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Where Land and Water Meet: Opportunities for Integrating Minnesota Water and Land Use Planning Statutes for Water Sustainability

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WHERE LAND AND WATER MEET: OPPORTUNITIES FOR INTEGRATING MINNESOTA WATER AND LAND USE PLANNING STATUTES FOR WATER SUSTAINABILITY

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I. INTRODUCTION

Minnesota's laws and programs governing planning for water quality and quantity developed separately from laws and programs governing land use planning. Local governments exercise land use planning and permitting authority with little state oversight, while water planning and permitting is spread broadly across multiple state agencies, many of which work with local government implementers. Because of the physical function of watersheds, integration of these distinct land use and water planning processes is necessary to achieve water sustainability. Integration to improve water sustainability does not require overhaul of either the land use or water planning statutes. This article presents targeted statutory interventions designed to produce improved water sustainability outcomes.

A. Environment, Culture, and Economics

Minnesota is blessed with over 61,180 miles of lake shoreline[1] and 52,132 miles of river shoreline[2] where land and water meet. One of every four acres in Minnesota is either lake or wetland.[3] Minnesota residents value water and shoreland resources in many ways. The *Recreational/Spiritual/Cultural Technical Work Team Report*[4] of the *Minnesota Water Sustainability Framework* (*Framework*), a comprehensive plan for achieving water sustainability in Minnesota, observes: "Water is a part of Minnesota's identity, roots, and spirit. A fundamental human desire is to be near water—clean water—and the natural resources it supports. This desire to connect with water drives tourism, community involvement and activism, and, to a great extent, our state pride or identity."[5]

More than $11 billion is spent annually on tourism in Minnesota, a significant portion of that total ($2.7 million) related to fishing and other water-related activities.[6] Forty-three percent of Minnesotans twenty years of age and over participate annually in boating activities.[7] Minnesota has the highest participation of any state in boating and fishing activities.[8]

Lake cabin culture defines Minnesota. Lakes of any significant size are surrounded by summer homes and year-round homes. Roadways heading "up north" are clogged each summer weekend by the exodus from urban areas. Applying hedonic pricing methods used in other states to establish a connection between

1. Telephone Interview with Info. Ctr. Staff, Minn. Dep't of Natural Res. Info. Ctr. (Sept. 24, 2012) (including all natural basin lakes in Minnesota (60,972 miles) plus Minnesota shoreline of Lake Superior (208 miles)).

2. *Id.* (including all natural perennial rivers and streams in Minnesota).

3. *See* MINN. POLLUTION CONTROL AGENCY, 2010 MINNESOTA WATER QUALITY: SURFACE WATER SECTION, REPORT TO THE CONGRESS OF THE UNITED STATES WATER YEARS 2008 –2009, at 9 (2010), *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=5968 (finding that there are approximately 55 million acres within the political boundaries of Minnesota, of which 4.5 million acres are lakes and 9.3 million acres are wetland).

4. *See* UNIV. OF MINN. WATER RES. CTR., MINNESOTA WATER SUSTAINABILITY FRAMEWORK: RECREATIONAL/SPIRITUAL/CULTURAL TECHNICAL WORK TEAM REPORT (2011), *available at* http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_290482.pdf.

5. *Id.* at 2.

6. *Id.* at 10.

7. MINN. DEP'T OF NATURAL RES., ADAPTING TO CHANGE: MINNESOTA'S 2008–2012 STATE COMPREHENSIVE OUTDOOR RECREATION PLAN 3 (2012), *available at* http://files.dnr.state.mn.us/aboutdnr/reports/scorp_final_3308.pdf.

8. *Id.*

home values and the quality of adjacent water bodies, a 2003 study in northwest Minnesota found "that millions of dollars in lakeshore property values on Minnesota's lakes could be lost or gained upon a one-meter change in water clarity."[9] The study authors explain the relationship between water clarity and property value thusly:

> [L]ake water clarity . . . proved a significant explanatory variable of lakeshore property prices in all lake groups and in both models. The relationship between water clarity and property prices is positive, that is, all else being equal, property prices paid are higher on lakes having higher water clarity. In other words, buyers of lakeshore properties prefer and will pay more for properties on lakes with better water quality. Therefore, sustaining and/or improving lake water quality will protect and/or improve lakeshore property values. On the other hand, if water quality is degraded, lower property values will result, which in turn will increase demand and development pressures on remaining lakes with the better water quality and ultimately lowering their water quality as well.[10]

Sustainability is often described as having three components: environment, culture or society, and economics. The 2002 United Nations World Summit on Sustainable Development Johannesburg Declaration on Sustainable Development reconfirmed the Rio Principles[11] of a decade earlier that "the protection of the environment and social and economic development are fundamental to sustainable development."[12]

As early as 1996, Minnesota adopted a definition of sustainable development for local government.[13] "'Sustainable development' means development that maintains or enhances economic

9. CHARLES KRYSEL ET AL., LAKESHORE PROPERTY VALUES AND WATER QUALITY: EVIDENCE FROM PROPERTY SALES IN THE MISSISSIPPI HEADWATERS REGION 42 (2003), *available at* http://www.friendscvsf.org/bsu_study.pdf (prepared for the Legislative Commission on Minnesota Resources).

10. *Id.* at 40–41.

11. *See* United Nations Conference on Environment and Development, Rio de Janiero, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (Vol. 1), Annex I (Aug. 12, 1992), *available at* http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (listing the Rio Principles).

12. World Summit on Sustainable Development, Johannesburg, S. Afr., Aug. 26–Sept. 4, 2002, *Johannesburg Declaration on Sustainable Development* at 2, U.N. Doc. A/CONF.199/20, *available at* http://www.un.org/jsummit/html/documents/summit_docs/131302_wssd_report_reissued.pdf.

