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FINDING A PATH TO SUSTAINABLE WATER MANAGEMENT: WHERE WE'VE BEEN, WHERE WE NEED TO GO

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I. INTRODUCTION

Minnesota's very identity is linked to its water resources. The "land of 10,000 lakes"[1] takes its name from the Dakota term "Minnesota," meaning clouded or sky-tinted waters.[2] Minnesota sits "at the head of four continental watersheds and is the . . . origin . . . of three of these watersheds": the Red River of the North Basin, flowing into Hudson Bay; the Mississippi River Basin, flowing into the Gulf of Mexico; and the Great Lakes Basin, flowing through the St. Lawrence River to the Atlantic Ocean.[3] Its water resources include over 13.1 million acres of wetlands, approximately 12,000 lakes over 10 acres in size, and 63,000 miles of rivers and streams.[4] Minnesota has more shoreline than California, Florida, and Hawaii

1. *Minnesota*, NETSTATE.COM, http://www.netstate.com/states/intro/mn_intro.htm (last visited Jan. 19, 2013). In fact, Minnesota has over 11,842 lakes that are ten acres or larger. *Lakes, Rivers, and Wetlands Facts*, MINN. DEPARTMENT NAT. RESOURCES, http://www.dnr.state.mn.us/faq/mnfacts/water.html (last visited Jan. 19, 2013).

2. WARREN UPHAM, MINNESOTA GEOGRAPHIC NAMES: THEIR ORIGIN AND HISTORIC SIGNIFICANCE 3 (1920).

3. UNIV. OF MINN. WATER RES. CTR., MINNESOTA WATER SUSTAINABILITY FRAMEWORK 15 (2011) [hereinafter SUSTAINABILITY FRAMEWORK]; WATERS DIV., MINN. DEP'T OF NATURAL RES., MINNESOTA'S WATER SUPPLY: NATURAL CONDITIONS AND HUMAN IMPACTS 1 (2000).

4. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 15.

combined.[5]

This wealth of rivers, lakes, streams, and wetlands was central in shaping the heritage and the cultural identity of Minnesota's native and non-native populations. For example, Minnesota's North Woods waterways, which served as major transportation systems for Native Americans, the Hudson's Bay Company, and the American Fur Company, today form[6] the backbone of the Boundary Waters Canoe Area Wilderness; Voyageurs National Park; the Superior National Forest; the Chippewa National Forest; and the Grand Portage, Bois Forte, and Fond du Lac Chippewa Reservations. These same lakes and streams are the basis of Minnesota's cabin culture, as each summer for over a century Minnesotans vacate towns and cities to carry on their "romance" with Minnesota's lakes.[7] And in southern Minnesota and in the Red River Valley, on landscapes studded with prairie potholes,[8] an influx of European immigrants and settlers developed comprehensive drainage systems to make wetlands suitable for cultivation.[9]

Whether it's fishing, swimming, and recreating in our lakes and rivers; extracting drinking water; using our rivers to drive energy systems necessary for Minnesota businesses; draining wetlands for agriculture; or regulating flood waters, Minnesotans have operated from a paradigm of abundance—believing that water in this "land of 10,000 lakes" is virtually unlimited. This presumption has put increased pressures on our water resources, raising the question: "Are we loving our water resources to death?"

This article explores Minnesota's relationship with its water resources, the evolution of its water law and policy, and its struggles to manage its waters sustainably. Part II of this article discusses the parameters of sustainable water management. Part III of this article explores the evolution of Minnesota water law and policy

5. *Minnesota*, *supra* note 1.

6. *See generally* J. ARNOLD BOLZ, PORTAGE INTO THE PAST: BY CANOE ALONG THE MINNESOTA-ONTARIO BOUNDARY WATERS (1960) (discussing the history of Minnesota's northern boundary waters and modern wilderness canoeing experiences).

7. PAUL CLIFFORD LARSON, A PLACE AT THE LAKE 8 (1998).

8. By one count there were over ten million acres of federally owned "swamplands" in Minnesota pre-statehood. Mark J. Hanson, *Damming Agricultural Drainage: The Effect of Wetland Preservation and Federal Regulation on Agricultural Drainage in Minnesota*, 13 WM. MITCHELL L. REV. 135, 139–40 (1987) [hereinafter Hanson, *Damming Agricultural Drainage*].

9. *Id.* at 142–43.

from statehood to the state's present statutory schemes. In Part IV of this article we explore Minnesota's attempts at comprehensive revisions to its water law, and in Part V we discuss the barriers to sustainability identified by the *Minnesota Sustainability Water Framework*. We conclude with a suggestion for a path forward, to guide Minnesota in its quest to sustainably manage its water resources.

II. WHY SUSTAINABLE WATER LAW AND POLICY?

The management of water is an exercise in complexity. In Minnesota, for example, we ask water flowing through our forests, prairies, and communities to carry a heavy burden. A single drop of water flowing through the state may be called upon to meet multiple functions, including: provisioning households, businesses, and agricultural operations; providing aesthetic, cultural, and recreational opportunities; sustaining natural systems including forests, prairies, parks, and wildlife habitat; replenishing groundwater aquifers; providing flood protection; and sustaining hydrologic systems.[10]

Despite our national dependence on hydrologic systems and the ecosystems they sustain, water management has historically operated from a paradigm of "[s]tationarity—the idea that natural systems fluctuate within an unchanging envelope of variability."[11] Additionally, water policy in the upper Midwest assumes water is a limitless resource,[12] particularly in Minnesota where, because of our "10,000 lakes," we tend to operate from a paradigm of water abundance.[13] But recent data indicate the limits of this paradigm. Minnesota's water consumption, for example, is accelerating at a rate that exceeds our rate of population growth, with current consumption levels in over a third of Minnesota counties exceeding renewable water levels.[14] Simply put, current consumption levels are not sustainable.[15] Additionally, Minnesota faces considerable

10. *See generally* Geoffrey J. Syme et al., *Integrating Social Well Being into Assessments of Water Policy: Meeting the Challenge for Decision Makers*, 10 WATER POL'Y 323 (2008) (discussing the impact of water on human well-being).

11. P.C.D. Milly et al., *Stationarity Is Dead: Whither Water Management?*, 319 SCI. 573, 573 (2008).

12. *See* Oliver M. Brandes, *At a Watershed: Ecological Governance and Sustainable Water Management in Canada*, 16 J. ENVTL. L. & PRAC. 79, 79 (2005).

13. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 1.

14. *Id.* at 27.

15. *Id.*

water quality challenges, particularly from nonpoint sources of water pollution.[16] These challenges suggest that Minnesota, like many states, must find new ways to sustainably manage its waters.

A. Defining Sustainable Water Management

The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines water sustainability as the means "by which water resources and water services are able to satisfy the changing demand placed on them, now and into the future, without system degradation."[17] Meeting this challenge requires both meeting the needs of communities as well as maintaining the ecological, environmental, and hydrological integrity of aquatic systems.[18] This definition of sustainability closely parallels that adopted by the Minnesota Legislature, which has defined sustainable water use as water use that "does not harm ecosystems, degrade water quality, or compromise the ability of future generations to meet their own needs."[19]

For Minnesota, implementing this definition brings with it a new set of challenges. Many governments and governmental organizations have recognized these challenges and have established both principles and action agendas intended to guide a revisualization of international,[20] national,[21] and state water management, governance, and law. The *Minnesota Water Sustainability Framework* (*Sustainability Framework*), a project authorized by the Minnesota Legislature, for example, recommends that state water management and policy should be guided by eight core principles to achieve sustainability:

- Protect, maintain, and restore the biological, chemical, and physical health of the state's water

16. *Id.* at 17, 43–46.

17. Abel Mejía et al., U.N. Educ., Scientific, and Cultural Org., U.N. World Water Assessment Programme, Water and Sustainability: A Review of Targets, Tools and Regional Cases 4 (2012), *available at* http://unesdoc.unesco.org/images/0021/002171/217180E.pdf.

18. Daniel P. Loucks, *Sustainable Water Resources Management*, 25 WATER INT'L 3, 3 (2000).

19. Act of May 22, 2009, ch. 172, art. 2, § 30, 2009 Minn. Laws 2446, 2487.

20. *See* INT'L CONFERENCE ON WATER & THE ENV'T, DUBLIN STATEMENT ON WATER AND SUSTAINABLE DEVELOPMENT (1992), *available at* http://www.wmo.int/pages/prog/hwrp/documents/english/icwedece.html (last visited Jan. 19, 2013).

21. *See, e.g.*, Brandes, *supra* note 12 (discussing sustainable water management in Canada).

resources
- Provide resiliency to our ecosystems, our communities, and our economies
- Increase our understanding of our state water balance and the processes and stressors affecting it to provide for improved decision making
- Improve our capacity for water management that can adapt to new knowledge, changing biogeochemical systems, and long-term challenges
- Encourage sustainable, conservation-minded land use practices
- Recognize and honor our many uses of water, including recreational, cultural, and spiritual values
- Preserve our water-rich heritage and ensure our future legacy as national and international water stewards
- Provide for a lasting foundation to achieve and maintain sustainable water management.[22]

"Water governance is a major expression" of the sustainability paradigm[23] and will play a central role in Minnesota's ability to implement the core principles of sustainable water management. Although there is no general agreement surrounding what constitutes sustainable water governance, the water sustainability literature argues that sustainable water management requires:
- Decision-making constructs that embrace the goal of maintaining ecologically healthy watersheds;[24]
- Decision-making constructs that maintain and incorporate economic, community, and sociocultural goals;[25]
- Management in the context of the hydrologic system;[26]
- Sufficient flexibility in governance constructs and laws to enable the incorporation of new knowledge about the operation of hydrologic and natural systems as they change in response to human systems;[27]

22. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 12.

23. Jean Fried, *Water Governance, Management and Ethics: New Dimensions for an Old Problem,* 6 SANTA CLARA J. INT'L L. 1, 6 (2008).

24. Brandes, *supra* note 12, at 84; Loucks, *supra* note 18, at 6.

25. Loucks, *supra* note 18, at 6.

26. Brandes, *supra* note 12, at 84.

27. Min-Goo Kang & Gwang-Man Lee, *Multicriteria Evaluation of Water Resources Sustainability in the Context of Watershed Management*, 47 J. AM. WATER RESOURCES ASS'N 813, 815 (2011); Loucks, *supra* note 18, at 6.

- Development of a shared vision of desired social, environmental, and economic goals for both present and future generations of water management;[28]
- Collaborative decision making involving *all* stakeholders;[29]
- Adopting a systems approach to manage the interrelationships between natural and human systems;[30]
- Continuous monitoring and adjustment of policy and law in response to new information obtained through monitoring of natural systems;[31]
- Recognizing which decisions are best made at the local level and which decisions involve broader state objectives and are, therefore, better made at the regional or state level;[32]
- Adopting the polluter-pays principle;[33] and
- Adopting the precautionary principle.[34]

Additionally, addressing water sustainability requires major revisions to water law to permit states to protect ecosystems, reallocate water for more efficient use, limit the mining of aquifers, integrate water quality and quantity, and respond to natural crises.[35]

B. The Challenge

Water laws across the nation as well as in Minnesota are ill suited to meet these challenges. As illustrated below, Minnesota's water laws and policies were adopted over time to address specific challenges. This piecemeal, decades-long approach to water law

28. Loucks, *supra* note 18, at 6.
29. Fried, *supra* note 23, at 6; Loucks, *supra* note 18, at 6.
30. Loucks, *supra* note 18, at 6.
31. *Id.*
32. *Id.* at 6–7.
33. Fried, *supra* note 23, at 7. The polluter-pays principle means that a polluter should bear the cost of abating, avoiding, and remediating pollution for which the polluter is responsible. Eric T. Larson, *Why Environmental Liability Regimes in the United States, the European Community, and Japan Have Grown Synonymous with the Polluter Pays Principle*, 38 VAND. J. TRANSNAT'L L. 541, 545–50 (2005) (discussing the evolution of the polluter-pays principle in the United States, Europe, and Japan).
34. Fried, *supra* note 23, at 7. The precautionary principle is a principle in environmental law that encourages lawmakers to use precaution in such activities as approving chemical use and development projects in the face of unknown risks and scientific uncertainty. Jonathan R. Nash, *Standing and the Precautionary Principle*, 108 COLUM. L. REV. 494, 498–99 (2008).
35. A. Dan Tarlock, *Water Law Reform in West Virginia: The Broader Context*, 106 W. VA. L. REV. 495, 530 (2004).

has created as many problems as it has solved.[36] Early in Minnesota's history, the impact of water policy decisions on hydrologic and natural systems was often ignored.[37] More recently, Minnesota's water laws and policies, like those of many other states, were built on the premise that a natural balance exists in the environment that could sustain itself absent human interference.[38] Thus water laws and policies assume that natural systems, including hydrologic systems, are sufficiently resilient to adapt to changes imposed by human systems and to continue to function.[39] Minnesota's laws and policies reflect this presumption.

But the resilience of hydrologic systems has been compromised by built infrastructure, including dams, flood control projects, land cover, and land use change,[40] as well as by a patchwork of management authorities, laws, and policies. Laws and policies in particular have significantly impacted the resilience of hydrologic systems, in part because they are fragmented and insufficiently adaptive to incorporate new knowledge. Water law and policy is fragmented politically, geographically, geologically, by issue, and by program.[41] This fragmentation has led to policy gaps, conflicting water management goals, competing agendas, a lack of accountability, and a delinking of hydrologic systems from human systems and development.

Politically, for example, land use decisions that affect both water quality and use are divorced from laws that allocate water,

36. *See generally* UNIV. OF MINN. WATER RES. CTR., MINNESOTA WATER SUSTAINABILITY FRAMEWORK: POLICY TECHNICAL WORK TEAM REPORT (2011) [hereinafter POLICY TECHNICAL REPORT], *available at* http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_290479.pdf; Robert W. Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973 (1995).

37. Minnesota did not evidence a significant concern about the impact of policy decisions on natural systems until the mid-twentieth century. *See infra* text accompanying notes 346–53.

38. Fred P. Bosselman & A. Dan Tarlock, *The Influence of Ecological Science on American Law: An Introduction*, 69 CHI.-KENT L. REV. 847, 864–65 (1994).

39. Donald R. Nelson, W. Neil Adger & Katrina Brown, *Adaptation to Environmental Change: Contributions of a Resilience Framework*, 32 ANN. REV. ENV'T & RESOURCES 395, 398–99 (2007). Resilience "refers to the amount of change a system can undergo and still retain the same controls on function and structure while maintaining options to develop." *Id.* at 398.

40. Milly et al., *supra* note 11, at 573.

41. *See generally* Robert W. Adler & Michele Straube, *Watersheds and the Integration of U.S. Water Law and Policy: Bridging the Great Divides*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 1, 4–13 (2000) (discussing the impact of the fragmentation of water law and policy).

regulate water quality, and control and protect water resources.[42] Land use decision making has traditionally rested with local units of government,[43] while the overview of water policy is largely a state government prerogative. This is true for Minnesota, where land use planning falls within the purview of local units of government, including counties, cities, and townships.[44] The state has relatively little input in the placement of built infrastructure on the landscape, despite the fact that "there is compelling evidence that land use-related pollution of various kinds is the largest single source of aquatic ecosystem impairment in the United States."[45]

Water law and policy is also fragmented across programs. A recent evaluation of Canada's water management system identified water governance as a primary impediment to sustainable water management noting: "Despite its critical importance, water management, by senior government is characterized as a bewilderingly complex administrative galaxy where myriad public agencies share authority with little accountability and leadership. The resulting gridlock and inaction leads to a fundamental failure to address the underlying physical problems eroding freshwater ecosystems."[46] More recently, the *Sustainability Framework* Policy Team observed that Minnesota's water law and policy present a significant barrier to the achievement of water sustainability in Minnesota.[47]

III. WHERE WE'VE BEEN—A BRIEF HISTORY OF MINNESOTA WATER LAW

The geographic territory of the State of Minnesota was created by an amalgamation of sections of the Northwest Territory ceded to the United States by Virginia,[48] France (the Louisiana Purchase), and Great Britain (the Oregon Territory).[49] Extensive forest cover and prairie lands "punctuated" by wet areas characterized

42. *Id.* at 7.
43. *Id.*
44. MINN. STAT. §§ 394.232, 394.33, 462.351 (2010).
45. Adler & Straube, *supra* note 41, at 7.
46. Brandes, *supra* note 12, at 82.
47. *See generally* POLICY TECHNICAL REPORT, *supra* note 36.
48. State v. Adams, 251 Minn. 521, 549, 89 N.W.2d 661, 680 (1957). Under the deed of cession, the United States government held title to these territories until new states were formed and admitted to the Union. *Id.*
49. *Territorial Acquisitions of the United States*, MAPSOF.NET, http://mapsof.net/map/territorial-acquisitions-of-the-united-states (last visited Jan. 13, 2013).

Minnesota's geographic territory,[50] but "[w]ater [was the] prominent feature."[51] These "wet areas" were largely a product of Minnesota's glacial history.[52]

Minnesota is perhaps most famous for its lakes. Eighty-six percent of Minnesota's lakes are located in its northern coniferous and central deciduous forests.[53] These lakes tend to be deep with low phosphorus concentrations, while lakes in Minnesota's non-forested regions tend to be shallower water bodies.[54] But perhaps the most dominant water feature of Minnesota's pre-settlement landscape were its wetlands. By some estimates almost one-third of the state had naturally wet soils,[55] including prairie wetlands, peatlands, and forest wetlands.[56] Prairie wetlands were abundant in both southern and western Minnesota.[57] The vast majority of these "prairie potholes," about ninety percent, have been drained for agricultural production.[58] Peat wetlands are more common in northern and central Minnesota.[59] While there were some early attempts to drain Minnesota's peatlands, these wetlands remain largely intact.[60] As their name suggests, Minnesota's forest wetlands were located primarily in Minnesota's deciduous and coniferous forests.[61] The Minnesota Department of Natural Resources (DNR) estimates that Minnesota has lost forty to sixty percent of its deciduous forest wetlands and less than five percent of its northern

50. Jay A. Leitch & Gyles Randall, *Policy Decisions and the Changing Face of Wetlands*, *in* WATER POLICY IN MINNESOTA: ISSUES, INCENTIVES AND ACTION 107 (K. William Easter & Jim Perry eds., 2011) [hereinafter WATER POLICY IN MINNESOTA].

51. JOHN R. TESTER, MINNESOTA'S NATURAL HERITAGE: AN ECOLOGICAL PERSPECTIVE 6 (1995).

52. The final retreat of the glaciers at the end of the Wisconsin Glaciation approximately 10,000 years ago sculpted Minnesota in a diverse landscape predominated by rivers, lakes, and wetlands. *See generally id.* at 3–15, 197–98 (discussing the geological formation of Minnesota's landscape).

53. *See id.* at 198, 224, 228.

54. *Id.*

55. Mark J. Hanson, Development of Agricultural Drainage and Drainage Law in Minnesota 2 (July 30, 1986) [hereinafter Hanson, Development of Agricultural Drainage] (unpublished manuscript) (on file with authors).

56. TESTER, *supra* note 51, at 161.

57. *Id.*

58. JEFFREY P. ANDERSON & WILLIAM J. CRAIG, GROWING ENERGY CROPS ON MINNESOTA'S WETLANDS: THE LAND USE PERSPECTIVE 5 (Judith H. Weir ed., 1984); TESTER, *supra* note 51, at 193.

59. TESTER, *supra* note 51, at 161.

60. *Id.* at 195.

61. *Id.* at 191.

coniferous forest wetlands.[62]

These lakes and wetlands, together with Minnesota's rivers and streams, form Minnesota's eight major watersheds.[63] Today the wetlands, lakes, rivers, and streams receive the vast majority of their flow from groundwater sources augmented by rainfall and snowmelt.[64]

A. The Evolution of Public and Private Water Rights

Minnesota was admitted to the Union on May 11, 1858,[65] and upon admission was conferred the rights and obligations of the original thirteen states.[66] These rights included the "absolute right to all . . . [its] navigable waters and the soils under them for their own common use, subject only to the rights since surrendered by the constitution to the general government."[67] Under the terms of the Constitution, the federal government's right to the waters of

62. *Id.* at 193.

63. *Id.* at 236–37, fig.9.3. These drainage basins include the Red River Basin and the Rainy River Basin, both of which drain into Hudson Bay; the Lake Superior Basin, which drains into the St. Lawrence Seaway; the Minnesota, Mississippi, and St. Croix River Basins, which together form the headwaters of the Mississippi water basin; the Des Moines River Basin; and the Missouri River Basin. *Id.* Four of these watersheds are headwaters of three continental watersheds: the Great Lakes Watershed, the Hudson Bay Watershed, and the Mississippi River Watershed. *See id.*

64. *Id.* at 236.

65. *Today in History: May 11*, LIBR. CONGRESS, http://memory.loc.gov/ammem/today/may11.html (last visited Nov. 30, 2012).

66. An Ordinance for the Government of the Territory of the United States North-West of the River Ohio, art. 4 (July 13, 1787) (commonly referred to as the Northwest Ordinance). The Northwest Ordinance was adopted by the second Continental Congress in 1787 concurrently with the U.S. Constitution. Douglas C. North & Andrew R. Rutten, *The Northwest Ordinance in Historical Perspective*, *in* ESSAYS ON THE ECONOMIES OF THE OLD NORTHWEST 19, 22 (David C. Klingaman & Richard K. Vedder eds., 1987).

