According to Peter Brown and Geoffrey Garver, the idea of a political commonwealth, “established to promote the common good,” can be extended to the whole of life on Earth to promote the principles of mutual respect and fairness.²⁰³ As water is an essential element for much of life on Earth, if the riparian concept were expanded to include Earth's commonwealth of life, the concept would more accurately reflect the vested interest of all life forms in water as a resource and the global nature of the hydrologic cycle.²⁰⁴ When the expanded riparian notion of Earth's

197. See *supra* Part VI.A (expanding the discussion on potential enforcement of environmental ethic legislation).

198. See *The Evolution of Riparianism*, *supra* note 50, at 85 (describing regulated riparianism).

199. *Id.* at 85, 87.

200. See *id.* at 87 (noting how regulated riparianism involves administrative processes and local government).

201. HIGGINS, *supra* note 183, at 6.

202. See *supra* Part V (discussing the “right to pollute” in the context of maintaining healthy ecosystems).

203. PETER BROWN & GEOFFREY GARVER, *RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY* 6 (2009).

204. *Cf. id.* (stating that the “commonwealth stresses the shared features of the community and interdependence of its members,” and the hydrologic cycle is a shared feature of Earth's biological community).

commonwealth of life is applied to the foundational maxim of the riparian doctrine—*so use your own as not to injure another's property*—the maxim transforms into an environmental ethic.²⁰⁵

Through implementing an expanded riparian concept to regulated riparianism and legally enforcing an environmental ethic, Vermont could create a new context in which state agencies prioritize ecological boundaries and the Earth's commonwealth of life over economic development. With these changes in place, the State could work within the existing legal structure for regulated riparianism to appropriately allocate water for the challenges of the Anthropocene.

CONCLUSION

Despite a well-written legal framework for balancing ecological, social, and economic needs in allocating water, the regulated riparianism regime in Vermont ultimately falls short of meeting the ecological priorities necessary for the Anthropocene.²⁰⁶ Vermont provides just one example of the challenges faced by the regulated riparianism doctrine in the Anthropocene, and it is likely that many other states face similar or even more dramatic challenges.²⁰⁷ The fact that, in practice, such environmentally sound legislation defers to economic, anti-ecological decisions, suggests that regulated riparianism as a doctrine needs to be revised.²⁰⁸ To update the doctrine, Vermont, and other riparian states, should reframe the role of government—and the riparian regime—around an environmental ethic that prioritizes respect for ecological boundaries over economic growth and development. From this re-grounded riparian regime, the current legal framework is well equipped to curtail current environmental degradation, restore deteriorated ecosystems, and protect against increased vulnerability to climate change in the Anthropocene.²⁰⁹

205. *See id.* (stating that a commonwealth promotes the interests of the common good rather than the individual); *see also supra* Part IV (discussing the principles of a land ethic); *supra* Part III.A (discussing the principles of riparian rights).

206. *See supra* Part IV (overviewing the current legal and regulatory framework for water rights and describing the current state of water in Vermont).

207. *See supra* Part IV (showing the shortcomings of Vermont's statutes at creating ecologically sound legislation for water resources).

208. *See supra* Part VI (explaining issues in Vermont under the riparian system).

209. *See supra* Part IV (describing the current legal framework in Vermont); *see also supra* Part V (applying a new theory of reasonable use to Vermont's framework).