13. MINN. STAT. § 4A.07 (2010).

opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs."[14] Over two decades later, in 2009, Minnesota legislators enacted a definition of sustainable water use which, like the sustainable development definition, includes environmental, economic, and intergenerational social aspects.[15] The legislature appropriated funds to plan for and pursue the "sustainable use of groundwater and surface water that does not harm ecosystems, degrade water quality, or compromise the ability of future generations to meet their own needs."[16]

The future of Minnesota water sustainability depends on recognition of all three of the traditional components of sustainability: environment, society, and economics. But more importantly, the future of Minnesota water sustainability depends on establishing a strong connection between sustainability in land use planning (or sustainable development) and sustainability in water planning. The *Framework* projects a desired future where water sustainability arises from "[a] society in which all of our land use decisions and plans are inextricably linked with sustainable water use and planning."[17]

B. The Land and Water Connection

In our daily lives we can readily see the consequences of failing to link land use planning and water planning, but the connection is not always obvious. A stormwater outfall that drains directly into a river or lake may look innocuous until you recognize the implications of untreated stormwater for water quality. The sight of cattle grazing along a small stream may look peaceful and scenic until you notice the muddy banks and lack of streamside vegetation. And a green lawn extending from a cabin to the lakeshore may look attractive if you don't recognize that a lawn, especially if fertilized, can cause up to a ninefold increase in the amount of phosphorus entering the lake.

14. *Id.*
15. Act of May 22, 2009, ch. 172, art. 2, § 8, 2009 Minn. Laws 2476, 2476.
16. *Id.*
17. UNIV. OF MINN. WATER RES. CTR., MINNESOTA WATER SUSTAINABILITY FRAMEWORK (2011), *available at* http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_292471.pdf.

Stormwater runoff from land in watersheds draining into water bodies is a primary source for pollutant loading. According to the U.S. Environmental Protection Agency (EPA), "[n]onpoint source pollution poses the greatest threat to water quality and is the most significant source of water quality impairment in the nation."[18] In a comprehensive review of water quality trends in Minnesota between 1800 and the present, scientists found significant water quality decreases (e.g., increases in chloride and total phosphorus) in lakes in urban and agricultural regions of the state.[19] These pollutant increases were attributed to road salt and nutrient runoff.[20] The water quality decreases were strongly correlated with the percentage of watershed area that was developed in urban areas and the percentage of land in agriculture in agricultural watersheds.[21]

It's not just pollutants. Water volume and velocity are increased due to changes in land cover and increases in impervious surfaces, leading to flooding, scouring of streambanks and river bottoms, stream channel instability, and more rapid rise and fall of water levels in response to rainfall.

Water supply is also affected by land use practices. Groundwater withdrawal in one location can unwittingly affect groundwater availability in other locations, near or distant, because the regulating agencies do not consider cumulative effects of withdrawals on an aquifer. Multiple demands upon a single aquifer can result in decreases in lake levels and reduction in water flow to cold water trout streams and rare calcareous fens.[22]

Comprehensively addressing the land and water connection is necessary to move toward sustainability in our water systems. The following examples illustrate instances of land-water connections with serious consequences for either the land or the water resource, and efforts to address these problems.

18. U.S. ENVTL. PROT. AGENCY, HANDBOOK FOR DEVELOPING WATERSHED PLANS TO RESTORE AND PROTECT OUR WATERS 2-2 (2008), *available at* http://water.epa.gov/polwaste/nps/upload/2008_04_18_NPS_watershed_handbook_handbook.pdf.

19. Joy M. Ramstack et al., *Twentieth Century Water Quality Trends in Minnesota Lakes Compared with Presettlement Variability*, 61 CAN. J. FISHERIES & AQUATIC SCI. 561, 561 (2004).

20. *Id.* at 572.

21. *Id.*

22. CATHERINE O'DELL, MINN. POLLUTION CONTROL AGENCY, MINNESOTA'S GROUND WATER CONDITION: A STATEWIDE VIEW 39 (2007), *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=6395.

1. The Land/Water Connection: Flooding

Rainfall and flooding of historic proportions struck parts of the Upper Mississippi River Valley, including the Root River Valley of southeast Minnesota, on August 18 and 19, 2007, with rainfall in excess of ten to twelve inches in some areas.[23] The region's steep hills and highly erodible soils responded rapidly with torrents of water, and numerous creeks and rivers rose out of their banks.[24] Water from Rush Creek surged up and out of its protective levees in Rushford, Minnesota, flooding most of the town.

> Water was 8 feet deep in places. Several roads and bridges were washed away, many in Winona and Houston Counties. A few homes were even lost into the river as banks eroded around the Minnesota City area. A total of 7 people lost their lives during this flooding, most of [them] in vehicles that were caught in rising water.[25]

Protection against floods of this magnitude is not entirely feasible. However, existing land use patterns and practices certainly worsened the impacts of the flood. Cities such as Rushford were originally built around rivers, and existing levees cannot protect all the homes still in the historic floodplain against extreme flood events. Moreover, intensive farming high in the Rush Creek watershed increases the sediment and nutrient loads entering the creek and its tributaries, threatening the region's valued trout streams.[26]

Five years post-flood, recovery is largely complete, but several changes have occurred.[27] The city's levee initially lost its FEMA certification, based on revised floodplain calculations.[28] The levee

23. Peter Corrigan & Mike Welvaert, *Major Historical Floods and Flash Floods in the La Crosse (ARX) Hydrologic Service Area*, NAT'L WEATHER SERVICE, http://www.crh.noaa.gov/arx/?n=historicalfloods (last updated Jan. 2010).

24. *Id.*

25. *Id.*

26. MINN. DESIGN TEAM, DESIGN TEAM PRESENTATION: RUSHFORD AREA (2008), *available at* http://www.minnesotadesignteam.org/resources/Documents /Rushford%202008-05-20.pdf; *see also Rush & Pine Creeks FY2013*, MINN. TROUT UNLIMITED, http://mntu.org/habitat-projects/lessard-sams -proposed-fy2013-projects /rush-pine-creek-fy2013/ (last visited Jan. 7, 2013).

27. Adam Voge, *Remembering the Flood of 2007: Repairs to City Cost $40M; $1.4 Million in FEMA Money Undelivered*, WINONA DAILY NEWS, Aug. 19, 2012, http://www.winonadailynews.com/news/local/article_8d2094c4 -e9a9-11e1-b5f2-0019bb2963f4.html.