67. Saint Anthony Falls Water-Power Co. v. Bd. of Water Comm'rs of Saint Paul, Minn., 168 U.S. 349, 359 (1897) (citing Martin v. Waddell, 41 U.S. 367, 410 (1842)). In *Martin v. Waddell*, the court recognized, "[W]hen the Revolution took place, the people of each state became themselves sovereign; and in that character hold the absolute right to all their navigable waters, and the soils under them, for their own common use, subject only to the rights since surrendered by the constitution to the general government." 41 U.S. at 410. Because the federal government held the lands of the territories in trust for the new states that were yet to be formed, the federal government was incapable of transferring title to either the navigable waters in the territories or the lands thereunder by patent to private land owners. *See In re* Application of Union Depot St. Ry. & Transfer Co. of Stillwater, 31 Minn. 297, 300–01, 17 N.W. 626, 628 (1883) (citing Pollard v. Hagan, 44 U.S. 212, 222 (1845)).

the states (including underlying lands) was limited to a navigational interest.[68] The U.S. Supreme Court has characterized the federal government's interests in navigable waters as a burden of servitude upon a state's jurisdiction over its navigable waters and lands lying thereunder.[69]

The Court further expounded on the state's water rights in *St. Anthony Falls Water-Power Co. v. Board of Water Commissioners*, a case involving Minnesota's right to authorize the City of St. Paul to extract water from the Mississippi for consumptive use.[70] St. Anthony Falls Water-Power, relying on a federal land grant, claimed ownership of waters of the Mississippi and the underlying property adjacent to the banks of the Mississippi. St. Anthony Falls Water-Power argued the land grant precluded the Minnesota Legislature from exercising jurisdiction over the waters of the Mississippi[71] and, therefore, from authorizing the city to appropriate water for domestic use.[72] The Court upheld the State's right to grant extraction rights to St. Paul, confirming that the navigable waters and the soils thereunder "belong[] to the states by their inherent sovereignty."[73] This right includes the right of the individual states to regulate their waters and the lands thereunder.[74] The fact that the Mississippi was a national "highway" subject to federal regulation as navigable water did not impair the state's title or jurisdiction.[75] Minnesota was free to regulate its navigable waters so long as the exercise of state jurisdiction did not interfere with those "regulations which may be made by congress with regard to public navigation and commerce."[76] It is, therefore, the inherent right of each state, including Minnesota, to determine the scope of private water rights and to regulate the use of waters within its territory.[77]

68. James v. Dravo Contracting Co., 302 U.S. 134, 140 (1937).

69. *Id.*; *see also* Pike Rapids Power Co. v. Minneapolis, Saint Paul & Sault St. Marie Ry. Co., 99 F.2d 902, 911 (8th Cir. 1938) (noting that the federal government's power to regulate navigable waters flows from the Commerce Clause); *In re Union Depot*, 31 Minn. at 300–01, 17 N.W. at 628.

70. *Saint Anthony Falls Water-Power Co.*, 168 U.S. at 358.

71. *Id.* at 357–58.

72. *Id.*

73. *Id.* at 361.

74. *See id.* at 361–62.

75. *Id.* at 359.

76. *Id.* at 363 (quoting Hardin v. Jordon, 140 U.S. 371, 382 (1891)).

77. *Id.*

1. The Concept of Public Waters

Historically, Minnesota's water bodies were classified as either navigable or non-navigable, and Minnesota's title was limited to navigable waters.[78] But, for purposes of state jurisdiction, the concept of navigability extended beyond traditional notions of commercial or pecuniary navigation—the question of navigability rested on whether the water body could be used "for the ordinary purposes of life."[79] The division of water bodies between navigable and non-navigable was "but another way of dividing them into public and private waters, and navigable waters embrace[d] all bodies of water public in their nature."[80] The court's broad definition of navigability evidences the presumption that as many water bodies as possible should be treated as public waters. Noted Justice Mitchell:

> Many, if not the most, of the meandered lakes of this state, are not adapted to, and probably will never be used to any great extent for, commercial navigation; but they are used—and as population increases, and towns and cities are built up in their vicinity, will be still more used—by the people for sailing, rowing, fishing, fowling, bathing, skating, taking water for domestic, agricultural, and even city purposes, cutting ice, and other public purposes which cannot now be enumerated or even anticipated. To hand over all these lakes to private ownership, under any old or narrow test of navigability, would be a great wrong upon the public for all time, the extent of which cannot, perhaps, be now even anticipated.[81]

The state holds title to its public waters and lands thereunder in trust for the public.[82] This obligation, commonly referred to as the public trust doctrine, recognizes that certain types of public property, including seashores and tidal waters, are dedicated to perpetual public use and must be held in trust for the public by the sovereign.[83] The U.S. Supreme Court recognized the application of

78. State v. Korrer, 127 Minn. 60, 148 N.W. 617, 618, 621 (1914).
79. Nelson v. De Long, 213 Minn. 425, 431, 7 N.W.2d 342, 346 (1942).
80. *Korrer*, 148 N.W. at 618.
81. Lamprey v. Metcalf, 52 Minn. 181, 199–200, 53 N.W. 1139, 1143 (1893).
82. *See* Shively v. Bowlby, 152 U.S. 1, 14–47 (1894); *see also* Saint Paul & Pac. R.R. Co. v. Schurmeir, 74 U.S. 272, 287 (1868) (noting that navigable rivers are "subject to the *jus publicum*").
83. JOSEPH L. SAX, DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION 163–64 (1970); *see also* Joseph L. Sax, *The Public Trust Doctrine in Natural*

the public trust doctrine to the individual states as early as 1868[84] and more fully articulated the scope of the states' trust obligations in *Illinois Central Railroad Co. v. Illinois*,[85] holding that the states' trust obligations extended to navigable waters and streams and that state legislatures were precluded from conveying waterfront and associated control over commerce to a private business.[86] The Court found that a state's title to its navigable waters was "different in character from that which the state holds in lands intended for sale. . . . It is a title held in trust for the people of the state . . . ."[87] The state could not "abdicate its trust over property in which the whole people are interested, . . . so as to leave them entirely under the use and control of private parties."[88]

Justice Mitchell acknowledged the public trust doctrine's application to Minnesota's waters as early as 1883, noting that the state's water jurisdiction flowed from the British crown and encompassed an obligation to hold the waters in trust for "common use"—jurisdiction over waters "was a *sovereign or prerogative* and not a *proprietary* right."[89] The state holds title to its waters "in its sovereign capacity, as a trustee for the people, for public use,"[90] and the scope of the trust obligation, as with the term navigability, was sufficiently flexible to expand and change over time. Noted Justice Mitchell:

When the colony of Massachusetts, 250 years ago, reserved

Resource Law: Effective Judicial Intervention, 68 MICH. L. REV. 471, 475–76 (1970) (recounting the history of the public trust doctrine dating back to Roman and English common law).

84. *See Schurmeir*, 74 U.S. at 287; *see also Shively*, 152 U.S. at 14–47 (recounting the history of the public trust doctrine in the United States).

85. 146 U.S. 387 (1892).

86. *Id.* at 454. *Illinois Central* involved a state grant of land under Lake Michigan to the Illinois Central Railroad. *Id.* at 438. The grant included most of Chicago's commercial waterfront. *Id.* at 437–38. The Illinois General Assembly voted to repeal the grant and sued to invalidate the grant. *Id.* at 449. The Supreme Court upheld the revocation. *Id.* at 463–64. For a more detailed history of *Illinois Central*, see Joseph D. Kearney & Thomas W. Merrill, *The Origins of the American Public Trust Doctrine: What Really Happened in* Illinois Central, 71 U. CHI. L. REV. 799 (2004).

87. *Illinois Cent. R.R. Co.*, 146 U.S. at 452.

88. *Id.* at 453. In 1984, Minnesota amended its constitution to permit the state to exchange privately and publically held lands but requiring the state to reserve to the state all mineral rights and water power rights to land transferred. MINN. CONST. art. XI, § 10.

89. *In re* Application of Union Depot St. Ry. & Transfer Co. of Stillwater, 31 Minn. 297, 300, 17 N.W. 626, 628 (1883) (emphasis added).

90. Lamprey v. Metcalf, 52 Minn. 181, 198, 53 N.W. 1139, 1143 (1893).

> to public use her "great ponds," probably only fishing and fowling were in mind; but, as is said in one case, "with the growth of the community, and its progress in the arts, these public reservations, at first set apart with reference to certain special uses only, became capable of many others, which are within the design and intent of the original appropriation. The devotion to public use is sufficiently broad to include them all, as they arise."[91]

Independent of its title to navigable waters and associated trust obligations, the state also has the authority to regulate both public and private waters pursuant to its police powers.[92] The authority to regulate both public and private waters rests with the legislature subject only to constitutional limitations[93] and cannot be surrendered by the state; nor may a private party by estoppel preclude the state from exercising its regulatory authority over the waters of the state.[94]

2. Private Riparian Rights Versus Public Rights

In addition to the public's interest in water resources, private parties may also have interests in Minnesota's waters. The right of private parties to use water in the states is derived from one of two common-law water doctrines—the riparian rights doctrine common east of the Mississippi and the prior appropriation doctrine commonly favored by the arid western states.[95] Minnesota sits at the headwaters of the Mississippi, the historic dividing line of these two systems.[96] As a water-rich state, Minnesota has adopted the riparian system of private water rights.[97] The riparian system is

91. *Id.* at 200, 53 N.W. at 1143 (quoting W. Roxbury v. Stoddard, 89 Mass. 158, 167 (1863)).

92. Herschman v. State Dep't of Natural Res., 303 Minn. 50, 54, 225 N.W.2d 841, 844 (1975) (citing State v. Adams, 251 Minn. 521, 546, 89 N.W.2d 661, 678 (1957).

93. *Id.*

94. *Id.* Waters of the state were defined in 1976 to mean "any waters, surface or underground, except those surface waters which are not confined but are spread and diffused over the land." MINN. STAT. § 105.37, subdiv. 7 (1976).

95. *See generally* Christine A. Klein et al., *Modernizing Water Law: The Example of Florida*, 61 FLA. L. REV. 403, 406–09 (2009) (containing an explanation and discussion of the prior appropriation and riparian doctrines).

96. *See, e.g.*, Christopher L. Len, *Synthesis—A Brand New Water Law*, 8 U. DENV. WATER L. REV. 55, 56 (2004).

97. *See generally* Schurmeier v. Saint Paul & Pac. R.R. Co., 10 Minn. 82 (1865), *aff'd*, 74 U.S. 272 (1868). In *Schurmeier*, the Minnesota Supreme Court adopted the English common law holding that an owner of land abutting a navigable water

rooted in tort law, which imposes a duty on riparian landowners to refrain from using water in a manner that unreasonably harms another riparian owner.[98] At common law a riparian owner, by ownership of property abutting a watercourse (e.g., shoreland),[99] obtains a "usufructuary" right, or right to the reasonable use of water.[100] The scope of the water right held by a riparian owner is a matter left to the determination of the individual states.[101]

Early on, the Minnesota Supreme Court adopted the rule that a riparian owner, "[b]y virtue of his ownership of the banks and the land in front thereof[,] . . . has a right to the *use of the water* flowing in its natural channel, without diminution or obstruction."[102] This right exists regardless of the navigability of the water body—that is, a riparian owner has riparian rights regardless of whether the water body is private or public.[103] The concept of riparian rights also extends to groundwater aquifers—that is, an overlying landowner has the right to the reasonable use of waters underlying and touching upon his or her property.[104]

A riparian owner's rights are not absolute. Justice Mitchell, in *Red River Roller Mills v. Wright*, characterized a riparian owner's rights as "natural" rights "qualified and limited by the existence of the rights of others."[105] Although a riparian owner's use rights extend over the entire water body,[106] the owner's rights are not

holds title only to the low water mark. *Id.* at 102–03. The U.S. Supreme Court affirmed that Congress, in granting an 1849 patent to various railroads to aid in railroad construction, intended that the grantees be bound by the common law rules of riparian ownership. Saint Paul & Pac. R.R. Co. v. Schurmeier, 74 U.S. 272, 288–89 (1868); *see also* State v. Korrer, 127 Minn. 60, 148 N.W. 617 (1914) (reviewing the history of early Minnesota water law and citing *Schurmeier* as the first Minnesota case to adopt the English common law regarding water rights); Sanborn v. People's Ice Co., 82 Minn. 43, 50, 84 N.W. 641, 642 (1900).

98. Klein et al., *supra* note 95, at 406.

99. *Id.* at 406–07.

100. *Id.*

101. Barney v. Keokuk, 94 U.S. 324, 337–38 (1876).

102. Pinney v. Luce, 44 Minn. 367, 369, 46 N.W. 561, 561–62 (1890) (emphasis added); *see also* Johnson v. Seifert, 257 Minn. 159, 165–66, 100 N.W.2d 689, 694–95 (1960) (citing Petraborg v. Zontelli, 217 Minn. 536, 547, 15 N.W.2d 174, 180 (1944)).

103. *Johnson*, 257 Minn. at 165–69, 100 N.W.2d at 694–97.

104. *See* Crookston Cattle Co. v. Minn. Dep't of Natural Res., 300 N.W.2d 769, 774 (Minn. 1980). In 1980, the Minnesota Supreme Court acknowledged that the concept of riparian rights extended to groundwater aquifers. *Id.*

105. Red River Roller Mills v. Wright, 30 Minn. 249, 253, 15 N.W. 167, 168 (1883).

106. Flynn v. Beisel, 257 Minn. 531, 539, 102 N.W.2d 284, 290 (1960).

exclusive.[107] A riparian owner's rights are limited by the requirement that his or her water use must be reasonable.[108] What is reasonable depends in part upon each riparian owner's water use vis-à-vis other riparian owners,[109] the public's rights, and the circumstances of each case.[110] The test is a flexible one capable of changing over time—the court will look to

> the subject-matter of the use; the occasion and manner of its application; the object, extent, necessity, and duration of the use; the nature and size of the stream; the kind of business . . . ; the importance and necessity of the use . . . ; the extent of the injury to the other party; . . . the general and established usages of the country in similar cases; and all the other and ever-varying circumstances of each particular case bearing upon the question of the fitness and propriety of the use of the water under consideration.[111]

There are, however, some uses that are presumed to be unreasonable. Thus,

> [w]henever it appears that any use of a stream by one riparian owner interferes with the reasonable use of the stream by a lower riparian owner, to his injury, either by the interruption, diversion, obstruction, *or pollution of the water*, the burden of proof is upon the former to show that his use is reasonable . . . ."[112]

A riparian owner may not by his or her use "substantially" interfere with or harm another riparian owner's use right or property.[113] Despite this admonition, there are a number of uses that are presumed to be reasonable, among them the right to access; the right to construct wharves, piers, and landings;[114] and the right to water use for domestic, agricultural, and mechanical purposes.[115]

The restriction against substantial impairment includes the right of all riparian owners to have water maintained at natural and

107. Sanborn v. People's Ice Co., 82 Minn. 43, 50, 84 N.W. 641, 642 (1900).
108. State v. Korrer, 127 Minn. 60, 148 N.W. 617, 622 (1914).
109. *See id.*
110. *Red River Roller Mills*, 30 Minn. at 253–54, 15 N.W. at 168–69.
111. *Id.* at 253, 15 N.W. at 169.
112. *Id.* at 254, 15 N.W. at 169 (emphasis added).
113. *See* Meyers v. Lafayette Club, 197 Minn. 241, 250, 266 N.W. 861, 866 (1936).
114. *Korrer*, 127 Minn. at 71, 148 N.W. at 622.
115. *Meyers*, 197 Minn. at 248, 266 N.W. at 865 (quoting Pinney v. Luce, 44 Minn. 367, 369, 46 N.W. 561, 562 (1890)).

ordinary water levels,[116] and this restriction has substantially served to limit the extraction of water from Minnesota water bodies for private sale or commercial gain by either riparian owners or members of the general public.[117] *Sanborn v. People's Ice Co.* is illustrative.[118] In *Sanborn*, the People's Ice Company annually cut 75,000 tons of ice from White Bear Lake, which it sold in St. Paul and "distant markets."[119] The extraction caused White Bear Lake's water levels to drop two feet over twelve years.[120] The defendant, People's Ice Company, claimed the right to remove and sell ice as a usage right shared by both riparian owners and the general public.[121] The court acknowledged that both the public and riparian owners had the right to take water or ice from the lake but characterized this right as one of a personal nature enjoyed by the public in common with riparian owners.[122] The court observed:

> Any man, woman, or child is accorded an equal opportunity in the use of such advantages. The door is shut to no one, if the means of access have been provided. But the very purpose which has caused the development of the law establishing the right would be destroyed if the principle were extended to protect an unlimited traffic by shipment to a distant market. The taking of ice for the purpose of shipment to a distant market, for the purposes of sale, without regard to its effect upon the common user, is not the exercise of a common right. . . . [W]hen use is made of such water for commercial purposes, not of common right, then the right to so use ceases at the point where the conflict of interest with the common user commences[, including the lowering of water levels].[123]

The state alone, acting on behalf of the public, can grant the right to extract water for consumption beyond personal use.[124]

Public rights also limit a riparian owner's water use—a riparian

116. Erickson v. Minn. & Ont. Power Co., 134 Minn. 209, 212, 158 N.W. 979, 980 (1916).
117. *Id.*
118. 82 Minn. 43, 84 N.W. 641 (1900).
119. *Id.* at 49, 84 N.W. at 642.
120. *Id.*
121. *Id.* at 50–51, 84 N.W. at 642–43.
122. *Id.* at 51, 84 N.W. at 643.
123. *Id.*
124. *Id.*; *see also* Minneapolis Mill Co. v. Bd. of Water Comm'rs, 56 Minn. 485, 490–91, 58 N.W. 33, 35 (1894) (holding the state had the authority to grant the City of St. Paul the right to extract water from the Mississippi river for consumptive use within the city).

owner may not materially interfere with the public's rights.[125] The relationship between a riparian owner and the public is in part determined by whether the water body at issue is public or private. In the case of public waters, a riparian owner's rights are "qualified, restricted, and subordinate to the paramount rights of the public. As against the state, a riparian owner can exercise no dominion or make a valid grant of rights in waters adjacent to riparian lands or in the submerged lands under such waters."[126] The exercise of the public right does not "deprive the riparian owner of any right," but "merely regulates and limits the exercise of existing rights."[127] Therefore, the exercise of these public rights is not a constitutional taking.[128] The public's rights have historically included the right to fish, swim, hunt, boat, and extract water for domestic use.[129] The scope of public use is not rigid; it is a flexible standard subject to change over time and accommodates new uses,[130] as evidenced by the history of the concept of public water rights as they have evolved in Minnesota.

B. Getting Water off the Land

Minnesota's first imperative during the initial waves of European settlement was the drainage of prairie wetlands for agricultural use.[131] Prior to statehood, Minnesota had over ten million acres of wet soils commonly referred to at the time as swampland.[132] Upon admission to the Union, Minnesota received title to these swamplands, which were deemed "unfit for cultivation" because of their swampy condition.[133] The Swamp and Overflowed Lands Act transferred title of over five million poorly drained acres, approximately half of the state's total wetlands, to

125. *See* Meyers v. Lafayette Club, 197 Minn. 241, 250, 266 N.W. 861, 866 (1936).
126. Nelson v. De Long, 213 Minn. 425, 431, 7 N.W.2d 342, 346 (1942).
127. *Id.* at 432, 7 N.W.2d at 347.
128. *See, e.g.*, State *ex rel.* Head v. Slotness, 289 Minn. 485, 487, 185 N.W.2d 530, 533 (1971).
129. *See* State v. Kuluvar, 266 Minn. 408, 418, 123 N.W.2d 699, 706 (1963); Lamprey v. Metcalf, 52 Minn. 181, 199–200, 53 N.W. 1139, 1143 (1893).
130. *Lamprey*, 52 Minn. at 200, 53 N.W. at 1143–44.
131. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 140–41.
132. *Id.* at 139–40; Hanson, Development of Agricultural Drainage, *supra* note 55, at 3.
133. Swamp and Overflowed Lands Act of 1850, ch. 84, § 1, 9 Stat. 519; Act of Mar. 12, 1860, ch. 5, § 1, 12 Stat. 3 (extending the Swamp and Overflowed Lands Act of 1850 to Minnesota and Oregon).

Minnesota.[134] The grant encouraged the state to reclaim and sell the swampland.[135]

By 1850, agricultural settlement of southeastern Minnesota was well underway,[136] but it was not until the settlement of the Red River Valley[137] between 1890 and 1900 that Minnesota began to earnestly pursue a drainage policy.[138] At the end of the nineteenth century, most of Minnesota's farmable land had been settled, and additional farmland could be made available only through drainage.[139] Minnesota subsequently relied on drainage to "reclaim" wetlands for crop production; indeed "much of Minnesota's agriculture was built on drainage."[140] By the latter half of the nineteenth century, Minnesota had adopted a drainage code that vested jurisdiction over wetland drainage in local units of government.[141] The state's wetland drainage policy was twofold: to improve land productivity and to "remov[e] . . . causes of malaria."[142] In 1887, the legislature, in large part to facilitate drainage in the Red River Valley, adopted its first comprehensive drainage law, patterned after Illinois's drainage law.[143] Use of the statute to facilitate settlement and cultivation was advocated by Governor Johnson who, joined by the Secretary of State and State Auditor, recommended to the legislature that Minnesota actively pursue a drainage policy, noting: "We are convinced that the time

134. Janet Timmerman, *Draining the Great Oasis*, *in* DRAINING THE GREAT OASIS: AN ENVIRONMENTAL HISTORY OF MURRAY COUNTY, MINNESOTA 125, 125–41 (Anthony J. Amato et al. eds., 2001).

135. *See id.*

136. Prior to 1893, primary authority to oversee drainage of "swamplands" rested with local units of government. MINN. STAT. ch. 124, § 49 (1878).

137. Early attempts to promote drainage in the Red River Valley were spearheaded by James J. Hill, who owned over a million acres in the Red River Valley, and C.C. Elliot, an Illinois drainage engineer and former chief of drainage investigation for the U.S. Department of Agriculture. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 140 n.26.

138. For an excellent discussion of the history of drainage in Minnesota, see *id.* at 136–48; Hanson, Development of Agricultural Drainage, *supra* note 55, at 3–28.

139. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 142.