28. Adam Voge, *Rushford Levee System Upgraded, but No Levee Could Withstand the 2007 Flood*, WINONA DAILY NEWS, Aug. 19, 2012, http://www.winonadailynews.com/news/local/article_5da41738-e9af-11e1-82a3

was upgraded by raising about forty-five feet of it and establishing a clear zone of at least fifteen feet from the toe of the structure, where trees, buildings, and electrical wiring were removed.[29] However, city officials recognize that even this upgrade will be inadequate to protect the city from a future flood of similar magnitude.[30]

Many other flood-prone cities, including those in the Red River and Minnesota River valleys, have systematically bought and removed homes and businesses located in the 100-year floodplain. The Red River Watershed Management Board, which has taxing authority, has been particularly effective at developing flood mitigation and protection strategies within each of its constituent watersheds.[31] However, with flood velocity and frequency expected to increase as a result of climate change, it will be impossible to provide complete flood protection in many cases. In Duluth, where major flooding occurred in June of 2012, significant damage to roads, trails, and housing is likely to require several years to repair.[32]

2. *The Land/Water Connection: Remote Groundwater Withdrawal Impact—White Bear Lake*

Drought, the inverse of flooding, is also a regular occurrence in Minnesota and is especially severe as we write this article in fall 2012. Drought has exacerbated the cumulative impacts of groundwater withdrawals in the Twin Cities metropolitan area, already impacted by land use practices. A cluster of lakes and streams in the northeast metro, including White Bear Lake, have seen significant declines in water levels, caused in part by urban expansion and increased pumping from the Prairie du Chien aquifer.[33] Between 2003 and 2010, White Bear Lake dropped more

-0019bb2963f4.html.

29. *Id.*

30. *Id.*

31. *See* RED RIVER WATERSHED MGMT. BOARD, http://www.rrwmb.org/index.cfm (last visited Nov. 15, 2012).

32. *See Northern Minnesota Flooding, June 19–20*, MINN. WATER SCI. CENTER NEWSL. (USGS/Minn. Water Sci. Ctr., Mounds View, Minn.), Summer 2012, *available at* http://mn.water.usgs.gov/about/newsletter/summer2012/index.html; *Duluth Area Flooding–June 2012*, MINN. WATER SCI. CENTER., http://mn.water.usgs.gov/flood/DuluthArea2012/ (last visited Nov. 23, 2012).

33. Bill McAuliffe, *Residential Thirst Straining, Draining White Bear Lake*, STAR TRIB., Oct. 1, 2012, http://www.startribune.com/local/east/172018831.html?refer=y; *White Bear Lake Update*, MINN. WATER SCI. CENTER NEWSL.

than five and one-half feet from its ordinarily high water level.[34] White Bear Lake and nearby lakes and streams are particularly vulnerable to pumping because the porous layers of glacial till sand and gravel beneath them allow rapid drainage and easy exchange of water with the aquifer. Pumping from the aquifer by the city of White Bear Lake and nine surrounding communities increased from 2.6 billion gallons in 1980 to six billion in 2008, with most of that increase due to residential growth.[35] Cities are responding to the drawdown with water conservation measures, including increasing water charges and alternate-date lawn watering. A two-year study of groundwater-surface water interaction by the U.S. Geological Survey (USGS) identified potential solutions, including identifying and relocating wells that draw the highest concentrations of lake water.[36]

3. The Land/Water Connection: Septic Systems Impact Lake Water Quality

The high density of cabins and lake homes on small lots around many Minnesota lakes means that many lakes are potentially affected by discharges from substandard or inadequate septic systems. Pharmaceuticals and endocrine-active compounds, including estrogenic compounds, were found in water and sediment of twelve Minnesota lakes as part of a recent study by USGS and St. Cloud State University, in cooperation with the Minnesota Pollution Control Agency.[37] Lakes with a high density of septic systems had the most frequent detections of these chemicals.[38] Low levels of estrogenic compounds in lakes have caused the extinction of species of forage fish and are known to cause abnormal sexual development in bass and walleye in Minnesota rivers.[39] The USGS Minnesota Water Science Center, in partnership with St. Cloud State University and the Minnesota Department of Health (MDH), is currently surveying "24 additional

(USGS/Minn. Water Sci. Ctr., Mounds View, Minn.), Summer 2012, *available at* http://mn.water.usgs.gov/about/newsletter/summer2012/index.html.

34. McAuliffe, *supra* note 33.

35. *Id.*

36. *Id.*

37. *Assessing Septic System Discharge to Lakes*, MINNESOTA'S LEGACY, http://www.legacy.leg.mn/projects/assessing-septic-system-discharge-lakes (last visited Nov. 16, 2012).

38. *Id.*

39. *Id.*

Minnesota lakes with high densities of septic systems for water and sediment contamination from pharmaceuticals and estrogenic compounds," with funding from the Legacy Amendment's Clean Water Fund.[40]

Many small Minnesota communities are also using Legacy Amendment funds to evaluate alternatives to fix failing subsurface sewage treatment systems (SSTS).[41] Alternatives may include installation of publicly owned SSTS and soil-based cluster systems, or extension of public sewers.

II. MINNESOTA WATER PLANNING LAW STRUCTURE

Starting from a common-law, riparian-rights historical footing,[42] water law in Minnesota is driven primarily by implementation of the federal Clean Water Act[43] and Safe Drinking Water Act,[44] and by independent state legislative initiatives responding to specific water quality or quantity issues. An excellent overview of Minnesota water law is set forth by Professor Bradley C. Karkkainen in chapter five of *Water Policy in Minnesota: Issues, Incentives, and Action*.[45] The following section summarizes the multiplicity of state and local entities with authority over water use, water quality, and water planning; the legislative foundations for their authority; their responsibilities; and their relationships with other entities.

The Minnesota Department of Natural Resources (DNR) was Minnesota's first environmental agency, established in 1931 as the Department of Conservation.[46] The DNR has primary responsibility

40. *Id.*

41. MINNESOTA'S LEGACY, http://www.legacy.leg.mn/search (enter "Small Community Wastewater Treatment Program" in the "Search projects" box; follow "go" hyperlink).

42. Bradley C. Karkkainen, *Minnesota Water Law: A Unique Hybrid*, *in* WATER POLICY IN MINNESOTA: ISSUES, INCENTIVES, AND ACTION 71, 72 (K. William Easter & Jim Perry eds., 2011). *See generally* Schurmeier v. St. 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 holds title only to the low-water mark. *Id.* at 105–06. The U.S. Supreme Court affirmed that Congress, in granting the 1849 patents to various railroads to aid in railroad construction, intended that the grantees be bound by the common-law rules of riparian ownership. *Schurmeier*, 74 U.S. at 283.

43. Clean Water Act, 33 U.S.C. §§ 1251–1387 (2006).

44. Safe Drinking Water Act, 42 U.S.C. §§ 300f–300j-26 (2006).

45. *See* Karkkainen, *supra* note 42, at 71.

46. Act of Apr. 17, 1931, ch. 186, 1931 Minn. Laws 206.

for inventorying and managing the state's public waters, as defined, including public water wetlands, and for regulating any activities that obstruct or alter these waters, including dams, reservoirs, and other structures. The DNR establishes permissible lake or stream levels (known as ordinary high water levels). The agency is also responsible for water allocation and use, including groundwater appropriations. Water use permits are considered on a case-by-case basis, based on a statutorily defined order of priorities that gives the highest priority to domestic water supplies, followed by uses such as irrigation, power production, and similar uses. The DNR may suspend withdrawals during periods of low water levels or other shortages.

The Minnesota Pollution Control Agency (MPCA) has primary responsibility for water quality protection, as the administrator of the federal National Pollutant Discharge Elimination System (NPDES) program under a cooperative agreement with the EPA.[47] As such, the MPCA is responsible for assessing the quality of all waters in the state and identifying impaired waters that fail to meet state water quality standards. The agency is required to develop a total maximum daily load (TMDL)—essentially an allowable pollution budget—for each impaired water body segment and a plan for achieving the TMDL goals.[48] The MPCA conducts extensive monitoring of lakes, streams, and watersheds; manages stormwater permits for municipal and industrial users; and monitors groundwater quality. The agency also regulates the collection, transportation, storage, processing, and disposal of animal manure and other livestock operation wastes.

The MDH is responsible for protecting drinking water quality, especially groundwater, under the federal and state Safe Drinking Water Acts.[49] The MDH regulates well drilling by examining and licensing well contractors and overseeing the modification, repair, and sealing of wells. The MDH performs source water assessments for public water supply systems and administers the state's Wellhead Protection Program. The agency also establishes health risk limits for groundwater contaminants, working with the MPCA and the Department of Agriculture.

The Minnesota Department of Agriculture works with agricultural producers to promote best management practices

47. MINN. STAT. § 115.03 (2010).
48. *Id.* § 114D.25.
49. *Id.* § 144.383.

(BMP) that are protective of water resources. The agency is responsible for regulating pesticides, fertilizers, and other agricultural chemicals under the Minnesota Pesticide Control Act.[50]

The Board of Water and Soil Resources (BWSR) functions as the state soil conservation agency and is authorized to direct private land soil and water conservation programs through the action of soil and water conservation districts (SWCD), counties, cities, townships, watershed districts, and water management organizations. The BWSR is the primary source of guidance for local government, private landowners, and other partners on local water plans, wetland protection efforts under the Wetland Conservation Act, and soil and water conservation programs.[51] Counties are not required to produce water plans, but the plans are a prerequisite for eligibility for the BWSR's Natural Resources Block Grant program, and all of the state's eighty-seven counties have plans in place.

The Minnesota Environmental Quality Board has statutory authority to coordinate a statewide comprehensive long-range water resources plan every ten years.[52] The *2010 Minnesota Water Plan* (*Water Plan*)[53] assesses the current status of Minnesota water resources and charts a course for the future. While the *Water Plan* does not detail specific steps or numeric goals for water sustainability, it does provide directional guidance for state agency and local government program and policy choices. One of seven key principles identified as necessary to protect and improve water resources is comprehensive land and water management.[54] On this principle, the *Water Plan* states that "[s]ustainable water resources can be achieved when land and water are managed as a holistic system. Land and water must be viewed and managed holistically using a systems approach that recognizes their complex interconnections."[55]

Within the Twin Cities metropolitan area, the Metropolitan Council is authorized to prepare plans for the region's water

50. *Id.* § 18B.03.

51. *See About the Board of Water and Soil Resources*, MINN. BOARD WATER & SOIL RESOURCES, http://www.bwsr.state.mn.us/aboutbwsr/index.html (last visited Nov. 15, 2012).

52. § 103B.151, subdiv. 2.

53. MINN. ENVTL. QUALITY BD., 2010 MINNESOTA WATER PLAN (2010), *available at* http://www.eqb.state.mn.us/documents/2010_Minnesota_Water_Plan.pdf.

54. *Id.* at 29.

55. *Id.*

resources and water supplies, to recommend performance standards for watershed plans (working with the BWSR), and to review comprehensive planning efforts by local governments for conformance with metropolitan system plans (including the water resources and water supply plans).[56] While this level of coordination between water and land use planning provides a useful model for greater Minnesota, in practice the requirements for multiple updates of both comprehensive and water plans have been burdensome for many cities, and a recent analysis recommended a "coordinated planning cycle."[57]

As Professor Karkkainen notes, Minnesota has been a pioneer and innovator in water management, but its water law and governance structures are exceedingly complex—so much so that costly inefficiencies and redundancies may result.[58] Moreover, he points out, substantial gaps still exist, and the gap between land use and water planning is one of the most evident.[59]

A. The One-Watershed, One-Plan Approach to Water Planning in Minnesota

Watershed-based planning is a critical tool for water restoration, protection, and management. The EPA promotes watershed-based planning as a means for states to meet the Clean Water Act requirements to restore impaired waterbodies.[60] "A watershed is the area of land that contributes runoff to a lake, river, stream, wetland, estuary, or bay."[61] Watershed-based planning addresses the full-range of water issues in a defined watershed in a holistic manner, actively involving stakeholders and considering the use of all potential management strategies, including solutions that require integration with land use planning.[62]

56. §§ 473.1565, .157, .175.

57. MINN. ENVTL. INITIATIVE, LAND AND WATER POLICY PROJECT 6 (2009), *available at* http://www.environmental-initiative.org /images/files /LWPPStakeholderRecommendations.pdf.