140. Steven J. Taff, *Managing Minnesota's Drainage System*, 692 MINN. AGRIC. ECONOMIST 1, 1–3 (1998).

141. MINN. STAT. §§ 124.49–.63 (1878); *see also* Act of Mar. 1, 1883, ch. 108, 1883 Minn. Laws 141.

142. Act of Mar. 2, 1883, ch. 139, 1883 Minn. Laws 196 (codified at MINN. STAT. § 124.63(a) (Supp. 1883)).

143. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 141 n.27; *see* Act of Mar. 8, 1887, ch. 98, 1887 Minn. Laws 161.

has arrived when it is imperatively necessary for the state to pursue a vigorous policy in dealing with . . . [drainage of swamp lands]. We respectfully recommend that the reclamation of the state swamp lands be continued on a more extensive scale . . . ."[144]

By 1905, Minnesota had a well-established drainage code.[145] It created four separate drainage authorities: townships, counties, judicial districts, and the state. Townships developed ditches pursuant to historic authority. Counties and district courts were, however, the primary ditch authorities. Ditch systems affecting watercourses entirely within a single county could be created and maintained by county boards acting as county ditch authorities.[146] Landowners could petition the county board, in its capacity as the ditch authority, to establish a county ditch.[147] The statute established a viewing process to assess and allocate benefits and damages associated with the proposed ditch prior to ditch construction, a process for ditch construction, and procedures for assessing to benefitted properties construction and maintenance assessments.[148] Although the drainage code has been modified over time, the 1905 version remains the framework used today to establish, maintain, and repair most of the state's ditch systems.[149] A third system, the Judicial Ditch system, was designed to address ditch systems affecting watercourses in more than one county.[150] The process for establishing a judicial ditch was largely the same as that used to establish county ditches, except the petition was filed in district court, and the district court, rather than the county ditch authority, managed the ditch proceeding.[151]

The state too had drainage authority. The governor, the state auditor, and the secretary of state—sitting as the State Drainage

144. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 142 n.36 (quoting Letter of Transmittal from Governor John A. Johnson, State Auditor Samuel Iverson, and Sec'y of State Peter E. Hanson to the Minn. Legislature (Jan. 1, 1907)).

145. *See* MINN. STAT. §§ 2586–2651 (1905).

146. *Id.* §§ 2586–2587.

147. *Id.* § 2587.

148. *See id.* §§ 2586–2609.

149. *See* MINN. STAT. §§ 103E.005–.812 (2010); LOUIS SMITH & CHARLES B. HOLTMAN, MINNESOTA DRAINAGE LAW ANALYSIS AND EVALUATION 5 (2011), *available at* http://www.bwsr.state.mn.us/drainage/Drainage_Law_Eval_Smith_Partners_LCCMR_Final_Report_08-15-11.pdf; Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 141.

150. MINN. STAT. § 2610 (1905).

151. *Compare* MINN. STAT. §§ 2610–2645 (1905), *with* MINN. STAT. §§ 103E.005–.812 (2010).

Commission—were authorized to construct ditch systems to make state lands suitable for farming.[152] Once constructed, ditch maintenance became the responsibility of the county in which the state ditch system was situated,[153] thus becoming one of the first unfunded water management mandates placed on local governments by the state. Between these four ditch system processes, nine million acres of land were drained between 1900 and 1915.[154]

In 1919, the Minnesota Legislature replaced the State Drainage Commission with the Department of Drainage and Water (Drainage Department).[155] In addition to the authority previously exercised by the State Drainage Commission, the Drainage Department was authorized to alter the state's public watercourses to accommodate the outflow of drainage systems from both developed and undeveloped landscapes.[156] In so doing, the Minnesota Legislature essentially turned Minnesota's rivers, lakes, and streams into the outflow for hundreds of thousands of acres of agricultural fields and developed communities.

Drainage efforts peaked in 1915 when a series of events, including floods, droughts, tile failures, World War I, and a drop in farm commodity prices, caused a sharp decline in large-scale drainage projects.[157] The questions raised by the 1916 floods, in particular, gave rise to a deeper understanding of the interconnected nature of hydrologic and natural systems, as policy makers explored whether drainage ditch systems, which accelerated water flow from farm fields into watercourses, either "caused" or contributed to flooding and erosion.[158] The return of "normal" rainfall patterns between 1938 and 1945 and an increase in commodity prices gave rise to an increased interest in drainage, and the state undertook efforts to revise and recodify its drainage law.[159] While the resulting revision maintained the basic structure

152. MINN. STAT. §§ 2646–2647 (1905).

153. *Id.* § 2651.

154. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 143.

155. Act of Apr. 25, 1919, ch. 471, § 1, 1919 Minn. Laws 607 (codified at MINN. STAT. § 6634 (1927)).

156. *Id.* at § 2 (codified at MINN. STAT. § 6635 (1927)).

157. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 143–44.

158. Hanson, Development of Agricultural Drainage, *supra* note 55, at 11 (citing F. Sardeson, *The Drainage Question,* 10 W. MAG. 3, 45–48 (1917)); G. Ralph, *Drainage Work in Minnesota*, ST. DRAINAGE COMM. BULL., no. 1, Aug. 1912, at 25.

159. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 146 (citing LEGISLATIVE INTERIM COMM'N, REPORT OF THE INTERIM COMMISSION TO REVISE AND

of drainage development, construction, repair, and maintenance, the legislature eliminated both township and state drainage ditch authorities, vesting all drainage authority in county boards and district courts.[160] This made drainage essentially a local government function.

Drainage continued relatively unabated until the 1950s, when the state took preliminary steps to protect wetlands both through the drainage code and as public waters. And while recent revisions to the drainage code are evidence of a growing recognition of the resource values of watercourses and wetlands, drainage is still controlled largely by a multitude of county ditch authorities with only minimal oversight by state agencies.[161]

C. Managing the Water Resource

Minnesota began some minimal attempts to regulate water use as early as 1867. Most of these early laws were designed to assist Minnesota's logging[162] and milling[163] industries, drain wetlands for agricultural production,[164] or protect drinking water supplies.[165] These activities were carried out by local units of government or by state district courts. Local units of government, for example, were primarily responsible for overseeing the drainage of wetlands,[166] the establishment of uniform lake levels,[167] and the "improvement" of watercourses.[168] State district courts handled criminal and civil

CODIFY DRAINAGE AND WATER RESOURCES LAWS (Minn. 1947)).

160. *Id.*; *see also* MINN. STAT. § 106.021 (1949). The judicial authority to establish drainage ditches was eliminated in 1971. *See* Act of June 4, 1971, ch. 785, § 1, 1971 Minn. Laws 1502–03.

161. *See generally* SMITH & HOLTMAN, *supra* note 149, at 5–21.

162. In 1867 the Minnesota Legislature characterized rivers as "public highways" which served an important function in the transportation of logs and lumber. MINN. STAT. ch. 32, §§ 1–2 (1866). It was illegal to obstruct the passage of logs along river thoroughfares. *Id.*

163. MINN. STAT. ch. 31 (1863) established a procedure for the placement of dams in navigable waters for milling operations.

164. MINN. STAT. ch. 124, § 63 (1878 & Supp. 1883). *See generally supra* Part III.B.

165. MINN. STAT. ch. 54, art. IV, § 221 (1873) (prohibiting the throwing of offal in rivers and lakes or abandoning the same on the ice surfaces of rivers or lakes). *See generally infra* Part III.D.

166. MINN. STAT. ch. 124, §§ 49–63 (1878 & Supp. 1883).

167. MINN. STAT. ch. 42, §§ 2552–2562 (1905) (establishing a procedure to be used by counties to establish and maintain lake levels).

168. *Id.* § 727(8) (granting villages the authority to straighten watercourses and maintain sewer systems).

proceedings related to the construction of milling dams,[169] the issuance of dam licenses for logging,[170] the unlawful obstruction of rivers,[171] the illegal placement of offal in public waters,[172] and the unlawful drainage of meandered lakes and ponds.[173] The sole state agency with any regulatory authority over water was the State Board of Health, which had, as one of its ten primary responsibilities, the authority to "control, by requiring the taking out of licenses or permits, or by other appropriate means[,] . . . [t]he pollution of streams and other waters, and the distribution of water by private persons for drinking or domestic use."[174]

It was not until 1925, when the Minnesota Legislature reorganized the state government, that the state began to play a more active role in the regulation and management of the state's water resources.[175] In 1925 the legislature created the Departments of Health, Drainage and Waters, and Conservation,[176] the latter of which was the predecessor to the now-existing DNR.[177] The Department of Health and State Health Board[178] continued to be responsible for protecting the safety of domestic water supplies.[179]

The DNR was primarily responsible for managing the state's timber resource, the state's game and fish resources, and public lands withheld from sale.[180] The role of the DNR in water management was limited and focused on conservation of Minnesota's fisheries, wildlife, and waterfowl. To the extent the DNR exercised authority over the state's water resources, its actions

169. MINN. STAT. ch. 31, §§ 1–22 (1863).
170. *Id.* ch. 31.
171. MINN. STAT. ch. 32, §§ 1–3 (1866).
172. MINN. STAT. ch. 54, art. IV, § 221 (1866 & Supp. 1873).
173. *Id.* § 126.
174. MINN. STAT. ch. 29, § 2131(5) (1905).
175. This is in contrast to the state's timber resource, which the state actively began managing as early as 1871. *See, e.g.*, Act of March 6, 1871, ch. 30, 1871 Minn. Laws 75–76.
176. MINN. STAT. § 53-1 (1927).
177. In 1969 the legislature renamed the Department of Conservation the Department of Natural Resources (DNR) and transferred all functions of the Department of Conservation to the DNR. Act of June 9, 1969, ch. 1129, art. 3, § 1, 1969 Minn. Laws 2338 (codified at MINN. STAT. § 84.01 (1971)) (relating to the organization and operation of state government). For purposes of clarity, "DNR" refers both to the current DNR and its predecessor in interest, the Department of Conservation, throughout this article.
178. *See* MINN. STAT. § 53-33 (1927).
179. *See id.* §§ 5374–5375.
180. *See id.* §§ 53-19 to -22.

were directly related to its conservation duties.[181] Thus, for example, by the mid-1920s Minnesota was actively managing its fisheries and associated waters by setting fishing limits limiting the number of water species, including fish, frogs, and turtles, which could be harvested from public waters by the general public, riparian owners, and commercial fishermen.[182] The DNR Commissioner was also authorized to take action to enjoin pollution that was injurious to fish life[183] and to regulate "obstruction[s] in any creek, stream, or river" that interfered with the passage of fish.[184] All persons who intended to construct a dam were first required to submit plans to the Commissioner, who could require the construction of a fishway as part of the dam project.[185]

1. The Public Waters Concept Evolves

In 1937, the Minnesota Legislature adopted legislation intended to "devise and develop a general water resources conservation program for the state"[186] managed by the Division of Water Resources and Engineering (Water Division) within the DNR.[187] Although the Water Division was responsible for administering all "state waters and water power," including the "elimination of stream and lake pollution,"[188] it was largely concerned with drainage matters. It was not until 1947 that Minnesota took a broader approach to the management of its water resources by adopting a state water policy. The 1947 legislation represents a major shift and acknowledgement by the legislature that the state should manage its water resources for the broader

181. *See id.*

182. *See generally id.* §§ 5563–5609-7 (describing a wide ranges of statutes that were created in an attempt to conserve the fishing population).

183. *Id.* § 5582.

184. *Id.* § 5583.

185. *Id.* §§ 5590–5591.

186. Act of Apr. 26, 1937, 1937 Minn. Laws 794–800 (codified at MINN. STAT. ch. 105 (1941)).

187. *Id.* § 5, 1937 Minn. Laws at 795–96. The Water Division has undergone numerous name changes throughout its history. In 2009, the then-Division of Waters was merged with the Division of Ecological Services to form the Division of Ecological and Water Resources. *See Division of Ecological and Water Resources*, MINN. DEPARTMENT NAT. RESOURCES, http://www.dnr.state.mn.us/waters/index.html (last visited Dec. 15, 2012). For purposes of this article, however, the Division will be referred to as the Water Division.

188. MINN. STAT. § 105.03 (1941).

benefit of Minnesota citizens.[189] The legislature broadly defined public waters as those waters "capable of substantial beneficial public use," stating:

> In order to conserve and utilize the water resources of the state in the best interests of the people of the state, and for the purpose of promoting the public safety and welfare, it is hereby declared to be the policy of the state (1) that subject to existing rights, all waters in streams and lakes . . . capable of substantial beneficial public use, shall be public waters, and shall be subject to the control of the state . . . .[190]

But it was not until 1957 that the legislature affirmatively abandoned the concept of navigability as a parameter for defining the scope of public waters, instead embracing a beneficial "use" requirement and essentially codifying the public waters test historically espoused by the Minnesota Supreme Court.[191]

The Minnesota Legislature further modified the public waters concept in 1973 when it eliminated the substantial beneficial use requirement[192] in favor of a "beneficial public purpose" requirement.[193] The public purpose requirement incorporated in the 1973 legislation went beyond actual water use, which had historically included notions of hunting, fishing, swimming, boating, and water supply, to include watershed health, sediment and nutrient entrapment, and wildlife habitat, criteria previously rejected by the court under the public use definition.[194] Also in 1973, the state for the first time defined "waters of the state" to

189. *See* Act of Mar. 25, 1947, 1947 Minn. Laws 218–28 (codified at MINN. STAT. §§ 105.37–.55 (1949)); *Id.* § 2 (codified at MINN. STAT. § 105.38 (1949)).

190. *Id.* § 2, 1947 Minn. Laws at 219. The statute also reserved to the state the authority to control the appropriation and use of both surface water and groundwater as well as to regulate dam construction. *Id.* §§ 5–6, 1947 Minn. Laws at 221–22.

191. Act of Apr. 20, 1957, ch. 502, § 1, 1957 Minn. Laws 624–25 (codified as amended at MINN. STAT. § 105.38(1) (1957)). The statute retained the substantial beneficial use test adopted in 1947, but clarified,

> The public character of water shall not be determined exclusively by the proprietorship of the underlying, overlying, or surrounding land or on whether it is a body or stream of water which was navigable in fact or susceptible of being used as a highway for commerce at the time this state was admitted to the union.

Id. (emphasis omitted).

192. MINN. STAT. § 105.38(1) (Supp. 1973).

193. *Id.*

194. *See* Pratt v. State Dept. of Natural Res., 309 N.W.2d 767, 770–71 (Minn. 1981).

include "any waters, surface or underground, except those surface waters which are not confined but are spread and diffused over the land."[195]

This broad definition of public waters was challenged as a taking of private property interests in *Pratt v. State Department of Natural Resources*.[196] By the time *Pratt* reached the Minnesota Supreme Court, the legislature had once again revised the definition of public waters by establishing criteria that should be used to determine whether a water body served a beneficial public purpose.[197] The criteria were wide ranging, including those waters whose health was necessary to maintain the hydrologic functioning of Minnesota's waters, in the belief that healthy hydrologic systems were necessary to sustain both human and natural systems.[198]

Writing for the court in *Pratt*, Justice Simonett, for whom this Issue is dedicated, acknowledged that the 1973 amendments had redefined and modified the concept of public waters and that the lake at issue, which had previously qualified as private, was now public because it trapped nutrients, recharged groundwater aquifers, and provided wildlife habitat, all indices of public waters as the concept had been redefined by the Minnesota Legislature.[199] Justice Simonett concluded, however, that this reclassification did not give rise to a taking of Pratt's riparian water rights because Pratt did not "own" the lake or water—individuals at common law were incapable of owning water in its natural state.[200] Nor did reclassification of waters as public pass ownership to the state; rather, Justice Simonett, relying on Justice Marshall's opinion in *Lamprey v. Metcalf*, opined: "[W]aters, once declared public, simply

195. § 105.37, subdiv. 7.
196. 309 N.W.2d at 770.
197. *See* MINN. STAT. § 105.38(1) (1976).
198. *Id.* § 105.37, subdiv. 6. The legislative criteria included but was not limited to:

(a) Water supply for municipal, industrial, or agricultural purposes;
(b) Recharge of underground water strata;
(c) Retention of water to prevent or reduce downstream flooding . . . ;
(d) Entrapment and retention of nutrients and other materials which impair the quality of natural resources;
(e) Recreational activities . . . ;
(f) Public navigation other than for recreational purposes;
(g) Wildlife habitat . . . ; or
(h) Areas designated as scientific and natural areas . . . .

Id.
199. *Pratt*, 309 N.W. 2d at 770–71 & 770 nn.2–3.
200. *Id.* at 772.

become subject to the protection and control of the state under its regulatory scheme"[201]—they become subject to regulation by virtue of the state's police powers.[202] "The state is said to hold title only in a sovereign capacity, as trustee for the public good, and not in a proprietary sense."[203] Justice Simonett's opinion clearly places Minnesota in the group of states that have adopted a modified riparian system, referred to by legal scholars as a "regulated riparian" system.[204]

While *Pratt* was pending, the legislature abandoned the case-by-case designation of public waters, instead directing the DNR to inventory, identify, and designate as public waters those water bodies in each county that met the public water criteria.[205] In the same year that the court decided *Pratt,* the Minnesota Supreme Court, in *Crookston Cattle Co. v. Minnesota Department of Natural Resources*,[206] recognized that the public waters doctrine extended to groundwater[207] and thus that overlying landowners' rights to groundwater were limited riparian rights, and these rights were subject to the State's legitimate exercise of its police powers.[208]

In 1979, the Minnesota Legislature abandoned the beneficial purpose criteria, adopting a public waters definition that went well beyond historical notions of navigability to include a wide range of water bodies and for the first time included wetlands in the definition of public waters.[209] The legislature announced that

201. *Id.* at 771.

202. *Id.*

203. *Id.* Furthermore, Justice Simonett observed that the legislative reclassification of water as public waters was made subject to existing riparian rights, and Pratt still retained those rights, which were at all times subject to state regulation pursuant to the State's police powers. *Id.* at 772–74.

204. Bradley C. Karkkainen, *Minnesota Water Law: A Unique Hybrid, in* WATER POLICY IN MINNESOTA, *supra* note 50, at 71, 71–72.

205. MINN. STAT. § 105.391, subdiv. 1 (1976). Section 105.391, subdivision 1, was amended in 1979 to provide a formal procedure for the designation of public waters and public wetlands, including mapping, public notice, public hearing, and formal designation. MINN. STAT. § 105.391, subdiv. 1 (1980); *see also In re* Christenson, 417 N.W.2d 607, 608 (Minn. 1987).

206. 300 N.W.2d 769 (Minn. 1980).

207. *Id.* at 774–75.

208. *Id.* (holding that the issuance of a water appropriation permit to the City of Crookston authorizing the City of Crookston to extract water from a groundwater aquifer did not, without more, constitute a taking of the overlying landowners' riparian rights).

209. Act of May 25, 1979, ch. 199, 1979 Minn. Laws 334–40 (codified as amended at MINN. STAT. §§ 105.37, subdiv. 14–15; 105.38; 105.391 (1980) (sections 105.37–.40 were repealed in 1990); *see infra* Part III.C.2.c for a discussion of the

forthwith the

> public character of water shall not be determined exclusively by the proprietorship of the underlying, overlying, or surrounding land or by whether it is a body or stream of water which was navigable in fact or susceptible of being used as a highway for commerce at the time [the] state was admitted to the union.[210]

Rather, public waters included a wide range of water basins not traditionally thought of as navigable, including types 3, 4, and 5 wetlands,[211] and "[a]ll natural and altered natural watercourses with a total drainage area greater than two square miles."[212] It was now the policy of the state to "conserve and utilize the[se] water resources . . . in the best interests of the people of the state, and for the purpose of promoting the public health, safety and welfare."[213] Henceforth, all public waters and wetlands would be controlled by the state subject to existing riparian rights.[214] The state would regulate, "control and supervise . . . any activity which changes or which will change the course, current or cross section of public waters or wetlands."[215] The legislature delegated to the DNR Commissioner "administration over the use, allocation and control of public waters and wetlands, the establishment, maintenance and control of lake levels and water storage reservoirs, and the determination of the ordinary high water level of any public waters and wetlands."[216]

The revision of the public waters concept to include the well-being of hydrologic and natural systems was challenged in *In re Christenson*,[217] a case involving an application for a drainage permit to dredge an abandoned ditch system and related type 3 protected wetland.[218] The DNR denied the drainage permit on the basis that

state's wetland program.

210. § 2, 1979 Minn. Laws at 334–35 (codified as amended at MINN. STAT. § 105.37, subdiv. 14(h) (1980) (repealed 1990)).

211. *Id.*

212. *Id.* § 5, 1979 Minn. Laws at 336 (codified as amended at MINN. STAT. § 105.38 (1980) (repealed 1990)). The statute provides, however, that all designated trout streams are designated public waters regardless of the size of their drainage area. *Id.*

213. *Id.*

214. MINN. STAT. § 105.38(1) (1980).

215. *Id.* § 105.38(3).

216. *Id.* § 105.39, subdiv. 3.

217. 417 N.W.2d 607, 608–09 (Minn. 1987).

218. The case involved a farm that had been in the Christenson family since 1877. *Id.* at 608. Apparently there had been a wetland on the farm drained by a

dredging activities would essentially destroy a protected wetland.[219] The Christensons appealed on the grounds that they had received insufficient notice of the classification of wetlands as public waters, a constitutional due process violation, and that the restraint on drainage was a violation of their "right" to drain the wetland.[220] The court rejected both claims. At the outset, the court noted that "[a]lthough the statutory definition of public waters has changed over the last 90 years, the state's authority to *regulate and control* such waters has been constant since at least 1937."[221] The Christensons' rights vis-à-vis the former drainage ditch-*cum*-wetland were riparian rights, and riparian rights were water *use rights* subject to state regulation.[222] Use rights did not include the right to drain, as drainage would eliminate not only the Christensons' riparian rights, "but also the rights of [anyone] who even remotely or indirectly benefits from the continued existence of this wetland."[223] The court then proceeded to list as public benefits a number of natural system benefits provided by wetlands, including pollution abatement and wildlife habitat,[224] suggesting that the concept of public waters was sufficiently flexible to encompass changes in public usage over time, including "usages" such as hydrologic system health, which had heretofore gone unrecognized. Justice Wahl, citing the work of Aldo Leopold, acknowledged the interdependence of natural systems, including hydrologic systems, and the growing land ethic, which "enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."[225] She concluded the legislature, by

series of drainage ditches constructed in 1914. *Id.* The ditches had never been maintained, and the wetland had reestablished itself. *See id.* at 608–09. In 1984 the Christenson heir applied for a permit to excavate the 1914 ditches, thereby once again draining the wetland. *Id.* at 608.

219. *Id.* at 609. Christenson was offered compensation under the state's water bank program but refused compensation. *Id.*

220. *Id.*

221. *Id.* (emphasis added).

222. *Id.* at 613–14.

223. *Id.* at 614.