58. *See* Karkkainen, *supra* note 42, at 85.

59. *See id.* at 85–86.

60. U.S. ENVTL. PROT. AGENCY, *supra* note 18, at 2-14.

61. *Id.* at 1-2. Minnesota Statutes define a watershed as "the 81 major watershed units delineated by the map, 'State of Minnesota Watershed Boundaries–1979.'" § 103G.005, subdiv. 17a.

62. U.S. ENVTL. PROT. AGENCY, *supra* note 18, at 2-2 to 2-4.

1. The First Step: Watershed-Based Data Collection and Assessment

Watershed-based planning has taken hold on the water planning side of the ledger in Minnesota. After several decades of opportunistic and reactive collection of watershed health data, Minnesota recognized the need for strategic effectiveness in watershed data collection and assessment. The Clean Water Legacy Act of 2006,[63] which sprang from a unique stakeholder-driven collaborative effort,[64] led the MPCA to implement a watershed approach for assessing waters of the state.[65] Started in 2007, the assessment rotation will cover all eighty-one major watersheds in Minnesota (hydrologic unit code level 8 (HUC 8)) over ten years.[66]

The watershed-based assessment approach provides a few, albeit weak, connections to the land use planning system. It provides opportunities for local governments to participate in monitoring plans, provides a schedule for TMDL studies for impaired waters[67] or other water quality protection work, and provides comprehensive water quality data that could be used in land planning efforts.[68] The movement to watershed-based assessment, however, did not fully address integration of multiple water planning efforts within a watershed or conscientious integration of water planning and land planning.

2. The Second Step: Watershed-Based Local Water Planning Authorized

After undertaking watershed-based water quality data collection and assessment, the next logical step toward watershed-based planning is to require local water planning to be organized around watersheds. Local governments in Minnesota are subject to a multiplicity of water planning requirements. To illustrate this fact, the City of Blaine, Minnesota, identified six water planning

63. § 114D.

64. LeRoy C. (Lee) Paddock, *Collaborative Problem Solving in Minnesota*, 25 NAT. RESOURCES & ENV'T 17, 17–18 (2010).

65. MINN. POLLUTION CONTROL AGENCY, MINNESOTA'S WATER QUALITY MONITORING STRATEGY 2011 TO 2021, at 13 (2011), *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=10228.

66. *Id.*

67. The Clean Water Act requires states to conduct TMDL studies for impaired waters. 33 U.S.C. § 1313(d)(1)(C) (2006). TMDL studies establish water quality restoration targets and result in pollutant load reduction allocations to land-based generators of those loads.

68. MINN. POLLUTION CONTROL AGENCY, *supra* note 65, at 5.

and permitting documents the city was required to complete within a ten-year period.[69] The water plans covered overlapping (although not coterminous) geography and required overlapping (although not exactly the same) analysis, policy development, and program implementation. In 2009, a group of high-level state agency staff, local government representatives, and other water policy stakeholders recommended that the state of Minnesota

> develop a coordinated planning cycle based on geographic areas and a five-year planning sequence. The need for coordinated planning is two-fold. First, so water resource goals inform land use decisions, and second, to relieve local governments and other implementers who currently must respond to multiple, uncoordinated planning requirements. A coordinated planning cycle will result in more informed land use decisions and a better balance between planning and implementation activities for land and water resources.[70]

In 2012, the Minnesota Legislature took a significant step toward coordinated, watershed-based planning by passing the "one-watershed, one-plan" legislation, which authorizes the integration of multiple water planning efforts within a single watershed.[71] The legislation defined a "comprehensive watershed management plan" as "a plan to manage the water and related natural resources of a watershed."[72] A comprehensive watershed management plan may take the place of required local water management plans and allows one plan to satisfy multiple water planning requirements.[73] Content and scope of local water management plans may now be addressed "in the context of watershed units and groundwater systems."[74] The legislation was initiated by a coalition of state agencies and local government associations attempting to streamline water planning requirements.[75]

Allowing watershed-based planning on the water planning side of the ledger addresses one of the three components of

69. MINN. ENVTL. INITIATIVE, *supra* note 57, at 16.

70. *Id.* at 2.

71. Act of May 3, 2012, ch. 272, sec. 32–35, §§ 103B.101–.3363, 2012 Minn. Laws 1092, 1092–94.

72. *Id.* sec. 35, § 103B.3363, subdiv. 3a.

73. *Id.* sec. 32, § 103B.101, subdiv. 14.

74. *Id.* sec. 34, § 103B.311, subdiv. 4(a)(2).

75. ASS'N OF MINN. CNTYS., 2012 LEGISLATIVE SESSION SUMMARY 5 (2012), *available at* http://www.mncounties.org/Intergovernmental_Services/Final %202012%20Legislative%20Session%20Summary.pdf.

sustainability—the environmental component. On its own, watershed-based water planning does not address the other two components of sustainability—the social and economic components.

III. MINNESOTA LAND USE PLANNING STRUCTURE

A. History of Minnesota's Planning Law

Although Minnesota's existing county and municipal planning enabling statutes date from the 1950s and 1960s,[76] the concept of municipal land use planning and zoning took hold early in Minnesota, predating the standard state zoning and city planning enabling acts promulgated by the Department of Commerce in the 1920s.[77]

The first "zoning" law in the state was adopted in 1915; it allowed cities of the first class to create exclusive residential districts through the use of eminent domain.[78] The intent of the law was to protect single-family homes from the encroachment of incompatible uses. "As described by the Forest Resources Council, the tool authorized by this law is known as 'zoning by special assessment backed eminent domain.'"[79] Property owners in those districts who wanted to use their property for another use, such as a commercial use or an apartment building, had their right to develop for such uses taken by the city through eminent domain, and were paid just compensation for their lost development rights. The money to pay the just compensation award was collected by a special assessment levied against the residences that benefited from being in an exclusive residential district. Surprisingly, the law

76. Act of May 22, 1965, ch. 670, 1965 Minn. Laws 995 (municipal planning enabling statute); Act of Apr. 24, 1959, ch. 559, 1959 Minn. Laws 882 (county planning enabling statute).

77. "[The] Standard State Zoning Enabling Act . . . was developed by an advisory committee on zoning appointed by Secretary of Commerce (and later President) Herbert Hoover in 1921. After several revisions, the Government Printing Office published the first printed edition in May 1924, and a revised edition in 1926." *Growing Smart: Enabling Acts*, AM. PLANNING ASS'N, http://www.planning.org/growingsmart/enablingacts.htm (last visited Nov. 17, 2012). The Standard City Planning Enabling Act was published in 1928. *Id.*

78. Act of Apr. 16, 1915, ch. 128, § 1, 1915 Minn. Laws 180, 180 (restricted residence districts).

79. Suzanne Sutro Rhees, *Minnesota's Planning and Zoning Enabling Laws: Analysis and Options for Reform* 4 (Am. Planning Ass'n, Minn. Chapter, Working Paper, 2012).

enabling this special type of zoning is still part of the city planning statute, although it no longer seems to serve any purpose.[80]

As early as 1925, in *Beery v. Houghton,*[81] the Minnesota Supreme Court supported municipal land use planning and zoning actions as legitimate tools for promoting the general welfare.

County and township zoning were both authorized by the legislature in 1939. Counties that contained a state or federal forest or state conservation area were empowered to regulate land and building use "for the purpose of promoting health, safety, morals, public convenience, general prosperity and public welfare."[82] Interestingly, the law required zoning to be in accordance with a comprehensive plan, although no planning enabling legislation had yet been adopted. Towns located within counties with populations of over 450,000 and certain assessed valuation were empowered to poll voters on whether zoning should be adopted; a seventy percent vote in favor was required.

In 1959, county planning and zoning authority was expanded with the passage of the County Planning Act, which provides the current framework for county planning and zoning.[83] The Municipal Planning Act, the basic planning and zoning enabling law followed by cities today, was passed by the legislature in 1965.[84] Townships were authorized to use the Municipal Planning Act in 1982. The Metropolitan Land Planning Act of 1976 transformed the structure of planning for counties and local governments in the seven-county metropolitan area.[85] However, in spite of a series of studies and attempts to pass legislation, the basic enabling laws for local governments in greater Minnesota remain largely unchanged since their adoption.

A 1981 Growth Management Study, prepared by the Minnesota Planning Agency, concluded, "[I]t is often lack of coordination and cooperation among these levels [of local governments] that underlies growth management problems."[86] In

80. MINN. STAT. § 462.12 (2010).

81. State *ex rel.* Beery v. Houghton, 164 Minn. 146, 204 N.W. 569 (1925) (holding that a comprehensive zoning ordinance of the city of Minneapolis is a legitimate use of the constitutional delegation of the police powers).

82. Act of Apr. 20, 1939, ch. 340, § 1, 1939 Minn. Laws 514, 514.

83. MINN. STAT. § 394.21 (2010 & Supp. 2011).

84. MINN. STAT. § 462.12 (2010).

85. Act of Apr. 2, 1976, ch. 127, 1976 Minn. Laws 292.

86. MINN. STATE PLANNING AGENCY, PHYSICAL PLANNING DIV., GROWTH MANAGEMENT STUDY A-12 (1981).

the mid-1980s, the Governor's Advisory Council on State and Local Relations began to address some of the issues identified in the 1981 study. Following two years of study, the Council prepared a unified land planning act that was first introduced during the 1987 Legislative Session.[87] The bill was intended to provide a uniform enabling law for cities, townships, and counties that was up to date.[88] The bill was in response to several court decisions that overturned local land use decisions; the increasing complexity of planning issues; and the interaction between cities, townships, and counties. The bill was revised several times to address concerns raised by numerous stakeholders and reintroduced multiple times during the late-1980s and into the 1990s, but was never adopted.

Beginning in the 1990s, the concept of sustainability attracted the interest of many state agencies. Under Governor Arne Carlson, the Minnesota Sustainable Development Initiative, coordinated by the Environmental Quality Board and Minnesota Planning, continued to focus on planning law reform, producing a series of publications focused on planning. A bill introduced in 1994 proposed a system similar to that of Oregon, with state goals developed and coordinated by a state agency, mandated local comprehensive planning, and state review of local comprehensive plans, but did not pass.

The Community-Based Planning Act (CBPA) of 1997 grew out of the advocacy efforts of the nonprofit 1000 Friends of Minnesota, rather than a state agency.[89] The CBPA attempted to create a statewide framework for planning, provided a planning grant program and state technical assistance for local governments to plan cooperatively under the law, established eleven community-based planning goals, and provided for state review of local plans for consistency with the goals.[90] The CBPA added to but did not replace the existing planning enabling laws. The law, however, did not have widespread support, and key sections were repealed, effective in 2001, including the eleven goals, the funding, and the process for state review of community-based plans.[91] Other sections of the CBPA still remain but constitute optional guidance for the

87. S.F. 1759, 75th Leg. (Minn. 1988).

88. *Id.*

89. *Accomplishments*, ENVISION MINN., http://www.envisionmn.org/accomplishments/ (last visited Jan. 8, 2013) (formerly 1000 Friends of Minnesota).

90. Act of May 31, 1997, ch. 202, art. 4, 1997 Minn. Laws 1568.

91. Act of July 1, 2001, ch. 250, art. 1, 1999 Minn. Laws 2791.

"community-based comprehensive plan," as distinct from the "ordinary" comprehensive plan (although the community-based plan is not defined).[92]

Various minor amendments have been made to the planning and zoning enabling laws over the past decade. For example, in 2008, the Minnesota Legislature passed the President Theodore Roosevelt Memorial Bill to Preserve Agricultural, Forest, Wildlife, and Open Space Land.[93] This law requires that certain cities, townships, and counties consider adopting comprehensive plans and ordinances that include "goals and objectives for the preservation of agricultural, forest, wildlife, and open space land, and the minimization of development in sensitive shoreland areas."[94] When first introduced, the bill included some mandatory planning components, but these were deleted, and the adopted law only requires "consideration" of these issues.