224. *Id.*

225. *Id.* at 615 (citing Cnty. of Freeborn v. Bryson, 309 Minn. 178, 188–89, 243 N.W.2d 316, 322 (1976); ALDO LEOPOLD, SAND COUNTY ALMANAC 203 (1949)). The court read Minnesota's public water statute in conjunction with the Minnesota Environmental Rights Act, noting that the Minnesota Legislature had adopted a "land ethic" that required the court to protect and preserve the state's wetlands and the services they provide, including wildlife habitat and the improved water quality provided by said wetlands. *Id.*

adopting environmental legislation, had "given this land ethic the force of law, and imposed on the courts a duty to support the legislative goal of protecting our state's environmental resources."[226]

Although recodified in 1990, the definition of public waters has remained largely unchanged since 1979,[227] as has the statement of the state's "regulatory policy."[228] Despite this fact, there has, it seems, been a subtle shift toward a more expansive view of riparian rights among some riparian landowners who suggest that riparian rights are ownership rights, not use rights. This shift was evidenced in a series of recent articles in the *Star Tribune* documenting violations of shoreland ordinances by abutting landowners in a manner harmful to water quality.[229] Noted one landowner who built a 6000 square foot home just 39.1 feet from the shoreline in violation of the 75-foot shoreline setback: "I know there are people who want teeny weenie docks and little wood boats so that every little piece of weed can grow . . . . That's not how I want to enjoy *my property*."[230] This changed viewpoint was subtly affirmed by former Governor Pawlenty's public statement rejecting the DNR's shoreline development rules revision, alleging that the rules undermine private property rights in our lakes.[231]

2. Towards a Public Waters Policy

Initially state regulation of activities within public waters was limited; activities were largely managed by local units of government[232] and the courts, which indirectly managed public waters by defining the scope and limitations of riparian rights,[233] establishing drainage ditch systems,[234] and establishing flood control districts.[235] State management was limited to assuring safe

226. *Id.*
227. *See* MINN. STAT. § 103G.005, subdiv. 15–15a (2010).
228. *See id.* § 103A.201, subdiv. 1.
229. Jim Spencer, *Losing Our Lakes: Part 1: Rules Skirted and Lakes Under Attack,* STAR TRIB., June 23, 2010, http://www.startribune.com/investigators/96725284.html?refer=y.
230. *Id.* (emphasis added).
231. *Pawlenty Rejects Updated Shore Development Rules,* MINN. PUB. RADIO NEWS, Aug. 13, 2010, http://minnesota.publicradio.org/display/web/2010/08/13/pawlenty-lakeshore-development/.
232. *See* discussion *supra* Part III.C.
233. *See* discussion *supra* Part III.A.
234. *See* discussion *supra* Part III.B.
235. MINN. STAT. § 6879 (Supp. 1917).

drinking water, the protection of fisheries, facilitating drainage, and servicing commerce, most notably the logging industry. It was not until 1947 that the Minnesota Legislature undertook a truly comprehensive water policy,[236] directing that forthwith it would be the policy of the state to "conserve and utilize the water resources of the state in the best interests of the people."[237] To that end the legislature proclaimed:

> (1) . . . subject to existing rights, all waters . . . [of] the state, which are capable of substantial beneficial public use, shall be public waters . . . subject to the control of the state, (2) the state, so far as practicable, shall control the appropriation and use of surface and underground waters . . . , and (3) the state shall control and supervise, so far as practicable, the construction, reconstruction, repair, removal, or abandonment of dams, reservoirs, and all control structures in any of the public waters of the state.[238]

Moreover, in what some might characterize as the state's first water sustainability policy, the legislature directed the DNR to develop a state water conservation program that "contemplate[s] the conservation, allocation, and development" of the state's waters in a manner that advances the best interest of Minnesota's citizens.[239] To achieve this goal, the DNR was authorized to develop permit systems for the use and appropriation of Minnesota's waters and for the management of public waters.[240]

a. Water Use and Appropriations

Professor Karkkainen describes Minnesota's water appropriation system as a "curious hybrid" system—a modified prior appropriation system that "sit[s] uneasily" upon an unmodified regulated riparian system for smaller water users.[241] This unique system developed over a series of years as Minnesota transitioned away from local control of water allocation to a

236. *See* Act of Mar. 25, 1947, ch. 142, 1947 Minn. Laws 218–28 (codified at MINN. STAT. §§ 105.37–.55 (1949)). At this juncture, primary authority over water quality still rested with the Board of Health. MINN. STAT. § 144.12 (1949).

237. Act of Mar. 25, 1947, § 2, 1947 Minn. Laws at 219 (codified at MINN. STAT. § 105.38 (1949)).

238. *Id.*

239. *Id.* § 3 (codified at MINN. STAT. § 105.39 (1949)).

240. *Id.*

241. Karkkainen, *supra* note 204, at 71, 76.

centralized system that attempts to balance water demands with healthy "water balances"[242] in rivers, lakes, and streams.

Early water appropriations did not take into account the need for healthy water balances. While riparian owners had the right to extract water for their own consumptive uses, non-abutting owners relied on the state to authorize access to water. Initially, the right to appropriate water for consumptive use was conferred on non-riparian owners/cities by legislative charter.[243] The Minnesota Supreme Court recognized that the state's right to "draw" water from a water body to "supply . . . water for the ordinary use of cities in their vicinity is . . . a public use, and has always been so recognized."[244]

The legislature left management of water for consumptive use in the hands of local units of government[245] until 1937 when, motivated in part by the widespread droughts of the 1930s, the legislature authorized the DNR to develop a permit program for the appropriation of both groundwater and surface waters.[246] With limited exceptions,[247] the statutory scheme prohibited any person or unit of government from appropriating or using surface or groundwater without first obtaining a written DNR permit.[248] In 1947, the legislature authorized the DNR to attach conditions to appropriation permits to protect the public interest.[249]

Over the next several decades the legislature took steps to refine Minnesota's water appropriation system. These modifications included further restrictions on withdrawals and monitoring requirements. Thus, for example, the legislature

242. Water balance refers to the functioning of hydrologic cycles. The hydrologic cycle is composed of inputs such as snowmelt, rainfall, and condensation; outputs including stream flow, groundwater seepage, and evapotranspiration; and storage (inflow less output). A hydrologic system is balanced when inflows "balance" with changes in output and storage. KENNETH N. BROOKS ET AL., HYDROLOGY AND THE MANAGEMENT OF WATERSHEDS 21 (3d ed. 2003).

243. *See* Minneapolis Mill Co. v. Bd. of Water Comm'rs of Saint Paul, 56 Minn. 485, 490, 58 N.W. 33, 34 (1894); *see, e.g.*, Act of Mar. 4, 1885, ch. 110, 1885 Minn. Spec. Laws 287 (authorizing St. Paul to provide water to the residents of St. Paul).

244. *Minneapolis Mill Co.*, 56 Minn. at 490, 58 N.W. at 34.

245. MINN. STAT. § 1186(18) (1923), for example, delegated to villages and cities the authority to "provide, and regulate the use of wells, cisterns, reservoirs, waterworks, and other means of water supply."

246. Act of Apr. 26, 1937, ch. 468, § 4, 1937 Minn. Laws 794, 795.

247. The statute granted an exemption for domestic consumption for twenty-five persons or less. *Id.*

248. *Id.*

249. Act of Mar. 24, 1947, ch. 142, § 5, 1947 Minn. Laws 218, 221.

prohibited existing permit holders from increasing pumping capacity without a DNR permit.[250] More importantly, from a sustainability perspective, the legislature required permit holders to measure and annually report the actual volume of their water extractions.[251] This allowed the state, for the first time, to monitor the volume of water extracted from both surface water bodies and groundwater aquifers, a necessary first step in assuring a healthy "water balance"[252] and an eventual water budget.[253]

It was not until 1974 that the legislature adopted an appropriation priority scheme[254] and required the DNR to allocate water to potential users using a use-based priority scheme.[255] The priority scheme initially privileged domestic water supply and agricultural irrigation over all other uses.[256] Non-domestic and non-agricultural uses were prioritized based on industry type and water volume.[257] The 1974 amendments, however, retained exemptions for domestic uses serving less than twenty-five persons and added an exemption for minimal extractions.[258] The relatively low ranking of commercial and industrial users created dilemmas for some cities and municipalities, which serviced both domestic and commercial/industrial users, particularly where overlying riparian owners had higher priority rankings than commercial/industrial users serviced by municipal water systems.[259]

The 1974 priority scheme has evolved over time. Irrigated agriculture, for example, has fallen from a first-priority use to a third-priority use.[260] The priority scheme is now based on both

250. Act of May 26, 1965, ch. 797, § 1, 1965 Minn. Laws 1216, 1217 (codified as amended at MINN. STAT. § 105.41 subdiv. 2 (1966)).

251. *Id.* § 1, subdiv. 4–5, 1965 Minn. Laws at 1217–18.

252. *Id.*

253. A water budget is the amount of water within any one water reservoir. The basic water budget equation is characterized as "Inflow – Outflow = Change in Storage." *See* DAVID FAIRBAIRN, UNIV. OF MINN. WATER RES. CTR., MINNESOTA WATER SUSTAINABILITY FRAMEWORK: MINNESOTA WATER SUPPLY AND AVAILABILITY 4–16 (2011), *available at* http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_290681.pdf (discussing a hydrologic systems water budget and the impact of extractions on the water budget).

254. Act of Apr. 12, 1974, ch. 558, § 3, 1974 Minn. Laws 1373, 1375–76 (codified as amended at MINN. STAT. § 105.41, subdiv. 1a–1b (1974)).

255. *Id.*

256. *Id.* § 3, 1974 Minn. Laws at 1375.

257. *Id.*

258. *Id.* at § 3, 1974 Minn. Laws at 1376.

259. *See* Crookston Cattle Co. v. Minn. Dep't of Natural Res., 300 N.W.2d 769, 775–76 (Minn. 1980).

260. MINN. STAT. § 103G.261(a)(3) (2010).

water use and volume of water extracted.[261] In a further nod to sustainability, the system also prohibits the authorization of any appropriation of over two million gallons per day over a thirty-day period without first determining whether there is sufficient water within the water basin "to meet the basin's water resources needs during the specified life of the consumptive use."[262]

Following another period of significant drought in 1976, Minnesota took yet another step toward a more sustainable water appropriation system in 1977 when it required the DNR to consider hydrologic system functioning in the water appropriation permitting process.[263] Thus, the DNR is hypothetically required to limit appropriation permits during periods of low flow to protect both hydrologic functions and downstream water users.[264] The legislature also required the DNR to set minimum water basin levels to limit the maximum volume of water that can cumulatively be appropriated by permittees in any given water basin.[265] Finally, the governor was authorized to issue water deficiency orders restricting permitted uses such as lawn sprinkling and golf course irrigation during periods of drought.[266]

Today's water allocation permitting scheme attempts to link water basin levels to water allocation in a rough attempt at maintaining some semblance of a "water balance."[267] Water appropriations are hypothetically managed "to assure an adequate [water] supply to meet long-range . . . domestic, municipal, industrial, agricultural, fish and wildlife, recreational, power, navigation, and quality control" needs within the state.[268] Minnesota relies on a combination of appropriation permits,[269] withdrawal monitoring,[270] and natural system indicators to assure that there is sufficient water for both natural and human systems. Thus, appropriation permits are required for all appropriations in

261. *Id.* § 103G.265, subdiv. 2–3.
262. *Id.* § 103G.265, subdiv. 3(a)(1). Legislative approval is also required for certain appropriations of over two million gallons per day. *Id.* § 103G.265, subdiv. 3(a)(2).
263. Act of June 2, 1977, ch. 446, § 19, subdiv. 1–4, 1977 Minn. Laws 1230, 1239–40 (codified at MINN. STAT. § 105.401 (1978) (repealed 1990)).
264. *Id.* § 19, subdiv. 2, 1977 Minn. Laws at 1239.
265. *Id.* § 19, subdiv. 3(b), 1977 Minn. Laws at 1240.
266. *Id.* § 20, 1977 Minn. Laws at 1240.
267. MINN. STAT. § 103G.255 (2010).
268. *Id.* § 103G.265, subdiv. 1.
269. *Id.* § 103G.271.
270. *Id.* § 103G.282.

excess of ten thousand gallons a day[271] and must be consistent with state, regional, and local water and land management plans.[272] Individual permittees are required to monitor and report their water use volumes to the commissioner of the DNR annually.[273] At the same time, the DNR must manage allocation permits to assure maintenance of minimum water elevations across surface water bodies and ground water aquifers.[274] The DNR has the ability to adjust or terminate permits over time in response to significant impacts to hydrologic systems caused by the volume of appropriations.[275] For example, even with a valid permit, certain appropriations may not be made during periods of low flow.[276] Additionally, all appropriation permits are five years in duration[277] and subject to cancellation "at any time if necessary to protect the public interests."[278]

The DNR's ability to adjust and modify appropriation permits to assure a "water balance" and hydrologic integrity is, however, complicated by the very nature of hydrologic systems. The DNR's task is perhaps most difficult where appropriations are made from groundwater aquifers. Sixty-six percent of Minnesota's consumptive[279] water use is drawn from groundwater aquifers.[280] Our knowledge about the scope of our groundwater resources, including their volumes and recharge rates, is not as well developed as our knowledge of surface water bodies, which are visible.[281]

271. MINN. R. pt. 6115.0620(C) (2011); *see* MINN. STAT. § 103G.271, subdiv. 4(b).
272. MINN. STAT. § 103G.271, subdiv. 2.
273. *See id.* §§ 103G.281–.282.
274. *Id.* §§ 103G.285, .287.
275. *See id.* § 103G.315.
276. *Id.* § 103G.285, subdiv. 2.
277. *Id.* § 103G.315, subdiv. 13(b).
278. *Id.* § 103G.315, subdiv. 11(1).
279. A water use is non-consumptive if it is extracted, used, and immediately returned to the water body. *See* FAIRBAIRN, *supra* note 253, at 4.
280. *Id.* at 11. Minnesotans use between 1.37 and 1.44 trillion gallons of water per year, or 788 gallons per person per day. *Id.* at 10–11. The DNR permits 1.37 trillion gallons per year while the U.S. Geological Survey estimates that Minnesota's total water usage (both permitted and non-permitted uses) is 1.44 trillion gallons per year. *Id.* Thus, approximately seventy billion gallons of water are extracted from Minnesota's surface and groundwater systems without a DNR permit. The bulk of Minnesota's surface water use is non-consumptive—used for energy production. *See id.* at 11.
281. *Id.* at 13–16. "Due to the financial and staffing requirements of drilling the number of wells that would be needed to characterize entire areas, Minnesota does not have the data needed to comprehensively describe regional or smaller-

Information about groundwater aquifer levels is one of the greatest knowledge gaps and must be addressed to sustainably manage hydrologic systems.[282] Because of both our limited knowledge about and the volume of water drawn from groundwater systems, the DNR's ability to determine the cumulative impact of permitted withdrawals on groundwater systems is limited, making it difficult to sustainably manage groundwater resources.[283] Minnesota's appropriation scheme has not been rigorously tested, and as water becomes scarcer in some parts of the state, it is unclear whether Minnesota's appropriation permit system is capable of addressing either the growing water demands or the resulting use conflicts that may arise between permit holders, riparian owners, and the natural system.[284]

b. Water Conservation Practices

At the same time that the Minnesota Legislature developed its water appropriation system, the legislature also developed a regulatory system to manage the use and conservation of Minnesota's surface water systems. Beginning in 1937, DNR permits were required for dam construction or for any other activity that changed or modified "the course, current, or cross-section[285] of any stream or body of water, wholly or partly within this state."[286] In 1947, the legislature expanded the DNR's regulatory and permitting authority to cover the construction of "wharfs, docks, piers, levees, breakwaters, basins, canals and hangers in or adjacent to public waters."[287] The DNR was authorized to reject a

scale hydrogeology throughout the state." *Id.* at 15.

282. *Id.* at 16.

283. *See* POLICY TECHNICAL REPORT, *supra* note 36, at 5.

284. Karkkainen, *supra* note 204, at 75–76; *see also* Josephine Marcotty, *Minnesota Draining Its Supplies of Water*, STAR TRIB., Feb. 28, 2013, http://www.startribune.com/local/192783461.html.

285. The terms "course" and "current" refer to the flow of water through a water body. State v. Kuluvar, 266 Minn. 408, 416, 123 N.W.2d 699, 705 (1963). Changes in the cross section "refer[] to any change from the natural condition discernible in a view of the waters as they would appear if cut through by an intersecting plane." *Id.*

286. Act of Apr. 26, 1937, ch. 468, § 5, 1937 Minn. Laws 794, 795–96 (codified at MINN. STAT. § 105.42 (1949)). Minnesota Statutes section 105.42 was amended in 1973 to exempt public drainage systems established under the Drainage Code, which did not "substantially affect" a natural watercourse or lake. Act of May 18, 1973, ch. 315, § 7, 1973 Minn. Laws 615, 618–19 (codified as amended at MINN. STAT. § 105.42 (1974)).

287. Act of Mar. 25, 1947, ch. 142, § 6, 1947 Minn. Laws 218, 222 (codified as

permit application if the proposed work or modifications were "inadequate, wasteful, dangerous, or impractical, or detrimental to the public interest."[288] If, however, the proposed modification adequately protected public safety and promoted the public welfare, the DNR was required to issue the permit.[289] The legislature also expanded the DNR's oversight of dam construction, repair, and maintenance.[290]

The State's power to regulate a riparian owner's use of public waters was challenged in *State v. Kuluvar*,[291] a case involving certain "improvements" to Rainy Lake made by an abutting owner to benefit his resort property.[292] The proposed work included the construction of a channel and wharf and dredging.[293] Kuluvar had not obtained a DNR permit before undertaking the work[294] and challenged the requirement that he obtain one, alleging the permit statute deprived him of his riparian water rights without due process of law.[295] The court rejected Kuluvar's argument and upheld the State's authority to regulate activities in public waters, including traditional riparian uses, as the statute merely directed the State to fulfill its trusteeship by protecting public waters against interference, "including [by] those who assert the common-law rights of a riparian owner."[296] In reaching this conclusion, the court observed there are instances where a riparian owner's desires are contrary to, or detrimental to, the public interest. In those cases the interests of the riparian owner must give way to the broader public interest.[297] In reaching this conclusion, the court indirectly acknowledged that it was the State, not the abutting property owner, which determines how to best serve the public's interest in its water resources, including how to best manage the water body to achieve that interest, thus opening the door to a conservation management ethic.

amended at MINN. STAT. § 105.42 (1949)).

288. *Id.* § 9, 1947 Minn. Laws at 224 (codified as amended at MINN. STAT. § 105.45 (1949)).

289. *Id.*

290. *Id.* §§ 12, 16, 1947 Minn. Laws at 226–27 (codified as amended at MINN. STAT. §§ 105.48, 105.52 (1949)).

291. 266 Minn. 408, 123 N.W.2d 699 (1963).

292. *Id.* at 409–11, 123 N.W.2d at 701–02.

293. *Id.* at 410–11, 123 N.W.2d at 702.

294. *Id.* at 412, 123 N.W.2d at 703.

295. *Id.* at 415, 123 N.W.2d at 704.

296. *Id.* at 418, 123 N.W.2d at 706.

297. *Id.*

The criteria for issuing or denying a permit for alteration of a water body were amended in 1973. The amendment increased the DNR's discretion by removing language specifying when the DNR could deny a permit and clarifying that the applicant has "the burden of proving the proposed project is reasonable, practical, and will adequately protect public safety and promote public welfare."[298] Although the plain language of the statutory revision suggests that the statute imposes a greater burden of proof on the permit applicant, the Minnesota Supreme Court has rejected this notion, holding, rather, that the statute as revised merely incorporates the established rule of administrative law—a party must prove that the proposed permit will promote the public welfare in order to obtain a permit to modify the course, current, or cross section of a public water body.[299] Nonetheless, by deleting the conditions under which the DNR could deny a permit, the legislature expanded the DNR's discretionary authority to determine under what conditions the public interest requires a permit denial.

Conservation of Minnesota's public waters was furthered during the environmental renaissance of the 1970s, which included passage of both the Minnesota Environmental Policy Act (MEPA)[300] and the Minnesota Environmental Rights Act (MERA).[301] The Minnesota Supreme Court was quick to apply the provisions of both MEPA and MERA to assure conservation of Minnesota's water resources. Thus, in *Application of White Bear Lake*, the Minnesota Supreme Court held that MEPA prohibited the DNR from issuing a permit to the City of White Bear Lake to construct a highway across a bay on Birch Lake because the proposed construction "caused or [was] likely to cause pollution, impairment, or destruction of the air, *water*, land or other natural resources located within the state."[302] MEPA required the DNR to deny the permit "so long as

298. Act of May 18, 1973, ch. 315, § 13, 1973 Minn. Laws 615, 621 (codified at MINN. STAT. § 105.45 (1974), recodified at MINN. STAT. 103G.315 (1992)). *See generally* Act of Apr. 6, 1990, ch. 391, art. 7, 1990 Minn. Laws 354, 643.

299. *In re* Application of City of White Bear Lake, 311 Minn. 146, 150–51, 247 N.W.2d 901, 904 (1976) (citing *In re* Lake Elysian High-Water Level, 208 Minn. 158, 293 N.W. 140 (1940)).