The zoning requirements for municipalities in Minnesota Statutes chapter 462 have been revised numerous times to limit municipalities' ability to restrict certain uses, such as manufactured homes and manufactured home parks, state-licensed day care facilities, and state-licensed residential facilities ("group homes") in residential settings. These restrictions appear to have been intended to prevent actions by municipalities to exclude such uses from residential neighborhoods. The county statute includes the same restriction on manufactured home parks.[95]

Other minor revisions since 2000 have tended to limit local governments' authority to zone. For example, in 2009, the legislature established standards for development of nonconforming lots in shoreland areas, requiring lots meeting certain size requirements to be sold as individual lots rather than combined to create conforming lots.[96]

Additional changes to the enabling laws in 2006 related to municipalities' ability to require a subdivision applicant to dedicate a reasonable portion of land within the development to the public to address infrastructure needs created by the development.[97]

92. MINN. STAT. § 394.232, subdiv. 1 (2010 & Supp. 2011); MINN. STAT. § 462.3535, subdiv. 1 (2010).

93. MINN. STAT. § 394.21 (2010); MINN. STAT. § 462.357, subdiv. 1h (2010 & Supp. 2011).

94. MINN. STAT. § 462.357, subdiv. 1h (2010).

95. *Id.* § 394.25, subdiv. 3a.

96. Act of May 21, 2009, ch. 149, § 2, 2009 Minn. Laws 2025, 2025–26.

97. MINN. STAT. §§ 394.25, subdiv. 7; 462.358, subdiv. 2b–2c.

B. Watershed-Based Land Use Planning in Minnesota

Watershed-based land use planning has certainly not taken hold on the land use planning side of the ledger in Minnesota. Consideration of water resources, much less watershed-based planning, in land use planning efforts in Minnesota is spotty at best. Differences in the language of the land use enabling statutes foster inconsistent land use decision making amongst cities, townships, and counties, particularly outside the metropolitan area. Some provisions, such as annexation authority,[98] actually foster polarization among cities, townships, and counties. Watersheds do not follow political boundaries, and cooperation across jurisdictional lines is necessary to promote watershed-based land use planning decisions. There are no requirements or incentives for cross-jurisdictional land use planning outside the metropolitan area, although such efforts are allowed.[99]

Despite the pervasive visual presence of surface water, land use planning practice in Minnesota most often gives water quality and water availability a perfunctory glance. Background studies underlying land use planning decisions provide inventories of water resources, but often these inventories fail to influence development pattern choices. Shoreland zoning, required by Minnesota law, is implemented most often by adopting zoning regulations modeled on the state's outdated sample ordinance, last updated in 1999.

The value of water resources in traditional land use planning issues is crystal clear. Access to clean, safe drinking water is necessary for development. Economic development is strongly related to water-based recreation in many Minnesota communities. Ecosystem services, such as wetland functions that filter polluted water, enable least-cost drinking water treatment. Shoreland home prices can fluctuate with the cleanliness of adjacent water bodies. Agricultural irrigation and energy production are dependent on available water supplies.

During the boom years of the 1990s and 2000s, communities often planned for population growth without considering the realities involved in obtaining the necessary permits for water

98. *Id.* § 414.01.

99. MINN. STAT. §§ 394.232, 462.3535 (2010 & Supp. 2011); MINN. STAT. §§ 394.32 (allowing counties to cooperate with other jurisdictions on land use planning), 462.371–.375 (2010) (allowing municipalities to cooperate with other jurisdictions on land use planning).

supply and sewer treatment plants. The cities of Annandale and Maple Lake, located just outside the jurisdiction of the Metropolitan Council of the Twin Cities, planned to capture their share of the exurban growth and development. As part of the planned expansion, the two cities sought to expand a combined sewer plant that would discharge into an impaired waterway. The ultimate outcome was that the sewer expansion was approved—after nearly a decade[100] of plans, applications, negotiations, determinations, and litigation that rose to the Minnesota Supreme Court.[101] The question to be raised is, "Could the protracted legal battle and costs have been avoided if water planning and land use planning communicated better?"

C. Land Use Planning in Greater Minnesota

Outside of the seven-county Twin Cities Metropolitan Area,[102] land use planning efforts are permissive and optional.[103] If counties, cities, or townships in greater Minnesota choose to undertake land use planning, the requirements to even consider water quality or water availability are tepid.[104] The statutory authority for counties outside the metropolitan area provides:

> The county shall *consider* the following goals and objectives:
>
> . . . .
>
> (2) minimizing further development in sensitive shoreland areas;
>
> . . . .
>
> (4) identification of areas of preference for higher

100. The Need for an Environmental Impact Statement for the Proposed Annandale/Maple Lake Wastewater Treatment Facility 2 (Minn. Pollution Control Agency June 27, 2004) (order), *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=9707 (stating that an original request for a new treatment facility was submitted in 2003); Theresa Andrus, *Maple Lake to Go Online at Joint Sewer Plant*, MAPLE LAKE MESSENGER, Nov. 23, 2012, http://www.maplelakemessenger.com/main.asp?ArticleID=7119&SectionID=86.

101. *In re* Cities of Annandale & Maple Lake, 731 N.W.2d 502 (Minn. 2007).

102. MINN. STAT. § 473.121, subdiv. 2 (2010) ("'Metropolitan area' or 'area' means the area over which the Metropolitan Council has jurisdiction, including only the counties of Anoka; Carver; Dakota excluding the city of Northfield; Hennepin excluding the cities of Hanover and Rockford; Ramsey; Scott excluding the city of New Prague; and Washington.").

103. *See id.* §§ 394.23 (counties), 394.32 (municipalities), 366.17, 394.33 (townships).

104. *See id.* § 394.231(2).

> density, including *consideration* of existing and necessary water and wastewater services, infrastructure, other services, and to the extent feasible, encouraging full development of areas previously zoned for nonagricultural uses . . . .[105]

Language with the similar effect of allowing consideration of water-planning goals, but not requiring the community to adopt water-planning goals and objectives, is included in the municipal enabling legislation.[106] Township authority for planning relies to a great degree on the county enabling statute, which states that townships may adopt land use plans if they are at least as restrictive as the plan for the county in which the township is located.[107]

The permissive nature and lack of guidance on water-planning content in the land use planning enabling statutes for non-metro communities allows communities to overlook the opportunity to connect land use planning to water resources planning. With the demise of the state planning agency in 2002,[108] Minnesota has no entity that reviews land use plans outside of the metropolitan area. The planning agency had no authority over content of plans; however, the office did undertake intermittent surveys on the number of jurisdictions with land use plans. The most recent effort to review comprehensive plans in Minnesota was conducted by the Minnesota Forest Resources Council (MFRC) for the purpose of targeting improvements in land use planning law to protect forestland as a land-based economic resource.[109] The study is informative even though the motivation was not water-resource related. After a survey[110] of the content of county comprehensive plans, the study concludes that

> Minnesota's planning enabling laws include a very minimal definition of a "comprehensive plan." As a result, some [county plans surveyed by the MFRC] are

105. *Id.* § 394.231(2), (4) (emphasis added).