300. Act of May 19, 1973, ch. 412, § 1, 1973 Minn. Laws 895 (codified at MINN. STAT. § 116D.01 (1974)).

301. Act of June, 7, 1971, ch. 952, § 1, 1971 Minn. Laws 2011–12 (codified at MINN. STAT. § 116B.01 (1974)).

302. *In re Application of White Bear Lake*, 311 Minn. at 155, 247 N.W.2d at 906 (quoting § 116D.04, subdiv. 5 (emphasis added)).

there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare . . . . Economic considerations alone shall not justify such conduct."[303]

Likewise, in *County of Freeborn v. Bryson*,[304] the Minnesota Supreme Court, applying MERA to the state's water resources, held that a marsh was a protectable natural resource within the meaning of MERA.[305] Construction of a highway through the marsh was precluded where construction would materially adversely affect the marsh.[306] The matter was remanded to assess feasible and prudent alternatives.[307] On appeal, after remand, the court acknowledged that MERA reflected a significant value shift in natural resource management generally and in water resource management in particular:

> In the 1920's and 1930's, the state encouraged highway construction to facilitate industrial expansion and transportation of farm products to market. However, a consequence of such construction has been the elimination or impairment of natural resources. Whether for highways or for numerous other reasons, including agriculture, it is a well-known fact that marshes have been drained almost indiscriminately over the past 50 years, greatly reducing their numbers. The remaining resources will not be destroyed so indiscriminately because the law has been drastically changed by [MERA]. Since the legislature has determined that this change is necessary, it is the duty of the courts to support the legislative goal of protecting our environmental resources.[308]

During this same time frame, the legislature adopted a number of policies devised to protect Minnesota's water resources by regulating lands adjacent to public waters. A major piece of legislation in this vein was Minnesota's Shoreland Management Act

303. *Id.*

304. 297 Minn. 218, 210 N.W.2d 290 (1973), *aff'd in part*, 309 Minn. 178, 243 N.W.2d 316 (1976).

305. *Id.* at 228, 210 N.W.2d at 297.

306. *Id.* The matter was remanded to the district court to permit the County to present any affirmative defenses it might have to the MERA claim. *Id.* at 230, 210 N.W. 2d at 298.

307. *Id.*

308. Cnty. of Freeborn v. Bryson, 309 Minn. 178, 188, 243 N.W.2d 316, 321 (1976).

of 1969.[309] The legislation recognized that the "wise development of shorelands . . . [was necessary to] preserve and enhance the quality of surface waters, preserve the economic and natural environmental values of shorelands, and provide for the wise utilization of water and related land resources of the state."[310] The DNR was directed to develop model standards and criteria for the subdivision, use, and development of shoreland in unincorporated areas[311] as minimum requirements for shoreland development.[312] Counties were required to adopt and implement the model shoreland conservation ordinances, although a county could adopt more stringent ordinances.[313] Should a county fail to adopt the model shoreland development ordinances, the DNR was authorized to adopt the ordinances on the county's behalf.[314] In 1973, the Shoreland Management Act was extended to cover municipalities.[315]

Minnesota's Floodplain Management Act and Minnesota's Wild and Scenic Rivers Act also regulated development activities on private property to protect water resources. The 1969 Floodplain Management Act was designed to "guide" but not prohibit development in floodplains[316] and required local units of government to delineate floodplains and preserve the carrying capacity of floodplains and floodways to reduce flood damage.[317] Development in the floodplain was restricted to the extent that it unduly restricted the ability of the floodplain to carry and discharge floodwaters.[318] The present floodplain management program, as amended, requires local units of government to adopt

309. *See generally* MINN. STAT. § 103F.201 (2010).

310. Act of May 27, 1969, ch. 777, § 1, 1969 Minn. Laws 1450, 1450–51 (codified at MINN. STAT. § 105.485 (1971)).

311. *Id.* § 1, subdiv. 3, 1969 Minn. Laws at 1451 (recodified at MINN. STAT. § 103F.211 (2010)).

312. *Id.*

313. *Id.* § 1, subdiv. 4, 1969 Minn. Laws at 1451–52 (recodified at MINN. STAT. § 103F.215 (2010)).

314. *Id.* at 1452.

315. Act of May 19, 1973, ch. 379, §§ 1–3, 5, 1973 Minn. Laws 764, 764–67 (codified as amended at MINN. STAT. § 105.485, subdiv. 6 (1974), recodified at MINN. STAT. § 103F.211 (2010)).

316. Act of May 23, 1969, ch. 590, § 1, 1969 Minn. Laws 1015, 1015–16 (codified at MINN. STAT. § 104.01 (1974)).

317. *Id.* § 4, 1969 Minn. Laws at 1017–18 (codified at MINN. STAT. § 104.04 (1974)).

318. *Id.* § 3, 1969 Minn. Laws at 1017 (codified at MINN. STAT. § 104.03 (1974)).

sound floodplain management ordinances regulating land use in the floodplain to minimize flood damage and to maintain the carrying capacity of the floodway.[319] Ordinances are subject to DNR approval,[320] and the DNR requires that development within the 100-year floodplain meet specified elevation standards.[321] Development within the floodway is further restricted to development with low flood damage potential to assure adequate capacity to carry floodwaters.[322]

Unlike the Floodplain Management Act, Minnesota's river protection programs, including the Minnesota Wild and Scenic Rivers Act,[323] the Lower St. Croix Wild and Scenic River Act,[324] and the Mississippi Headwaters Planning and Management Act, are primarily conservational. Minnesota's Wild and Scenic Rivers Act[325] and Lower St. Croix Wild and Scenic River Act[326] were adopted to protect the unique natural attributes of Minnesota's remaining wild, scenic, and recreational rivers. Minnesota's Wild and Scenic Rivers Act, which is modeled after the Federal Wild and Scenic Rivers Act,[327] establishes a state Wild and Scenic Rivers System that includes rivers or river segments that "possess outstanding scenic, recreational, natural, historical, scientific, or similar values."[328] Rivers included in the state program are classified as "wild, scenic, or recreational."[329] The Act requires the DNR to adopt a management plan[330] and shoreland rules for each river included in

319. MINN. STAT. § 103F.121, subdiv. 1–2 (2010).
320. *Id.* § 103F.121, subdiv. 2(a)–(d).
321. MINN. R. pt. 6120.5700 (2009).
322. MINN. R. pt. 6120.5800.
323. §§ 103F.301–.345.
324. *Id.* § 103F.351.
325. Act of May 16, 1973, ch. 271, 1973 Minn. Laws 521 (codified at MINN. STAT. § 104.31 (1974)); *see also In re* Hubbard, 778 N.W.2d 313, 318–20 (Minn. 2010) (discussing the history of the Minnesota Wild and Scenic Rivers Act, the St. Croix Wild and Scenic Rivers Act, and the inclusion of the St. Croix River in the National Wild and Scenic Rivers Act).
326. Lower Saint Croix Wild and Scenic River Act of 1972, Pub. L. No. 92-560, §§ 3–6, 86 Stat. 1174 (codified at 16 U.S.C. § 1274(a)(9) (2006)). Passage of the Lower St. Croix Wild and Scenic River Act by the Minnesota Legislature was a prerequisite to including the Lower St. Croix in the National Wild and Scenic Rivers Program. Act of May 12, 1973, ch. 246, § 1, 1973 Minn. Laws 480, 480–81 (codified as amended at MINN. STAT. § 104.25 (1974), recodified at MINN. STAT. § 103F.351, subdiv. 1 (2010)).
327. *See* 16 U.S.C. §§ 1271–1281 (2006).
328. MINN. STAT. § 103F.315, subdiv. 1.
329. *Id.* § 103F.315, subdiv. 2.
330. *See id.* § 103F.325, subdiv. 1.

the system.[331] Local units of government are required to conform local zoning ordinances and land use plans to the DNR management plan and shoreland rules to assure that the rivers' special attributes are protected from degradation.[332] In addition to the St. Croix River, which holds a National Wild and Scenic Rivers designation, segments of six rivers have been included in the state's Wild and Scenic Rivers Program: the Kettle, the Rum, the Cannon, the Mississippi from St. Cloud to Anoka, the North Fork of the Crow River in Meeker County, and the Minnesota from Lac qui Parle Dam to Franklin.[333]

The ability of the DNR to implement both the Wild and Scenic Rivers Program and shoreland ordinances by requiring counties and local units of government to comply with ordinances adopted pursuant to the Wild and Scenic Rivers Act was recently called into question by *In re Hubbard*.[334] The Hubbards owned property on the Lower St. Croix River and proposed to develop the property by building a house on the river bluff in violation of forty-foot bluff setback requirements in the city's zoning ordinances, which the city had adopted in conformance with the DNR's model zoning ordinance for the Lower St. Croix Wild and Scenic River.[335] Prior to construction, the Hubbards submitted a variance request to the city, a variance request that the DNR opposed.[336] Despite the DNR's opposition, the city council voted to grant the variance.[337] Minnesota Administrative Rule part 6105.0540, subparts 2 and 3, however, required the city to submit the variance to the DNR for certification that the variance complied with State and Federal Wild and Scenic Rivers Act requirements.[338] The DNR refused to certify the variance, instead sending the city a "notice of non-approval," in essence vetoing the variance.[339] The court struck down the DNR's notice of non-approval because the Lower St. Croix Wild and Scenic River Act and the Minnesota Wild and Scenic Rivers Act did

331. *See id.* § 103F.321, subdiv. 2.
332. *See id.* § 103F.335.
333. *Minnesota's Wild & Scenic Rivers*, MINN. DEPARTMENT NAT. RESOURCES, http://www.dnr.state.mn.us/waters/watermgmt_section/wild_scenic/wsrivers/rivers.html (last visited Dec. 10, 2012).
334. 778 N.W.2d 313, 316 (Minn. 2010).
335. *Id.* at 316, 319.
336. *Id.* at 316.
337. *Id.*
338. *Id.* at 317.
339. *Id.* The court noted that a notice of disapproval was, in essence, a variance veto. *Id.* at 320.

not give the DNR either the express authority or the implied authority to certify zoning decisions made by local units of government, and, therefore, the DNR had no ability to prevent the city from granting a variance to the model wild and scenic river ordinances adopted by the city.[340]

The *Hubbard* decision is particularly problematic for Minnesota's rivers, lakes, and streams. For although the Wild and Scenic Rivers Acts and the Shoreland Management Act require local units of government to adopt model ordinances developed by the DNR for protection of the state's water resources, there are constraints on the DNR's ability to provide external oversight to assure that local units of government enforce the model ordinances in a manner that is protective of Minnesota's public waters. Thus, for example, some counties and local units of government can and do regularly grant individual variances to developments that will have detrimental impacts on Minnesota's rivers and lakes.[341] Because of their limited geographic breadth, local units of government, unlike the DNR, cannot envision the cumulative, detrimental effects of numerous and separate individual actions on the state's public waters.

The Mississippi Headwaters Planning and Management Act takes a different tack to protect the upper Mississippi River from Lake Itasca to Morrison County. Land use management oversight over the upper reaches of the Mississippi River is vested, not with the DNR, but with the Mississippi Headwaters Board, a Board composed of representatives of the counties through which the upper Mississippi traverses.[342] The Board is charged with developing and implementing a management plan[343] to provide minimum standards "for the protection and enhancement of the natural, scientific, historical, recreational and cultural values of the Mississippi River and related shoreland areas."[344] Local ordinances within the member counties are required to conform to the plan.[345]

c. The Rise of Wetland Protection

Public pressures to protect wetlands began to emerge in the

340. *Id.* at 325.
341. *See, e.g.*, Spencer, *supra* note 229.
342. MINN. STAT. § 103F.367, subdiv. 1 (2010).
343. *Id.* § 103F.369, subdiv. 3.
344. *Id.* § 103F.369, subdiv. 2.
345. *Id.* § 103F.373, subdiv. 2.

middle of the twentieth century. Historically, requests to drain wetlands under the drainage code were supported by a presumption that "reclamation of wasteland" for cultivation "through construction of public drainage ditches is of public benefit."[346] By 1950, however, there was a growing concern about wetlands decline, particularly prairie potholes, essential waterfowl habitat,[347] as hunting interests began advocating for wetland protection both nationally and in Minnesota.[348] In response to these pressures, Minnesota adopted both the Small Wetlands Program[349] and Water Bank Act.[350] These programs authorized the DNR to purchase and "bank" wetlands for wildlife habitat and/or management.[351] The acquisitions were funded through hunting license fees.[352]

In 1955, the drainage code was amended to require drainage authorities to consider the "conservation of soil, water, forests, wild animals, and related natural resources" when determining the benefits of a drainage system.[353] The court, however, was reluctant to use the drainage code amendment to curtail the authority of drainage authorities to authorize ditch construction. Citing the wetlands acquisition and banking provisions, the court concluded that the legislature intended the State to pay private landowners to protect conservation interests in wetlands.[354] In essence, the court eviscerated the conservation provisions in the drainage code by concluding that, absent an intent on the part of the State to purchase the wetland in question, conservation could not form the basis for interfering with or dismissing a drainage proceeding.[355] If the State wanted to protect wetlands, it should purchase them.

In 1973, Minnesota took yet another step to protect wetlands

346. Titrud v. Achterkirch, 298 Minn. 68, 72–73, 213 N.W.2d 408, 412 (1973) (citing MINN. STAT. § 106.011, subdiv. 14 (repealed 1985)).

347. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 147.

348. David C. Forsberg, *The Minnesota Wetland Conservation Act of 1991: Balancing Public and Private Interests*, 18 WM. MITCHELL L. REV. 1021, 1026 (1992).

349. *Id.* (citing Interview with Tom Landwehr, Wetland Wildlife Program Leader, Div. of Fish and Wildlife, Minn. Dep't. of Natural Res. (Sept. 25, 1991)).

350. Water Bank Act, ch. 644, 1957 Minn. Laws 875 (codified as amended at MINN. STAT. § 103F.601 (2010)).

351. *Id.*

352. Forsberg, *supra* note 348, at 1026.

353. Act of April 22, 1955, ch. 681, § 1, 1955 Minn. Laws 1030 (codified as amended at MINN. STAT. § 106.671 (1957) (repealed 1985)).

354. Schwermann v. Reinhart, 296 Minn. 340, 346, 210 N.W.2d 33, 37 (1973) (citing MINN. STAT. § 97.481).

355. *Id.*

when it extended the public waters designation to include wildlife habitation and sediment entrapment as important characteristics of public waters.[356] In 1979, the legislature classified all types 3, 4, and 5 wetlands[357] over ten acres in size as public waters wetlands.[358] The legislation required the DNR to undertake an inventory of public waters, including public water wetlands.[359] County boards could object to their inclusion in the public waters inventory.[360] Completing the inventory was, however, complicated by the reluctance of many county boards to cooperate with the inventory process.[361]

At the national level there was also a growing concern about wetland loss, including prairie potholes.[362] Congress acknowledged these concerns by including provisions in the 1972 Clean Water Act (CWA) to staunch the loss of wetlands across the United States.[363] Section 404 of the CWA authorized the Corps of Engineers to regulate dredging and filling of federal navigable waters, including wetlands.[364] Henceforth, drainage of wetlands meeting the definition of federal navigable waters, including those in Minnesota, would require a section 404 permit prior to any

356. Act of May 18, 1973, ch. 315, § 2, 1973 Minn. Laws 615, 615–16 (codified as amended at MINN. STAT. § 105.37 (1974) (repealed 1979)).

357. The U.S. Fish and Wildlife Service classifies wetlands by type depending upon vegetation type, soil moisture, water depth, and the length of time water sits on the land. MINN. BD. OF WATER AND SOIL RES., WETLANDS IN MINNESOTA 2–3 [hereinafter BWSR, WETLANDS IN MINNESOTA], *available at* http://www.bwsr.state.mn.us/wetlands/publications/wetland.pdf.

358. Act of May 25, 1979, ch. 199, § 3, 1979 Minn. Laws 334, 335 (codified as amended at MINN. STAT. § 105.37 subdiv. 15 (1980) (repealed 1990)).

359. *Id.* § 7, 1979 Minn. Laws at 336–37.

360. *Id.* at 337.

361. PROGRAM EVALUATION DIV., OFFICE OF THE LEGISLATIVE AUDITOR, STAFF PAPER DRAINAGE: LAW, POLICY AND PROGRAMS 18 (1978) (on file with the Minnesota Office of the Legislative Auditor).

362. *See generally* Oliver A. Houck & Michael Rolland, *Federalism in Wetlands Regulation: A Consideration of Delegation of Clean Water Act Section 404 and Related Programs to the States*, 54 MD. L. REV. 1242, 1244–54 (1995) (outlining the legislative deliberations surrounding section 404 of the Clean Water Act).

363. Federal Water Pollution Control Act (CWA) of 1972, § 404, 33 U.S.C. § 1344(g)(1) (2006) (including "wetlands" in the definition of "waters which are subject to the ebb and flow of the tide," thereby making regulation of discharge into wetlands solely within the jurisdiction of the Army Corps of Engineers).

364. *Id.*; *see also*, Forsberg, *supra* note 348, at 1037–41 (discussing the Corps of Engineers' management of the CWA section 404 program); Christopher J. Schulte, Note, *Minnesota Wetland Conservation Act of 1991: "Did Minnesota Miss the Boat to Protect Artificially Created Wetlands?"*, 15 HAMLINE L. REV. 439, 439–46 (1992).

development activity that required dredging and/or filling.[365] Section 404, however, contains an agricultural exemption for "normal farming" activities.[366]

Shortly after passage of the CWA, Minnesota attempted to once again address ongoing wetland loss by amending the drainage code to expressly require drainage ditch authorities to consider water quality, fish and wildlife habitat, and "overall" environmental impact in determining whether to authorize drainage ditch projects.[367] Despite these national and state efforts, drainage continued virtually unabated. Hanson reports that between 1974, when the State inventoried its remaining public wetlands, and 1980, the state lost almost seventeen percent of inventoried wetlands.[368]

Minnesota did not tackle the wetlands issue again for almost two decades, when in 1991 the legislature passed the Wetlands Conservation Act,[369] an act that reflects a 180-degree shift in state wetland policy. No longer were wetlands[370] viewed as wasted swampland to be drained to increase agricultural production; rather, the legislature recognized that wetlands provide important public values beyond wildlife habitat. Wetlands, by "conserving surface waters, maintaining and improving water quality . . . , reducing runoff, providing for floodwater retention, reducing stream sedimentation . . . , [and] helping moderate climatic change . . . are important to comprehensive water management."[371] In recognition of these services the Wetlands Conservation Act adopted a "no net loss" policy and avowed to "increase the quantity, quality, and biological diversity" of Minnesota's wetlands through restoration, enhancement, avoidance, and replacement of

365. 33 U.S.C. § 1344.

366. *Id.* § 1344(f)(1)(A). A full discussion of the section 404 program and the federal regulation of wetlands is beyond the scope of this article.

367. Act of Mar. 25, 1976, ch. 83, §§ 11–12, 1976 Minn. Laws 209, 218–19 (codified at MINN. STAT. § 106.021, subdiv. 6 (1978), recodified at MINN. STAT. § 103E.015 (2010)).

368. Hanson, *Damming Agricultural Drainage*, *supra* note 8, at 148.

369. Wetland Conservation Act of 1991, ch. 354, 1991 Minn. Laws 2794.

370. The Wetland Conservation Act defines a wetland as transitional land between terrestrial and aquatic systems where the water table is at or near the surface or where the land is covered by shallow waters which: (1) are predominantly composed of hydric soils and (2) are so saturated as to support a prevalence of hydrophytic vegetation. MINN. STAT. § 103G.005, subdiv. 19 (2010). This definition likely includes almost all wetland types covered by U.S. Fish and Wildlife Circular 39. *See generally* BWSR, WETLANDS IN MINNESOTA, *supra* note 357.

371. MINN. STAT. § 103A.201, subdiv. 2(b) (1992).

wetlands.[372]

Although public water wetlands continue to be regulated as public waters under the jurisdiction of the DNR, the Wetlands Conservation Act gives a significant role to local units of government and the Board of Water and Soil Resources (BWSR), a state board with strong local representation,[373] to implement the directives of the Act. Local units of government have broad discretion to determine which wetlands will be drained through their approval of wetland replacement plans.[374] The Act permits drainage of nonpublic waters wetlands if the drained wetland is "replaced by restoring or creating wetland areas of at least equal public value."[375] The BWSR is responsible for developing wetlands replacement regulations and outlining replacement plan parameters, including the "criteria . . . and location of acceptable replacement of wetland values."[376] The DNR's role in the process is limited to one of consultation.[377] Determinations made by local

372. *Id.*

373. The first iteration of the Board of Water and Soil Resources (BWSR), the Soil Conservation Committee, was created by the legislature in 1937 to organize soil conservation districts and to "provide them with promotional, financial and administrative assistance." MINN. BD. OF WATER & SOIL RES., BWSR HISTORY (2012), *available at* http://www.bwsr.state.mn.us/history/BWSR%20history.pdf. While still primarily servicing local units of government, the mission and function of the BWSR has changed over the years. In 1967, the BWSR's mission was expanded to include water. *Id.* In 1987, the legislature merged the then Soil and Water Conservation Board with the Water Resource Board (which had jurisdiction over the establishment of watershed districts) and the Southern Minnesota Rivers Basin Council. *Id.* The BWSR's membership of nineteen is heavily weighted to local interests, including representatives from soil and water conservation districts (3), water management organizations (3), counties (3), cities (2), and citizens (3). *Id.* Its membership also includes representatives from the DNR, the Minnesota Pollution Control Agency, the Department of Agriculture, the Department of Health, and the University of Minnesota. *Id.* This locally weighted membership does not bode well for Minnesota's wetlands. A recent evaluation from the Minnesota Legislative Auditor found that the BWSR has been historically reluctant to assess the performance of local water programs and has little "inclination to carry out effective oversight of local watershed management activities." MINN. OFFICE OF THE LEGISLATIVE AUDITOR, EVALUATION REPORT: WATERSHED MANAGEMENT 48 (2007) [hereinafter WATERSHED MANAGEMENT], *available at* http://www.auditor.leg.state.mn.us/ped/pedrep/watersheds.pdf#page=55.

374. MINN. STAT. §§ 103G.222, 103G.2242–.2243 (2010).

375. *Id.* § 103G.222, subdiv. 1.

376. *Id.* § 103G.2242, subdiv. 1(a).

377. *Id.* If there are questions about the public value of the replacement wetlands, a professional technical evaluation panel is employed to provide advice to the local unit of government. *Id.* § 103G.2242, subdiv. 2.

units of government may be appealed to the BWSR.[378] The Act contains numerous exemptions, including exemptions for agricultural activities and drainage systems.[379] These exemptions and specific limits of the Act's jurisdiction have been the subject of ongoing revision and "fine-tuning" by the legislature since the law was enacted in 1991.[380] Additionally, if a landowner's replacement plan is not approved, the landowner must be compensated—absent compensation, the landowner may drain or fill the wetland without an approved plan.[381]

D. Cleaning the Waters

Until the middle of the twentieth century, it was presumed that the task of maintaining water quality was the responsibility of the individual states.[382] Minnesota began taking preliminary steps to regulate water quality as early as 1873 when the state prohibited the disposal of offal and dead horses in lakes and rivers.[383] The focus of these early laws was the preservation of safe drinking water sources. Oversight of water pollution has, however, been bifurcated since Minnesota began taking steps to manage water quality.

By 1905, the Minnesota Legislature recognized the need to protect domestic drinking water supplies and directed the State Board of Health to control, through permits, persons and businesses polluting drinking water sources.[384] It was not until the mid-1920s, however, when the legislature created the Minnesota Department of Health, that Minnesota adopted a water pollution

378. *Id.* § 103G.2242, subdiv. 9.

379. *See id.* § 103G.2241.

380. *See, e.g.*, Act of May 3, 2012, ch. 272, § 44, 2012 Minn. Laws. 1075, 1102 (making revisions to the wetlands replacement program); Act of Apr. 13, 2000, ch. 382, 2000 Minn. Laws 471, 471–87 (simplifying and consolidating wetland regulation).

381. MINN. STAT. § 103G.237, subdiv. 1.

382. N. William Hines, *History of the 1972 Clean Water Act: The Story Behind How the 1972 Act Became the Capstone on a Decade of Extraordinary Environmental Reform* 4 (Univ. of Iowa Legal Studies Research, Working Paper No. 12-12, 2012), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2045069. The 1948 Water Pollution Control Act envisioned the federal government playing a secondary role in water pollution control limited to encouraging the passage of uniform state laws to regulate pollution and federal assistance. Water Pollution Control Act, ch. 758, 62 Stat. 1155 (1948). The Act also authorized the federal government to abate interstate pollution. ROBERT L. GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION LAW AND POLICY 586 (5th ed. 2007).

383. MINN. STAT. ch. 54, § 221 (1873).

384. MINN. STAT. ch. 29, § 2131(5) (1905).

regulatory scheme to regulate the pollution of both surface and ground waters.[385] The State Board of Health was empowered to "take all necessary and proper steps to preserve the same from such pollution as may endanger the public health" by limiting pollution in all springs, wells, ponds, and streams that were sources of domestic water supply.[386] Polluters could be cited without a hearing and ordered to desist polluting activities.[387] Board determinations could, however, be appealed to the state district court.[388]

While regulation of drinking water quality was vested in the Board of Health, regulation of other sources of pollution was within the jurisdiction of the DNR.[389] Minnesota law prohibited the disposal of "deleterious or poisonous substance[s]" in "any of the waters of this state in quantities injurious to . . . the propagation of fish therein."[390] Continuous pollution of fisheries was declared a public nuisance.[391] Additionally, private parties could bring a private action in state district court to abate a water pollution discharge as a public nuisance.[392]

Pollution of surface waters, especially drinking water supplies, became an increasing concern throughout the early twentieth century, leading to both state and federal actions. At the state level, the Minnesota Water Pollution Control Commission (WPCC) was created in 1945 within the Department of Health[393] and charged with administering and enforcing all state water pollution control laws,[394] including setting "reasonable pollution standards."[395] To accomplish this outcome, the WPCC managed a permitting scheme regulating the "discharge of sewage, industrial waste or other wastes."[396] But the primary focus of the WPCC was to assure potable drinking water by encouraging "upstream cities to

385. *See* MINN. STAT. § 5375 (1927).
386. *Id.*
387. *Id.*
388. *Id.* § 5376.
389. *Id.* §§ 5582, 5627.
390. *Id.* § 5582.
391. *Id.*
392. *See generally* Satren v. Hader Coop. Cheese Factory, 202 Minn. 553, 279 N.W. 361 (1938).
393. Act of Apr. 19, 1945, ch. 395, § 2, 1945 Minn. Laws 761, 763 (repealed 1967); Rob Johansson & Faye Sleeper, *Implementing the Federal Water Pollution Control Act and Minnesota's Clean Water, Land, and Legacy Amendment*, *in* WATER POLICY IN MINNESOTA, supra note 50, at 53.
394. *See* Act of Apr. 19, 1945, § 3, 1945 Minn. Laws at 763–64.
395. *Id.* at 763.
396. *Id.* at 764.

treat sewage well enough that downstream users could disinfect the stream water for potable use."[397]

In 1963, the Minnesota Legislature adopted its first truly comprehensive water pollution prevention program, which incidentally incorporated significant elements of sustainability by recognizing the importance of water quality for conservation, public health, and economic well-being. The legislature proclaimed:

> It is the policy of the state to provide for the prevention, control, and abatement of pollution of *all waters of the state*, so far as feasible and practical, in furtherance of *conservation of such waters and protection of the public health and in furtherance of the development of the economic welfare of the state*. . . . It is the purpose of this act to safeguard the waters of the state from pollution by: (a) preventing any new pollution; and (b) abating pollution existing when this act becomes effective. . . .[398]

The WPCC was directed to "adopt, promulgate, amend, or rescind regulations . . . as may be necessary" to accomplish the twofold purpose of pollution prevention and pollution abatement.[399] The backbone of the 1963 legislation was the requirement that the State adopt water quality standards for all of Minnesota's public waters. Water quality standards were set by water use classification. The waters of Minnesota were grouped into "use classes," and water quality standards were set for each class.[400] The water quality standards became the foundation of the state's water pollution regulatory program—it was unlawful "for any person to cause pollution of any waters of the state in excess of or contrary to any applicable standard of water quality."[401]

Two years later, Congress, concerned about the inability of the states to maintain the quality of the nation's waters, amended the Federal Water Pollution Control Act of 1948 to require the states to adopt and implement ambient water quality standards based on use

397. Johansson & Sleeper, *supra* note 393, at 53.

398. Act of May 27, 1963, ch. 874, § 4, 1963 Minn. Laws 1642, 1643 (emphasis added) (codified at MINN. STAT. § 115.42 (1964)).

399. *Id.* § 5 (codified at MINN. STAT. § 115.43, subdiv. 2 (1964)).

400. *See id.* § 6, 1963 Minn. Laws at 1644–45 (codified at MINN. STAT. § 115.44, subdiv. 2–3 (1964)). Classifications were premised on water body characteristics such as size, depth, surface area, and volume; and historic and potential uses including residential, agricultural, industrial, or recreational. *Id.*

401. *Id.* § 7, 1963 Minn. Laws at 1646 (codified at MINN. STAT. § 115.45 (1964)).

classification.[402] The process for developing ambient water quality standards closely paralleled the process set out in Minnesota's statutory scheme,[403] a coincidence likely attributed to the fact that one of the primary authors of the 1965 amendments to the 1948 Water Pollution Control Act was Representative Blatnik (D-Minn.), who represented Minnesota's Eighth Congressional District.[404]

In 1967, Minnesota elevated the importance of water quality as an essential element of water management when it created the Minnesota Pollution Control Agency (MPCA) in an effort

> [t]o meet the variety and complexity of problems relating to water and air pollution . . . and to achieve a reasonable degree of purity of water and air resources of the state consistent with the maximum enjoyment and use thereof in furtherance of the welfare of the people of the state.[405]

The WPCC's functions were transferred to the MPCA.[406] The MPCA quickly took up the task of protecting and enhancing water quality by revising existing industrial discharge permits to incorporate federal anti-degradation and secondary treatment standards, kicking off what would become a decade-long dispute with Reserve Mining and the taconite industry over water and air quality.[407]

The water pollution control landscape was substantially altered in 1972 with passage of the Federal CWA.[408] Arguably, the primary focus of the CWA was the regulation of point sources[409] of water

402. *See* Water Quality Act of 1965, Pub. L. No. 89-234, § 5(c), 79 Stat. 903, 907–08 (1965).

403. *See* Sherry A. Enzler, *EPA-Minnesota Ag Certainty Program—Is It Up to the Task of Cleaning Our Waters?*, 39 WM. MITCHELL L. REV. 959, 964 (2013) (discussing the ambient water quality standards requirement of the 1965 amendments of the 1948 Water Pollution Control Act).

404. Hines, *supra* note 382, at 15–16.

405. Act of May 25, 1967, ch. 882, § 1, 1967 Minn. Laws 1845 (codified at MINN. STAT. § 116.01 (1968)).

406. Act of Feb. 11, 1969, ch. 9, § 21, 1969 Minn. Laws 41–42.

407. *See* Reserve Mining Co. v. Minn. Pollution Control Agency, 267 N.W.2d 720, 726 (Minn. 1978) (authorizing the MPCA to use non-degradation standards to set Reserve Mining's discharge limits in its discharge permit); Reserve Mining Co. v. Minn. Pollution Control Agency, 294 Minn. 300, 303, 200 N.W.2d 142, 144 (1972).

408. Clean Water Act of 1972, Pub. L. No. 92-500, 86 Stat. 816 (codified at 33 U.S.C. § 1251 (2006)). A full discussion of the CWA is beyond the scope of this paper. See Enzler, *supra* note 403, at 963–75, for a more detailed discussion of the CWA and its application in Minnesota.

409. A point source is "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. § 1362(14) (2006).

pollution through the National Pollutant Discharge Elimination System (NPDES) permit program. The CWA required all point sources of pollution to obtain NPDES permits and to meet technology-based effluent or discharge limits.[410] Initially, nonpoint sources were excluded from the CWA regulatory scheme.[411]

Minnesota quickly moved to incorporate the parameters of the CWA's NPDES program into state statutes.[412] In 1974, the EPA delegated NPDES permitting authority to the MPCA.[413] And when the CWA was amended in 1987 to bring urban and industrial nonpoint pollution within the CWA's regulatory program, the State adopted legislation to regulate stormwater discharges.[414] The CWA does not, however, obviate the state's water pollution statutory scheme. Rather, the two systems operate in concert with each other, as recognized by the Minnesota Supreme Court in *Minnesota Pollution Control Agency v. United States Steel Corp.*,[415] a case involving U.S. Steel's attempt to prevent Minnesota from enforcing state water pollution permit requirements after passage of the CWA. The MPCA had sued U.S. Steel for failing to have a state discharge permit.[416] U.S. Steel argued a state discharge permit was not required as its NPDES permit was pending before the MPCA and the EPA.[417] In concluding that the pending NPDES permit did not preclude an action by the State against U.S. Steel for discharging pollutants without a state discharge permit, the court observed that even after passage of the CWA,

> "primary responsibility" for the control and prevention of [water] pollution rests with the states . . . . It is apparent that [the CWA and the Clean Air Act] were designed to assist the states in fulfilling their responsibility. Consistency with that congressional objective is further reason for not deferring judicial enforcement of our

410. *See* 33 U.S.C. §§ 1311(a), 1318, 1342.

411. *See* Enzler, *supra* note 403, at 969–75 (for a detailed discussion of the history of the CWA's treatment of nonpoint sources of water pollution).

412. *See generally* Act of May 19, 1973, ch. 374, 1973 Minn. Laws 742–58.

413. 33 U.S.C. § 1342(b) (2006) (permitting the EPA to delegate management of the NPDES program to the states); MINN. POLLUTION CONTROL AGENCY, FACT SHEET: MUNICIPAL SEPARATE STORM SEWER SYSTEM MS4 PERMIT REISSUANCE (2011).

414. MINN. STAT. § 115.03, subdiv. 5(c) (2010).

415. 307 Minn. 374, 240 N.W.2d 316 (1976).

416. *Id.* at 376, 240 N.W.2d at 317–18.

417. *Id.* at 381–82, 240 N.W.2d at 320.

pollution control laws . . . .[418]

Minnesota has remained an active CWA partner, using both its delegated authority under the CWA and the water pollution control provisions of Minnesota Statutes chapter 115 to protect the quality of Minnesota's waters from point and regulated nonpoint sources of pollution. In the forty years since passage of the CWA, tremendous progress has been made toward cleaning Minnesota's waters. Minnesota's policies and programs have been particularly effective in some areas. For example, the amount of phosphorus released annually into the Minnesota River attributable to point sources declined by 52% between 2001 and 2011.[419] It is also estimated that water clarity has increased in about a quarter of Minnesota's lakes.[420] Despite this progress, certain water quality challenges have proven intransigent, most notably diffuse runoff from agricultural lands.

The MPCA is not, however, the only state agency involved in assuring the quality of Minnesota's water resources. In 1977, the Health Department resumed its historic role in water policy—assuring safe drinking water supplies.[421] Likewise, pesticides[422] and fertilizers,[423] some of the primary components in agricultural runoff and sources of water pollution, are regulated by the Minnesota Department of Agriculture. This diffuse authority over water quality has created challenges for the MPCA and water quality given the state's inability to control agricultural water pollution, as illustrated in Minnesota by disputes regarding atrazine, a herbicide banned in the European Union.[424] This tension reached a head in 2004, when it was reported that Dr. Tyrone Hayes, a U.C. Berkeley scientist whose research linked atrazine to frog abnormalities, was

418. *Id.* at 383, 240 N.W.2d at 321.

419. *Dashboard: Environment and Performance Measures*, MINN. POLLUTION CONTROL AGENCY, http://www.pca.state.mn.us/index.php/about-mpca/mpca-overview/agency-strategy/dashboard-environment-and-performance-measures.html (last modified June 25, 2012, 2:38 PM).

420. *Id.* The 2015 Total Maximum Daily Load limit for phosphorus in the Minnesota River is 44,211 kg/year. *Id.*

421. Safe Drinking Water Act of 1977, ch. 66, 1977 Minn. Laws 110 (codified at MINN. STAT. §§ 144.381–.387 (2010)).

422. *See generally* MINN. STAT. § 18B (2010 & Supp. 2011).

423. *See generally id.* § 18C.

424. Nicolai David Jablonowski, Andreas Schäffer & Peter Burauel, Commentary, *Still Present After All These Years: Persistence Plus Potential Toxicity Raise Questions About the Use of Atrazine*, 18 ENVTL. SCI. & POLLUTION RES. 328 (2011), *available at* http://europepmc.org/articles/PMC3030996/pdf/11356_2010_Article_431.pdf.

"uninvited" by the MPCA to speak at an MPCA conference, at the behest of the Minnesota Department of Agriculture when the Department of Agriculture learned that Dr. Hayes would speak about the results of his research on the effects of atrazine.[425]

IV. MINNESOTA'S ATTEMPTS TO REFORM ITS WATER LAW AND POLICY

As described in the previous section, it is apparent that each of Minnesota's water-related statutes or programs was created independently and assigned to one of several state agencies, with little recognition of the relationships between water policies and programs. As early as the 1960s, it became obvious that water regulation was becoming unmanageably complex, and by 1967, the Minnesota State Planning Agency[426] (Minnesota Planning) observed: "[W]ater management function in Minnesota State government is fragmented among a number of separate agencies. None of them have the authority and the responsibility individually to prepare or administer a statewide plan of water and related land resources development."[427] To address the complexity issue, Minnesota Planning activated an advisory Water Resources Coordinating Committee and directed it to prepare a statewide water and related land resources plan.[428]

Numerous research efforts followed, assessing various aspects of Minnesota's water resources and current and projected demands.[429] One of the early studies, prepared by the University of Minnesota for Minnesota Planning and the Water Resources

425. Tom Meersman, *Deformed Frogs Not on MPCA Agenda; Scientist Who Links Deformities, Herbicide Finds Himself Uninvited*, STAR TRIB., Oct. 20, 2004, at A1.

426. The State Planning Agency was abolished in 1991, and its planning functions were transferred to the office of strategic and long-range planning, commonly referred to as Minnesota Planning. Act Relating to the State Planning Agency, ch. 345, art. 2, 1991 Minn. Laws 2653. In 2008, Minnesota Planning was abolished and its functions merged into the Department of Administration. Act of May 16, 2009, ch. 101, art. 2, § 6, 2009 Minn. Laws 1665, 1667. For purposes of this article, these agencies shall collectively be referred to as "Minnesota Planning."

427. STATE PLANNING AGENCY, WATER RES. COORDINATING COMM., MINNESOTA WATER AND RELATED LAND RESOURCES: FIRST ASSESSMENT 396 (1970).

428. *Id.* at 51.

429. *See, e.g.*, MINN. WATER RES. COORDINATING COMM., MINN. STATE PLANNING, MINNESOTA WATER AND RELATED LAND RESOURCES: INFORMATION PROGRAMS (1972); MINN. WATER RES. COORDINATING COMM., MINN. STATE PLANNING, BACKGROUND INFORMATION FOR FRAMEWORK STATEWIDE WATER AND RELATED LAND RESOURCES PLANNING IN MINNESOTA (1969).

Coordinating Committee, included this cogent summary of water governance and law—one that remains relevant today:

> As questions of water use arose over the years, agencies were created to deal with specific areas. Reorganizations tended to shift specific duties to new agencies, rather than develop a mechanism that would handle all present and future problems associated with use and management of water resources.
>
> Minnesota's water law was developed in a similar manner. It is now composed of a series of statutes dealing with specific areas. Decisions made in other areas are based upon interpretations of the introductions to these laws; differences in interpretations are common, and outright contradictions have been found. There is no comprehensive water law in Minnesota.[430]

But the promised "water and related land resources plan" would not appear until 1979, after severe flooding and drought in the late 1970s prompted the legislature to create a Water Planning Board (Water Board) and charged it with developing the plan.[431] The resulting framework plan examined water withdrawals and consumption, localized supply and demand, water quality, and related land use decisions.[432] The Water Board recommended the creation of a water resource coordinating body and regional development commissions to link state policy with local plans.[433] The plan also called for watershed districts, or local governments where none were present, to take the lead in local water management planning.[434]

Efforts directed towards streamlining and reorganizing the state's water programs and statutes have been fairly continuous since the 1970s. The Water Board's 1981 *Special Study on Local Water Management,* for example, examined the multiple roles and

430. MINN. STATE PLANNING AGENCY, ENVIRONMENTAL DECISION-MAKING IN MINNESOTA: AN OVERVIEW, APPLICABILITY OF INNOVATIONS IN OTHER STATES TO MINNESOTA AND ALTERNATIVES 1 (1973).

431. Act of June 2, 1977, ch. 446, § 1, subdiv. 2, 1977 Minn. Laws 1231 (codified at MINN. STAT. § 105.401 (1978)). Board members included the DNR Commissioner, the Health Commissioner, the Director of the MPCA, the Ag Commissioner, the Director of the Energy Agency, and the Soil and Water Conservation Board Chair. *Id.*

432. *See generally* MINN. WATER PLANNING BD., TOWARD EFFICIENT ALLOCATION AND MANAGEMENT: A STRATEGY TO PRESERVE AND PROTECT WATER AND RELATED LAND RESOURCES (1979).

433. *Id.* at 67–71.

434. *Id.*

functions of counties, watershed districts, and soil and water conservation districts[435] and recommended that counties should serve as the fundamental decision makers on local water plans, that water plans and management should be based on hydrologic units, and that upon approval state water management responsibilities should be delegated to the local level.[436] This study, among others, set the stage for the Comprehensive Local Water Management Act in 1985[437] and the local water governance structure that remains in place to this day. The Act encourages the counties to develop and implement comprehensive management plans and authorizes the counties to review and assess both water and land use plans of other local units of government for conformance with the county plan.[438] The Act also attempts to coordinate the work of the counties and watershed districts,[439] leaving cities in the untenable position of navigating multiple regulatory structures.

In 1983, Governor Perpich merged the duties of the Water Board into the Environmental Quality Board (EQB),[440] and the EQB became the primary state water coordinating body responsible for developing biennial recommendations for legislative action and preparing the state water plan.[441] Water governance reform efforts continued through the mid-1980s.[442] Those efforts yielded divergent viewpoints. For example, a 1985 Minnesota Planning study, *Water Agency Merger Study*, concluded that "the status quo is unacceptable" and recommended an integrated state approach to local water management governance.[443] However, a countervailing message was conveyed by a 1986 House Research evaluation. The

435. *See generally* MINN. WATER PLANNING BD., TOWARD EFFICIENT ALLOCATION AND MANAGEMENT: SPECIAL STUDY ON LOCAL WATER MANAGEMENT (1981).

436. *Id.* at i–iv.

437. Comprehensive Local Water Management Act, ch. 2, 1985 Minn. Laws 1st Spec. Sess. 1579 (codified at MINN. STAT. § 110B.01 (1986)).

438. *Id.* § 3 (codified at MINN. STAT. § 110B.04 (1986)).

439. *Id.*

440. MINN. HISTORICAL SOC'Y, STATE ARCHIVES, WATER PLANNING BD.: FILES OF THOMAS J. KALITOWSKI 1 (1977–85) [hereinafter STATE ARCHIVES], *available at* http://www.mnhs.org/library/findaids/wpb01.pdf. Thomas J. Kalitowski was the Director of the Water Board and first Executive Director of the Minnesota Environmental Quality Board. *Id.*

441. MINN. STAT. § 103B.151, subdiv. 1 (2010).

442. *See generally* STATE PLANNING AGENCY, WATER AGENCY MERGER STUDY (1984–85), *available at* http://archive.leg.state.mn.us/docs/2010/other/101000.pdf (discussing the reasons, options, and recommendations for agency reorganization).

443. *Id.* at 2.

Information Brief recapped the previous fifteen years of water management studies and suggested that the multiplicity of agencies at all scales of governance involved in water management create an advocacy system of

> strong, competing agencies, each concerned with its own duties and specific goals. In political terms, an "advocacy" system promotes competition and increases the public representation of each goal or interest and highlights political choices. *Conflicts and tradeoffs in such a system are meant to be solved through the political rather than the administrative process.*[444]

In 1987, in what was arguably an effort at streamlining water policy, the legislature created the BWSR.[445] The BWSR was formed through consolidation of three separate boards, the Water Resources Board, the Soil and Water Conservation Board, and the Southern Minnesota Rivers Basin Council.[446] The BWSR's membership consists primarily of local units of government.[447] The BWSR was charged with oversight and coordination of the work of local entities charged with water management responsibilities. However, a 2007 Legislative Auditor's Report evaluating the BWSR's water-related programs found that, although the BWSR had adequate resources to perform its water-related oversight responsibilities,[448] it had not established performance standards for local water management entities, it had failed to systematically monitor the performance of local water management entities, and it has failed to hold local water management agencies accountable for water program performance.[449] The evaluation recognized that the BWSR had limited regulatory authority, but more importantly,

444. H. RESEARCH, MINN. H.R., INFORMATION BRIEF—STATE WATER MANAGEMENT: REORGANIZATION AND CONSOLIDATION 8–9 (1986) (emphasis added) (on file with authors).

445. MINN. BD. OF WATER & SOIL RES., *supra* note 373.

446. *Id.* While still primarily servicing local units of government, the mission and function of the BWSR has changed over the years. In 1967, the BWSR's mission was expanded to include water. *Id.* In 1987, the legislature merged the then Soil and Water Conservation Board with the Water Board (which had jurisdiction over the establishment of watershed districts) and the Southern Minnesota Rivers Basin Council. *Id.* The BWSR was also empowered by the legislature with jurisdiction to resolve disputes pertaining to conflicting state natural resource policy, including water policy. MINN. STAT. §§ 103A.301–.341 (2010). There is no evidence that the BWSR has ever used this authority.

447. MINN. BD. OF WATER & SOIL RES., *supra* note 373.

448. WATERSHED MANAGEMENT, *supra* note 373, at 41.

449. *Id.* at 43–46.

that the BWSR was reluctant to use what limited authority it had to hold local water entities accountable for water performance.[450] And while subsequent to the audit and in response to its findings, the BWSR has enacted policies and procedures intended to improve oversight of local government water management, it is unclear at this point whether these attempts have met with success.

Through the 1980s, the EQB also undertook a number of efforts to set state water management priorities, producing several plans and studies emphasizing the need for integrated water management, additional research and monitoring, and a focus on groundwater contamination and drinking water protection.[451] The increased focus on groundwater quantity, quality, and governance, in particular, culminated in a bipartisan effort to address groundwater issues,[452] leading to enactment of the Groundwater Protection Act of 1989.[453] The Groundwater Protection Act establishes a non-degradation aspirational goal but relies on pollution prevention technologies where non-degradation is not practical.[454] Among the accomplishments stemming from the Act are: the protection of sensitive groundwater areas,[455] a system for setting health risk limits,[456] pollution detection,[457] stronger water conservation measures,[458] and new or increased water-use fees to reflect the cost of the resource.[459]

450. *Id.* at 45–46.

451. *See, e.g.*, MINN. POLLUTION CONTROL AGENCY & MINN. STATE PLANNING AGENCY, ENVTL. QUALITY BD., GROUND WATER IN MINNESOTA: A USER'S GUIDE TO UNDERSTANDING MINNESOTA'S GROUND WATER RESOURCE (1986), *available at* http://www.gda.state.mn.us/pdf/GroundWaterMN.pdf; MINN. WATER PLANNING BD., TOWARD EFFICIENT ALLOCATION AND MANAGEMENT: 1983–85 PRIORITY RECOMMENDATIONS (1983), *available at* http://www.eqb.state.mn.us/pdf/TowardEfficientAllocation.pdf.

452. Martha C. Brand & Joseph M. Finley, *Minnesota's Groundwater Protection Act: A Response to Federal Inaction*, 16 WM. MITCHELL L. REV. 911, 911 (1990).

453. Groundwater Protection Act, ch. 326, 1989 Minn. Laws 2221 (codified at MINN. STAT. §§ 103H.001–.280 (1990)); Brand & Finley, *supra* note 452, at 911.

454. Groundwater Protection Act, ch. 326, art.1, § 1, 1989 Minn. Laws at 2222 (codified at MINN. STAT. § 103H.001 (1990)).

455. *Id.* § 3, 1989 Minn. Laws at 2223 (codified at MINN. STAT. § 103H.101 (1990)).

456. *Id.* § 8, 1989 Minn. Laws at 2226 (codified at MINN. STAT. § 103H.201 (1990)).

457. *Id.* at 2228 (codified at MINN. STAT. § 103H.275 (1990)).

458. *Id.* art. 4, 1989 Minn. Laws at 2277 (codified at MINN. STAT. § 105.41 (1990)).

459. *Id.* § 5, subdiv. 5(a), 1989 Minn. Laws at 2279 (codified at MINN. STAT. § 105.41 subdiv. 5 (1990)).

In 1990, Minnesota recodified the bulk of its water-related statutes in yet another effort towards simplification and consolidation. The majority of Minnesota's water-related statutes are now codified in Minnesota Statutes chapters 103A through 103I.[460] As part of the recodification, chapter 103A contains Minnesota's "water policy"; however, a review of provisions included in chapter 103A suggests that chapter 103A simply aggregates a variety of divergent water management objectives without thought to their integration or the elimination of inconsistencies and gaps.[461] chapter 103A does not contain an overarching water policy for the state. Nor did the recodification resolve Minnesota's need for a more integrated approach to water management.

Throughout the 1990s, the EQB continued to issue water-planning documents. Its *1991 Minnesota Water Plan*,[462] however, represents a continued shift toward sustainability, recognizing the need to understand the interconnections between Minnesota's water resources and the need for governance constructs that manage the state's water resources in light of those interconnections.[463] To achieve the goal of maintaining high water quality and availability for human and natural systems, the *1991 Minnesota Water Plan* recommends that Minnesota manage its water as a system, recognizing the interconnectedness of water to ecosystems, the interconnected nature of hydrologic systems, and the needs of citizens by increasing the adaptability and accountability of water management governance.[464] Accomplishing a more systemic approach would, however, require the state to complete the assessment and implementation of water quality testing at the eighty-one-watershed (HUC-8) scale.[465] Following this

460. Statutes regulating water quality are, however, codified separately. *See, e.g.*, MINN. STAT. ch. 115–16 (2010).

461. *See* discussion *infra* Part V.C.

462. MINN. ENVTL. QUALITY BD., WATER RES. COMM., MINNESOTA WATER PLAN: DIRECTIONS FOR PROTECTING AND CONSERVING MINNESOTA'S WATERS (1991) [hereinafter 1991 MINNESOTA WATER PLAN], *available at* http://www.eqb.state.mn.us/documents/MinnesotaWaterPlan1991.pdf.

463. *Id.* at v, 5–6. The two primary goals of the *1991 Minnesota Water Plan* embrace the concept of sustainability: (1) improve and maintain high water quality and availability for "future generations and long-term health of the environment," and (2) insure that water use is sustainable, recognizing the interconnections of natural and human systems. *Id.* at 5.

464. *Id.* at 5–6.

465. Water basins and watersheds across the United States are nested, divided,

assessment, the EQB recommended the state consider a water basin approach to water management, focusing on Minnesota's eight water basins and the impact of decisions made in the eighty-one watersheds on the larger water basins.[466] To develop a more systemic approach to its water management, the *1991 Minnesota Water Plan* also recommended the state link comprehensive land use planning to water planning efforts.[467] The *1991 Minnesota Water Plan* also created a framework for subsequent water research, monitoring needs,[468] and funding.[469]

In 1995, the legislature undertook its own analysis of state water management when it directed the administration to evaluate the state's water management system in the context of five goals: (1) sustainability; (2) improved service delivery; (3) prevention; (4) citizen participation; and (5) reduced pollution.[470] The resulting *Crosscurrents* report documents the twenty-five year history of water management studies[471] and found Minnesota's water management

and subdivided into hydrologic units ranging from regions, sub-regions, accounting units, and cataloging units. *Hydrologic Unit Maps*, U.S. GEOLOGICAL SURV., http://water.usgs.gov/GIS/huc.html (last modified Dec. 12, 2012). The first unit divides the country into twenty-one major geographical units based on the combined drainage area of a series of rivers. Minnesota is part of three regions: the Upper Mississippi, the Souris-Red-Rainy, and the Great Lakes regions. *Id.* Each region is divided into sub-regions, which includes the area drained by the reach of a river and its tributaries. There are 221 sub-regions. *Id.* Sub-regions are divided into 378 accounting units, and those accounting units are divided into cataloging units, the smallest units in the hierarchy of hydrologic units in the United States. *Id.* HUC-8 refers to an eight-digit designation for cataloging units. *Id.* Minnesota is currently undertaking an evaluation of water quality at the HUC-8 scale. *Basins and Watersheds*, MINN. POLLUTION CONTROL AGENCY, http://www.pca.state.mn.us/index.php/water/water-types-and-programs/sufrace-water/basins/basins-and-watersheds-in-minnesota.html (last visited Nov. 21, 2012).

466. 1991 MINNESOTA WATER PLAN, *supra* note 462, at 26–29.

467. *Id.* at 9.

468. *See, e.g.*, MINN. ENVTL. QUALITY BD., WATER RESEARCH ADVISORY COMM., 1991 MINNESOTA WATER RESEARCH NEEDS ASSESSMENT (1992), *available at* http://www.eqb.state.mn.us/documents/1991MinnesotaWaterResearchNeedsAssessement.pdf; MINN. ENVTL. QUALITY BD., MINNESOTA WATER MONITORING PLAN (1992), *available at* http://www.gda.state.mn.us/pdf /MinnesotaWaterMonitoringPlan.pdf.

469. *See, e.g.*, MINN. ENVTL. QUALITY BD., WATER RESEARCH COMM., MEETING MINNESOTA'S WATER AND WASTEWATER NEEDS: A WORKING PAPER 13–17 (1995), *available at* http://www.gda.state.mn.us/pdf/lrpwater.pdf.

470. MINN. ENVTL. QUALITY BD., CROSSCURRENTS: MANAGING WATER RESOURCES 2 (1996), *available at* http://www.gda.state.mn.us/pdf/crosscur.pdf.

471. *Id.* at 7 (referring to the period of 1971 (first water management study) to 1996 (year the *Crosscurrents* report was published)).

system to be both complex and fragmented.[472] However, the *Crosscurrents* report concludes that "this [fragmented system] might be just the system the state intended," noting that "separate agencies can better advocate for their specific areas of responsibility . . . [and] the external checks and balances of the system can foster creative tension and diversity in dealing with the issues."[473] With that said, the *Crosscurrents* report found the state water management system in need of improvement to redress the outcomes of a complex and fragmented management system.[474] The *Crosscurrents* report presented the legislature with a number of options for reform, many of them related to water management policy and governance, including: maximizing use of comprehensive local water plans;[475] better using state water plans to direct agency activities, including a stronger leadership role for the EQB and coordination among agencies;[476] and more fully integrating sustainability in water management.[477]

With no significant action to address the perceived problems with Minnesota's water management, problems with the system continued to persist. There was also a growing concern about the lack of overarching water management goals.[478] In 1999, the Ventura Administration issued an executive order directing the EQB to use a river-basin approach to develop a statewide water management framework, including water management goals, objectives, and "measureable outcomes."[479] As a first step in the Unification Initiative, the EQB adopted four overarching management goals that would guide management of Minnesota's major water basins:

1. Improve water quality for surface and groundwater;
2. Restore and maintain healthy ecosystems;
3. Conserve water supplies and maintain diverse water characteristics for future generations, a healthy environment, and a strong economy; and

472. *Id.* at 8.
473. *Id.* (citing OFFICE OF THE LEGISLATIVE AUDITOR, STATE OF MINN., WATER QUALITY MONITORING (1987)).
474. *See, e.g.*, *id.* at 15–21.
475. *Id.* at 24.
476. *Id.*
477. *Id.* at 26.
478. Providing for a Water Management Unification Initiative, Minn. Exec. Order No. 99-15, (June 22, 1999), *available at* http://www.leg.state.mn.us/archive/ExecOrders/save/99-15.pdf.
479. *Id.* at 2–3.

4. Maintain reasonable and diverse opportunities for Minnesotans to enjoy the state's water resources.[480]

The goals and underlying objectives and indicators became the framework for the 2010 state water plan—*Minnesota Watermarks.*[481] In *Minnesota Watermarks,* the EQB applied the four overarching goals and related objectives to each water basin and developed performance indicators for Minnesota's water resources.[482] Governance and policy constructs were addressed in a separate but related effort (Reorganization Study).[483] Not unsurprisingly, the Reorganization Study found Minnesota's water management policies and governance construct to be both complex and fragmented,[484] and recommended that the shortcomings of this fragmentation and complexity be managed through coordination of both water policy development and state agency and local government planning and decision making.[485] To that end the Reorganization Study recommended the re-establishment of the Legislative Water Commission to coordinate and provide overarching leadership in water policy and budget review[486] and urged the Commission to address lakeshore development pressures, groundwater protection, integration of local water planning with comprehensive land use planning, and drainage laws and policies.[487] At the executive branch level, the Reorganization Study recommended the "re-invigoration" of the EQB to provide leadership to and coordination among the various water management agencies.[488] Finally, the Reorganization Study recommended that county water plans be incorporated in comprehensive land use plans.[489]

While the EQB continued to advance the concept of

480. *See* MINN. ENVTL. QUALITY BD., PREPARING FOR MINNESOTA WATER PLAN 2000, at 4 (1999), *available at* http://www.gda.state.mn.us/pdf/1999/eqb/draft.pdf.

481. MINN. ENVTL. QUALITY BD., MINNESOTA WATERMARKS: GAUGING THE FLOW OF PROGRESS 2000–2010 (2000), *available at* http://www.gda.state.mn.us/pdf/2000/eqb/wtr_mrk.pdf.

482. *See generally id.*

483. MINN. PLANNING, CHARTING A COURSE FOR THE FUTURE: REPORT OF THE STATE WATER MANAGEMENT PROGRAM REORGANIZATION PROJECT 3 (2002), *available at* http://www.gda.state.mn.us/pdf/2002/ChartingaCourse.pdf.

484. *See generally id.* at 4–16.

485. *Id.* at 16.

486. *Id.*

487. *Id.*

488. *Id.* at 17–18.

489. *Id.* at 18.

sustainable water management,[490] the overriding imperative of the first decade of the twenty-first century has been how to manage and fund the CWA's total maximum daily load (TMDL) program.[491] The imperative became clear when a 2002 Legislative Audit Report of the MPCA found that the MPCA's funding structure was insufficient to cover the cost of its regulatory permitting program[492] and could not begin to cover the cost of the newly invigorated federal TMDL program and management of non-point pollution sources.[493] The Legislative Auditor's report and the MPCA's need to find a sustainable water funding mechanism helped launch efforts to adequately fund water resource and other natural resource-based programs. The work of stakeholders and interest groups ultimately resulted in passage of the Clean Water, Land and Legacy Amendment (Legacy Amendment), a constitutional amendment dedicating funding "to protect our drinking water sources; to protect, enhance and restore our wetlands, prairies, forest, and fish, game and wildlife . . . ; and to protect, enhance, and restore our lakes, rivers, streams and groundwater by increasing the sales and use tax rate . . . by three-eighths of one percent on taxable sales."[494] Thirty-three percent of the revenues raised by the sales tax increase must "be deposited in the clean water fund and may be spent only to protect, enhance, and restore water quality in lakes, rivers, and streams and to protect groundwater from degradation."[495]

Since passage of the Legacy Amendment, a number of non-governmental organizations have evaluated Minnesota's water resource management. A 2008 Freshwater Society report found Minnesota's ability to achieve sustainable water management was

490. *See, e.g.*, MINN. ENVTL. QUALITY BD. & DEP'T OF NATURAL RES., USE OF MINNESOTA'S RENEWABLE WATER RESOURCES—MOVING TOWARD SUSTAINABILITY (2007), *available at* http://www.eqb.state.mn.us/documents/UseofMinnesotasRenewableWaterResourcesApril2007.pdf.

491. OFFICE OF THE LEGISLATIVE AUDITOR, STATE OF MINN., PROGRAM EVALUATION REPORT 02-02: MINNESOTA POLLUTION CONTROL AGENCY FUNDING 39 (2002), *available at* http://www.auditor.leg.state.mn.us/ped/pedrep/0202all.pdf.

492. *Id.* at 30–32.

493. *Id.* at 40–44.

494. FISCAL ANALYSIS DEP'T, MINN. H.R., ISSUE BRIEF: 2008 CONSTITUTIONAL AMENDMENT AUTHORIZED—SALES TAX INCREASE PROPOSED FOR NATURAL RESOURCE AND CULTURAL HERITAGE PURPOSES 1 (2008), *available at* http://www.house.leg.state.mn.us/fiscal/files/ib2008Salestaxamend.pdf.

495. MINN. CONST. art. XI, § 15. Five percent of the Clean Water Fund is dedicated to drinking water protection. *Id.*

inhibited by a number of governance and policy barriers, including: the failure to assess the cumulative impact of water withdrawals in the water appropriation process, the failure of current state policy to address agricultural non-point pollution, and water pricing.[496] A 2009 Environmental Initiative-facilitated study recommended development of a shared water-land resource vision, improved coordination between land use decisions and water resource goals, improved alignment of water planning processes, and increased coordination among state water agencies.[497] And a 2009 Citizens League project found Minnesota's water law, policy, and governance to be "*fragmented, incoherent, and poorly coordinated* to the extent that it is failing Minnesota" on five evaluative principles: transparency, effectiveness, equity, accountability, and appropriate scale.[498] The Citizens League study recommended that the state build a collaborative governance model that promotes public ownership and responsibility for the state's water resources.[499]

In 2009, the Minnesota Legislature directed the University of Minnesota's Water Resources Center to "develop a comprehensive statewide sustainable water resources detailed framework to protect, conserve, and enhance the quantity and quality of the state's groundwater and surface water."[500] The resulting *Sustainability Framework* was developed with the input of multiple issue teams composed of interdisciplinary water experts and stakeholders.[501] The final *Sustainability Framework* makes recommendations related to a number of Minnesota's water

496. FRESHWATER SOC'Y GUARDIANSHIP COUNCIL, WATER IS LIFE: PROTECTING A CRITICAL RESOURCE FOR FUTURE GENERATIONS 3–7 (2008), *available at* http://www.freshwater.org/images/stories/PDFs/publications/Water-is-Life-Report.pdf.

497. *See generally* MINN. ENVTL. INITIATIVE, LAND AND WATER POLICY PROJECT (2009), *available at* http://www.environmental-initiative.org/images/files/LWPPStakeholderRecommendations.pdf.

498. CITIZENS LEAGUE WATER POLICY STUDY COMM., TO THE SOURCE: MOVING MINNESOTA'S WATER GOVERNANCE UPSTREAM 1 (2009) (emphasis added), *available at* http://www.citizensleague.org/publications/reports/482.RPT.To%20the%20Source.pdf.

499. *Id.* at 2.

500. Act of May 22, 2009, ch. 172, art. 2, § 30, 2009 Minn. Laws 2446, 2487.

501. A list of *Sustainability Framework* participants and work products is available at *Minnesota Water Sustainability Framework*, WATER RESOURCES CENTER, http://wrc.umn.edu/watersustainabilityframework/index.htm (last visited Jan. 28, 2013).

challenges, including: water appropriation,[502] land and water interactions,[503] maintaining ecological and hydrological integrity[504] and infrastructure,[505] and management of contaminants of emerging concern.[506] But the *Sustainability Framework* also recognizes that one of the key barriers to achieving water sustainability in Minnesota is the current governance construct, including Minnesota's laws and policies.[507] It recommends that the state undertake a one-time Water Congress to evaluate and re-vision Minnesota's water laws and policies,[508] re-establish the Legislative Water Commission to provide focused water policy leadership,[509] and combine the functions of watershed planning entities and Soil and Water Conservation Districts into water basin regional governance organizations.[510]

V. WHY RESTRUCTURE MINNESOTA WATER LAW?

The *Sustainability Framework*'s water governance recommendations grew out of an analysis of Minnesota's water law and policy conducted by the Minnesota Water Sustainability Framework Policy Team, which found eight key legal and policy obstacles that prevent Minnesota from attaining water sustainability.[511] Five of these obstacles relate directly to the structure of Minnesota water law and policy, while the remaining three (the lack of long-term sustainable funding, knowledgeable leadership, and knowledgeable citizen engagement) impact how Minnesota implements its water law and policies.[512]

A. Minnesota's Water Laws and Policies Do Not Recognize the Hydrologic System and Its Connection to Human and Natural Systems

The first major shortcoming of Minnesota's water law and policy is its historic failure to recognize hydrologic systems and

502. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 87.
503. *Id.* at 61.
504. *Id.* at 69.
505. *Id.* at 93.
506. *Id.* at 53.
507. *Id.* at 107–11.
508. *Id.* at 112.
509. *Id.* at 113.
510. *Id.*
511. POLICY TECHNICAL REPORT, *supra* note 36, at 4–14.
512. *Id.* at 9–11, 13.

their connection to human and natural systems. As the forgoing discussion illustrates, Minnesota's water laws and policies were designed to address challenges and/or to take advantage of opportunities presented by the hydrologic system. Thus Minnesotans rushed to drain water from the land to promote settlement and agricultural development and sited numerous industries along rivers to provide access to cheap sources of transportation and energy. In taking these actions and enacting laws to support these developments, little thought was given to their impacts on the functioning of hydrologic systems. It was not until the latter half of the twentieth century, when laws, policies, and practices were well established, that Minnesota began to recognize the interconnection of human and natural systems and the implication of these connections for hydrologic systems.

The impact of Minnesota's historic drainage laws and policies on the hydrologic system is a case in point. While much has been written about the impact of drainage on the hydrologic functioning of wetlands,[513] a second and perhaps equally important implication of these early statutory schemes was the connection of man-made drainage systems directly to Minnesota's public waters. Prior to this connection, waters running across landscapes sat in low lands where they gradually soaked into soils or only slowly ran across landscapes to reach water bodies. Through this process, soil moisture increased, contaminants were trapped, and groundwater aquifers were infused.[514]

The use of the state's drainage laws and policies to facilitate agricultural production through the construction of drainage tile and ditch systems permits water to quickly flow from land surfaces into rivers, lakes, and streams; increases stream velocity during periods of flooding and peak flow; and creates conduits for pollutants to reach rivers, lakes, and streams.[515] The decision to use Minnesota water bodies as outflows for agricultural drainage systems in particular has exacerbated Minnesota's water quality challenges, particularly in heavily agricultural areas such as the Minnesota River watershed.[516] These systems became pipelines for

513. *See supra* Part III.B.

514. *See generally* BROOKS ET AL., *supra* note 242, at 21–151 (discussing the operation of hydrologic systems).

515. *Id.* at 363.

516. *See generally* MINN. POLLUTION CONTROL AGENCY, MINNESOTA RIVER BASIN PLAN (2001); KRIS SIGFORD, MINN. CTR. FOR ENVTL. ADVOCACY, MINNESOTA RIVER CLEAN-UP: TEN YEARS LATER (2002).

sedimentation-, nutrient-, pesticide-, and herbicide-laden waters to reach Minnesota's public waters—and a primary source of agricultural water pollution.[517] Minnesota has struggled mightily to redress the water quality issues created both directly and indirectly in watersheds, where wetlands are drained for agricultural operations and development facilitated by policy-induced drainage systems with little success.[518]

A second illustration of this disconnection between hydrologic systems and Minnesota's water policy is the disconnection between land use and water management.[519] Local units of government with primary responsibility for land use management have historically managed local landscapes with insufficient consideration to water quality, water quantity, or hydrologic systems.[520] This is no less true in Minnesota, where "land use planning practice . . . most often gives water quality and water availability a perfunctory glance."[521]

Although local units of government are now required to adopt water plans, the failure of Minnesota's land use planning enabling statutes to connect land use planning with water resource planning[522] permits local units of government to ignore hydrologic system function in locating development. This disconnection has resulted in historically unsustainable practices, such as development in the flood plains of the Red River Valley.[523] And while floodplain development has been reduced in response to flooding events, other unsustainable development practices have emerged, as illustrated by the expansion of corn ethanol facilities on Minnesota's Corn Belt, where corn is plentiful but water is scarce.[524] A single ethanol plant cited in Claremont, Minnesota, for

517. *See generally* Enzler, *supra* note 403 (discussing Minnesota's attempts to address water pollution from agricultural operations).

518. *Id.*

519. *See* Adler & Straube, *supra* note 41, at 7–10; Craig Anthony (Tony) Arnold, *Clean-Water Land Use: Connecting Scale and Function*, 23 PACE ENVTL. L. REV. 291 (2006).

520. Adler & Straube, *supra* note 41, at 8.

521. For a more detailed discussion of the disconnection between land use and water policy, see Jean L. Coleman & Suzanne Sutro Rhees, *Where Land and Water Meet: Opportunities for Integrating Minnesota Water and Land Use Planning Statutes for Water Sustainability*, 39 WM. MITCHELL L. REV. 920, 939 (2013).

522. *Id.*

523. *See* Bill McAuliffe, *Red River Becomes the Red Sea*, STAR TRIB., Apr. 11, 2011, http://www.startribune.com/local/119568624.html.

524. Sea Stachura, *Ethanol vs. Water: Can Both Win?*, MINN. PUB. RADIO NEWS (Sept. 18, 2006), http://minnesota.publicradio.org/display/web/2006/09/07/ethanolnow/.

example, uses 146 million gallons of water a year—about the same amount of "water used by a small city with 3000 people, a few Dairy Queens and a movie theater."[525] And in Granite Falls, Minnesota, a second ethanol plant drains the aquifer "by nearly half in less than a year. . . . [I]t's pumping faster than the aquifer can refill."[526] While efforts are being undertaken to redress this situation in these individual cases, there is nothing to prohibit local units of government from citing high-water-demand industries in their communities without consideration of the availability of water, as was the case in both Claremont and Granite Falls, Minnesota.

B. Minnesota's Water Laws Do Not Recognize the Long-Term Health of Natural Systems or the Services They Provide to Human Well-Being

A second major barrier to sustainable water management in Minnesota is the failure of Minnesota's water law and policy to recognize, in a systemic way, that the health of ecosystems is dependent on healthy hydrologic systems and the services they provide to human well-being.[527] In some cases, Minnesota has simply overlooked the connection between hydrologic systems, ecosystems, and ecosystem services.

Minnesota's treatment of wetlands is a case in point. Historic efforts to systematically drain wetlands ignored the important ecological and hydrologic functions performed by wetlands. Wetlands essentially serve as "the kidneys of the landscape,"[528] filtering waters passing into rivers, lakes, streams, and groundwater aquifers,[529] while at the same time aiding in the retention of soils,

525. *Id.*

526. *Id.*

527. The services provided by ecosystems include: provisioning, regulating, cultural, and supportive services. Provisioning services include: the production of food, fiber, fuel, genetic materials, fresh water, and energy. *See generally* MILLENNIUM ECOSYSTEM ASSESSMENT BD., LIVING BEYOND OUR MEANS: NATURAL ASSETS AND HUMAN WELL-BEING (José Sarukhán & Anne Whyte eds., 2005), *available at* http://www.maweb.org/documents/document.429.aspx.pdf. Ecosystems also regulate air quality, climate, water quality, groundwater recharge, flooding, and the timing of runoff. *Id.* Ecosystems are also integrally related to the spiritual and religious values in numerous cultures. *Id.* at 17. Culturally, ecosystems increase human understanding of systems and are closely linked to our sense of place and our cultural heritage. *See id.* Finally, ecosystems are essential to sustaining earth's systems, including: soil formation, photosynthesis, water cycling, and nutrient cycling. *Id.*

528. Forsberg, *supra* note 348, at 1027.

529. *See* MILLENNIUM ECOSYSTEM ASSESSMENT BD., ECOSYSTEMS AND HUMAN WELL-BEING: WETLANDS AND WATER 31–32 (2005), *available at* http://

recharging groundwater aquifers, and providing natural flood control.[530] And although the state recognized the importance of wetlands habitat[531] by the middle of the twentieth century, it would take another four decades to protect wetlands for the less visible services they provide to both natural and human systems. While Minnesota has certainly advanced its efforts to protect wetlands as public waters, the management of wetlands is segmented from the management of other public waters. The management of wetlands at the state level rests in part with the DNR, which regulates public water wetlands, and with local units of government, which regulate all other wetlands under the Wetland Conservation Act. And although local management of wetlands is subject to oversight by the BWSR, a recent evaluation of the BWSR program management prepared by the Minnesota Legislative Auditor observed that the BWSR has demonstrated a disinclination to provide oversight or to use its authority to hold local units of government accountable for their water management decisions, including wetlands conservation.[532]

In other cases, Minnesota's laws and policies recognize the connection between healthy hydrologic systems while other legal and policy provisions undermined them. Thus, for example, in the early twentieth century, the DNR was directed to regulate water quality to protect "fish life."[533] At the same time, lakeshore owners, often at the encouragement of local land use authorities desiring to increase their property tax base,[534] encouraged lakeshore development, "turning native lakeshore and shallow water vegetation into lawns, rocky riprap, and sand beaches," all practices which destroy fish habitat.[535] And although the state has overseen the adoption of shoreland ordinances, in part to address this dilemma, the enforcement of those ordinances is left largely in the hands of local units of government, a number of which are

www.maweb.org/documents/document.358.aspx.pdf (delineating the ecosystem services provided by inland wetlands).

530. *See id.*

531. *See generally* TESTER, *supra* note 51, at 161–95 (discussing the ecosystem functions of wetlands).

532. WATERSHED MANAGEMENT, *supra* note 373, at 43–48.

533. MINN. STAT. § 5582 (1927).

534. Spencer, *supra* note 229.

535. *Improve and Protect Habitat: Habitat Improvement*, MINN. DEPARTMENT NAT. RESOURCES, http://www.dnr.state.mn.us/fisheries/management/habitat.html (last visited Nov. 30, 2012).

unwilling to enforce shoreline development restrictions.[536]

C. Minnesota's Water Laws and Policies Lack Overarching Goals and Priorities

The *Sustainability Framework* Policy Team observed that, although Minnesota has made many valiant attempts to create overarching water management goals, the Minnesota Legislature has neither adopted overarching water policy goals nor established priorities for managing its water.[537] Minnesota Statutes chapter 103A, for example, sets out eleven separate water policies ranging from policies concerning the use and appropriation of water[538] to a hydropower policy, which encourages the production of hydropower, including the placement of dams in public waters.[539] There is no guidance or vision in the chapter for prioritizing or harmonizing these various goals, a shortcoming that creates problems for sustainable water management. Absent an overarching goal or vision to guide state water management, contradictions and gaps are simply left to play out at the agency level. For example, the conservation policy articulated in section 103A.205 advocates leaving precipitation on the landscape where it falls, albeit "as far as practicable."[540] This policy is contradicted by the state floodplain management policy, which simply advocates guiding development in floodplains.[541] Clearly, it is politically difficult to leave water on the landscape in natural hydrologic systems when communities continue to develop and redevelop in floodplains.

Another example of a policy gap is the state's groundwater policy, which is not so much a policy as it is a listing of the six state agencies with jurisdictional responsibilities over the state's groundwater resources.[542] This is a serious gap if Minnesota is to achieve sustainable water management, particularly when one considers that the majority of Minnesota's drinking water supply is drawn from groundwater sources.[543] No single agency has the

536. Jim Spencer, *Losing Our Lakes: Part 3: Overwhelmed and Worried*, STAR TRIB., June 25, 2010, http://www.startribune.com/investigators/96849434.html.
537. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 109.
538. MINN. STAT. § 103A.201 (2010).
539. *Id.* § 103A.203.
540. *Id.* § 103A.205.
541. *Id.* § 103A.207.
542. *Id.* § 103A.204.
543. FAIRBAIRN, *supra* note 253, at 6 fig.3.

ability to set a vision for the management of the state's groundwater resources. Likewise, while the Minnesota Legislature recognizes that groundwater and surface water should be managed as a system across watersheds, the individual statutory authorities governing important policies such as water appropriation, wetland protection, and water quality permitting are not holistic, forcing state agencies to approach their individual water missions from the perspective of their individual statutory authority rather than from the perspective of watershed health. This makes it difficult to assure such important considerations as the maintenance of groundwater resources for base flow and the protection of wetlands to ensure groundwater recharge.

Minnesota has attempted to grapple with the need to set overarching water policy directions. The creation of the Water Board in 1977, for example, was designed to coordinate the state water agencies and develop a "framework" for the management of the state's water resources.[544] This coordinating and framing function was shifted to EQB in 1983 when Governor Perpich merged the duties of the Water Board into the EQB.[545] But although the EQB is directed to coordinate public water resource management and lead long-range water resources planning,[546] it has no real statutory authority to assure that water plans or a state water budget are implemented by the state agencies. Nor are the state water agencies required to adopt and implement the state water plans developed by the EQB. Ironically, it is the BWSR, which is dominated by local governmental interests, that has the only real authority to resolve disputes about overarching state water policy.[547] The BWSR has failed to embrace this leadership role as the Legislative Auditor observed in a recent evaluation of the BWSR's programs. The Legislative Auditor admonished the BWSR: "While local units of government must play key roles in watershed management, water is inherently a state concern and requires strong state involvement"[548] and, one might add, state leadership and oversight, which the report found the BWSR unable to provide.[549]

544. An Act Relating to Water Resources, ch. 446, § 1, 1977 Minn. Laws 1231 (codified at MINN. STAT. § 105.401 (1978)).

545. STATE ARCHIVES, *supra* note 440, at 1.

546. § 103B.151, subdiv. 1.

547. *Id.* §§ 103A.301–.343; 103B.101, subdiv. 9–10.

548. WATERSHED MANAGEMENT, *supra* note 373, at 37.

549. *Id.* at 37–48 (evaluating the BWSR's leadership and oversight

D. Minnesota's Water Governance Is Fragmented and Reactive

One of the primary barriers to sustainable water management is the fragmentation of water authority between federal, state, and local units of government and across state agencies. Indeed, "[i]t is difficult to imagine a political and institutional system as complicated and as fragmented as that used for protecting and managing water resources . . . —a system that has been described as 'similar to a marbled cake, with several levels of government intermingled in an irregular pattern.'"[550] "According to one estimate, there are well over 100,000 public entities involved in water resources in the United States."[551] The fragmentation of water policy across state agencies and between state agencies and local units of government is a barrier to sustainable water management acknowledged in numerous state water policy evaluations,[552] including the *Sustainability Framework*, which observed that in Minnesota "more than 20 federal agencies, seven state agencies, and hundreds of local units of government . . . affect[] every aspect of water use."[553]

The fragmentation of Minnesota's water management system is in large part a product of Minnesota's history, as Minnesota added water management programs to meet new water challenges.[554] As the previous analysis of the history of Minnesota's water law and policy indicates, the "seeds" to fragmentation were sown shortly after statehood. By 1927, the practice of fragmenting both water policy and water management among state agencies and between state agencies and local governments was well established. Jurisdictionally, although the right to regulate water rested with the State, the State, for the most part, was content to permit water to be managed *in situ* by local authorities until the first decade of the twentieth century,[555] when the Minnesota Legislature recognized the need to assure the quality of drinking water supplies across the state and vested the authority to regulate water pollution in the State Board of Health.[556] Only gradually did the legislature begin

performance).

550. Adler, *supra* note 36, at 991.
551. *Id.* at 992.
552. *See* discussion *infra* Part VI.
553. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 107.
554. *Id.* at 109.
555. *See supra* Part III.C.
556. *See supra* Part III.D.

locating water management authority in state agencies. The result—a water management system that divides water responsibilities first between state and local units of government and then later across state agencies.

By 1990, the Minnesota Legislature had created a full array of state agencies to manage the state's water resources. The management of drinking water quality was vested in the Department of Health, while the MPCA was responsible for assuring ambient water quality, and the Minnesota Department of Agriculture was primarily responsible for the regulation of pesticides and herbicides on farm fields. The oversight and management of wetlands was split between the DNR, which was primarily responsible for managing the use of and conserving public waters, and the BWSR, in addition to numerous local units of government. The EQB was given the task of coordinating water resource management across the state agencies, coordinating the development of Minnesota's ten-year water plan and coordinating the development of state water policy recommendations and priorities[557]—a virtual impossibility.

This fragmentation of authority among the state agencies has meant that water management has not always been coordinated across state agencies[558] and has created a multiplicity of concerns about Minnesota's ability to sustainably manage its water resources over time. Thus each agency operates within its own water sphere, and there is no meaningful statutory mechanism to redress conflicts between the agencies. The MPCA, for example, is charged with maintaining ambient water quality. However, the DNR, without consulting the MPCA, could hypothetically issue an appropriation permit resulting in the drawdown in an aquifer or surface water body, causing pollutants to become more concentrated and water quality to degrade.

E. Minnesota's Water Laws and Policies, and the Tools Used to Implement Them, Often Have Negative Impacts on Our Water Resources and Are Insufficient to Achieve Water Sustainability

Minnesota has had some remarkable successes with its water programs, such as improved water quality attributed to Minnesota's

557. MINN. STAT. § 103B.151 (2010).
558. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 109.

management of the NPDES CWA permit program,[559] the development of a Master Water Supply Plan in the Metropolitan Area,[560] the development of a groundwater monitoring network,[561] and passage of the Clean Water Legacy Amendment[562] to fund water resource programs. But Minnesota still faces significant water challenges and in many cases lacks sufficient governance tools or the flexibility to develop the governance mechanisms necessary to address these water challenges. Nowhere is this more apparent than with our failed attempts to redress nonpoint agricultural pollution.[563] Lacking any other politically feasible tool to redress agricultural pollution, Minnesota has relied upon voluntary, incentive-based programs to redress non-point pollution and, as illustrated by the numerous attempts to clean the Minnesota River, those voluntary programs have been unsuccessful.

Additionally, there is a growing list of water contaminants outside the regulatory framework of the CWA but which are of growing concern to both human and natural systems.[564] These contaminants of emerging concern (CEC) include pharmaceuticals, endocrine-disrupting chemicals, additives in personal care products, and current-use pesticides.[565] The CWA does not address these potentially harmful chemicals, and while the State might use state pollution discharge permits to address these challenges, this remedy begs the question—Are present policy and legal constructs the best way to address what is quickly becoming a growing list of new chemicals in our surface and groundwater?

Finally, while our water appropriation system is currently adequate to meet the task of allocating water use, it is unclear whether the present permitting system will be sufficient to the task of regulating water allocations in the face of future uncertainties posed by population increase, recurring drought, and climate

559. *See generally* FRIENDS OF THE MISS. RIVER & NAT'L PARK SERVICE, STATE OF THE RIVER REPORT (2010), *available at* http://stateoftheriver.com/state-of-the-river-report/.

560. *See, e.g.*, METRO. COUNCIL, METROPOLITAN AREA MASTER WATER SUPPLY PLAN (2010). A copy of the actual Metropolitan Council Master Plan may be accessed at http://www.metrocouncil.org/environment/WaterSupply/masterplan.htm.

561. *Id.*

562. MINN. CONST. art. XI, § 15. Five percent of the Clean Water Fund is dedicated to drinking water protection. *Id.*

563. *See generally* Enzler, *supra* note 403.

564. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 53.

565. *Id.*

change.[566] Minnesota's water allocation laws, particularly those surrounding the allocation of groundwater resources, are particularly undeveloped. Will a more sophisticated tool be needed to allocate water between users and between extractive uses and in-stream uses in the face of these uncertainties?

VI. CONCLUSIONS—FINDING A PATH FORWARD

The evolution of Minnesota's water law and policy since statehood illustrates Minnesota's ability to change and modify its laws and policies in response to events such as flooding, the demand for agricultural lands, drought, and new scientific knowledge. And the commitment of Minnesota's citizens evidenced by passage of the Clean Water Legacy Amendment by fifty-six percent of eligible voters[567] illustrates that even in these contentious political times Minnesotans are committed to the long-term health of Minnesota's water resources. But commitment and funding alone are insufficient to meet the challenge of assuring the long-term sustainability of Minnesota's water resources.

As the forgoing discussion illustrates, Minnesota's current water management laws and governance present significant barriers to sustainable water management. The *Sustainability Framework* recognizes the challenge that current laws and policies present to achieving sustainable water management[568] and concludes that, to assure that state law and policy "align[] with water sustainability goals that efficiently direct on-the-ground actions,"[569] Minnesota must "[p]rovide uniform state guidance for water sustainability policy and a governance delivery structure to ensure that Minnesota has a comprehensive, well-integrated, and effective water policy for the future."[570] To accomplish this

566. *See generally* MINN. DEP'T OF NATURAL RES., MINNESOTA'S WATER SUPPLY: NATURAL CONDITIONS AND HUMAN IMPACTS 7–10 (2000), *available at* http://files.dnr.state.mn.us/publications/waters/mn_water_supply.pdf (discussing concerns related to the future management and allocation of Minnesota's water supply).

567. Of the 2.9 million eligible voters, 1.6 million supported the Clean Water Legacy Amendment, 1.1 million opposed the amendment, and 143,628 left the ballot provision blank. *Results for Constitutional Amendment*, MINN. SEC'Y OF STATE (Nov. 4, 2008), http://electionresults.sos.state.mn.us/20081104/RsltsConstAmendment.asp.

568. SUSTAINABILITY FRAMEWORK, *supra* note 3, at 107–11 (discussing the shortcomings of Minnesota's water law and policy as outlined by the Policy Team).

569. *Id.* at 112.

570. *Id.*

outcome, the *Sustainability Framework* recommends that Minnesota convene a "one-time" "Water Congress" to review Minnesota's water laws to identify "overlap, gaps, and conflicts" in Minnesota's water policy and recommend "specific and comprehensive" statutory changes to align Minnesota water law and policy with sustainability principles.[571]

Undertaking a comprehensive re-visioning of Minnesota's water laws and policies is not without risk, especially in this era of contentious politics. The Water Congress Scoping Committee (Scoping Committee), a group of water thought leaders who came together to explore the feasibility of the Water Congress,[572] acknowledged that certain stakeholders may indeed have a vested interest in preserving the status quo[573] and that, without adequate preparation, the Water Congress could be derailed or become a focal point for opposition to existing policies designed to protect our water resources.[574] But the Scoping Committee also believed that by restructuring Minnesota water law, policy, and governance systems to assure sustainable water management, Minnesota would improve the health and resilience of hydrologic systems while creating more vibrant communities and better preparing Minnesota to meet the needs of human and natural systems.[575] In short, healthy hydrologic systems can better be sustained by governance and policy systems designed to transparently accomplish a clearly articulated, comprehensive water sustainability vision. Such sustainable water systems are necessary to assure the long-term viability and stability of economic systems, vibrant communities, human health, and sustainable agricultural and business systems.[576] The failure to grapple with the shortcomings in Minnesota's water law, policy, and governance systems would undermine both Minnesota's water resource and Minnesota's economic systems, natural systems, and communities. A successful Water Congress must:

1. Hold the possibility for transformational change resulting in water sustainability—"change that goes beyond mere adjustment" and recognizes the interconnection of water to

571. *Id.*
572. MINN. WATER RES. CTR., MINNESOTA WATER CONGRESS SCOPING COMMITTEE REPORT 4–7 (2012) (on file with author).
573. *Id.* at 7–8.
574. *Id.* at 8–9.
575. *Id.* at 9–10.
576. *Id.* at 10.

other systems;[577]

2. Encourage creative and active problem solving across disciplines and include diverse voices, including experts, non-traditional stakeholders, and traditional stakeholders;[578]
3. Incorporate decision making based on the "best available science and technical knowledge";[579]
4. Assure transparency and incorporate public participation;[580] and
5. "[N]ot be predicated on consensus-based decision-making"—because requiring all participants to agree to an outcome would likely undermine the transformative ability of a Water Congress.[581]

Dr. Sandra Postel, one of the nation's most noted water scholars, argues that one of the most important global and national challenges of this century will be water and water management.[582] Meeting this challenge will require a re-visioning of how we manage our water resources at all levels. Minnesota, through its public waters system, its early adoption of state water pollution control laws that served to inform the development of early national water pollution control laws, its early partnership with the EPA in the NPDES program, and the recent adoption of the Clean Water Legacy Amendment, has demonstrated its capacity as a national water policy leader. But Minnesota's ability to sustainably manage its water resources into the future in the face of the growing uncertainties associated with water quality, climate change, and population growth depends on its ability to abandon its fragmented and incremental approach to water management, including water laws and polices—it will require citizens, experts, and policy leaders working together to modify Minnesota's water governance construct to support a sustainable water future for the "land of sky blue waters."

577. *Id.* at 26.
578. *Id.*
579. *Id.* at 27.
580. *Id.*
581. *Id.*
582. Sandra Postel, *Water: Adapting to a New Normal*, *in* THE POST CARBON READER: MANAGING THE 21ST CENTURY'S SUSTAINABILITY CRISES 77 (Richard Heinberg & Daniel Lerch eds., 2010).