106. *Id.* § 462.3535; *see also id.* § 462.357.

107. *Id.* § 394.33.

108. MYRON ORFIELD & THOMAS F. LUCE, JR., REGION: PLANNING FOR THE FUTURE OF THE TWIN CITIES 254 (2010).

109. CALDER HIBBARD ET AL., MAINTAINING THE FORESTLAND BASE IN MINNESOTA: FORESTLAND PARCELIZATION AND POLICY TOOLS app. B, at 1 (2011), *available at* http://archive.leg.state.mn.us/docs/2011/mandated/110685.pdf.

110. *Id.* ("Of the 85 counties with planning and zoning authority in Minnesota, the background paper includes comprehensive planning information for 76 counties. Of those, 73 (96%) have a comprehensive plan. For the status of general zoning, the background paper includes information for 79 counties.").

> very minimal and should in no way be considered "comprehensive." Other plans are a brief series of policy statements included in the county zoning ordinance, and some are a compilation of township plans. More legislative guidance about what constitutes a "comprehensive plan" would help improve plan quality.[111]

The authors of this article, who together have reviewed over 100 land use plans in greater Minnesota, agree with the conclusion of the MFRC study. Our experience is that land use planning focuses on growth and development, with resource identification treated as a baseline condition and resource protection often considered a costly luxury. Water quality is sometimes considered in land use plans through background studies that may, but do not necessarily, include identification of lakes and streams, shoreland areas, impaired waters, and wellhead protection areas. When undertaken, these background studies influence the content of land use policies and objectives, sometimes leading to land use policies and objectives that protect and improve water quality. One example of this approach is found in Cass County, where the comprehensive plan incorporates the goals and objectives of the Local Water Management Plan and includes a natural resources policy that explicitly references those goals:

> To incorporate the goals and strategies of the Cass County Comprehensive Local Water Plan in promoting land and water uses that result in the sustainable use of natural resources, balancing development and environmental commitment to conserve and enhance the natural beauty and resources of the County for this and future generations.[112]

Land use plans in communities outside the metropolitan area rarely consider water availability in background studies or policies and objectives. If water availability is not considered, how can communities reasonably plan for population growth that will increase the demand for potable water?

111. *Id.*

112. CASS CNTY., MINN., CASS COUNTY COMPREHENSIVE PLAN 15 (2010), *available at* http://www.co.cass.mn.us/esd/pdfs/comp_plan.pdf.

D. Land Use Planning in the Twin Cities Metropolitan Area

The Metropolitan Council was formed in part to respond to water quality and wastewater planning concerns.[113] Within the seven-county metropolitan area, the Metropolitan Council is the regional planning authority and has authority to plan for and administer the wastewater treatment system and to set regional policy goals for drinking water supply and surface water management.[114] Water and land use planning are integrated by the Metropolitan Council through the development of a regional framework consisting of land use and wastewater systems statements and a water supply plan.[115] A wastewater systems plan is created by the Metropolitan Council, and local governments in the metropolitan region are required to conform their local land use plans to the systems statement.[116] A similar process applies to regional water quality and water supply planning, although with added coordination with state agencies.[117]

The Metropolitan Council and local governments in the metropolitan region have embraced watershed-based planning. The statutory directive in Minnesota Statutes section 473.157 directs watershed-based planning for water resources in the metropolitan area:

> To help achieve federal and state water quality standards, provide effective water pollution control, and help reduce unnecessary investments in advanced wastewater treatment, the council shall adopt a water resources plan that includes management objectives and target pollution loads for watersheds in the metropolitan area. The council shall recommend to the Board of Water and Soil Resources performance standards for watershed plans in the metropolitan area, including standards relating to the timing of plan revisions and proper water quality management.[118]

The link between land use and water quality is reflected in language used by the Metropolitan Council in its 2030 Water Resources Management Policy Plan, where it states: "New

113. ORFIELD & LUCE, *supra* note 108, at 52, 69.
114. *Id.* at 69–73.
115. *See* MINN. STAT. §§ 473.145–.146, 473.1565–.157 (2010).
116. *See id.* § 473.513.
117. *See id.* §§ 473.1565–.157.
118. *Id.* § 473.157.

directions outlined in the [*Regional*] *Framework* set out a path for growth that protects water resources and the region's quality of life."[119] One of four guiding policies for metropolitan planning is:

> *Policy 4: Work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources.* Encouraging the integration of natural-resource conservation into all land-planning decisions. Seeking to protect important natural resources and adding areas to the regional park system. Working to protect the region's water resources.[120]

A key implementation strategy the Metropolitan Council identified for water resource protection is watershed-based assessment and planning.[121] Watershed Management Organizations (WMO), which are special units of government organized within watershed boundaries, initiate the watershed-based planning through the preparation of local surface-water management plans. Cities and counties in the metropolitan area must then adopt land use and water plans that conform to the local surface-water management plans. The Metropolitan Council reviews local land use and water plans to ensure conformance.[122]

The impact of land use choices on water quality and quantity in one major metropolitan waterway in the Twin Cities region, the Mississippi River, is described in the recent report, *State of the River Report: Water Quality and River Health in the Metro Mississippi River.*[123] The results show that failing to consider water impacts in land use decisions can have significant consequences, such as increases in sedimentation, phosphorus, nitrates, and bacteria, and decreases in ecological health and indicator animal species.[124] While some pollutants have decreased over the past decades, others have increased, and new pollutants are arriving on the scene.[125] The report indicates the future of improvements is tied closely to land

119. METRO. COUNCIL, 2030 WATER RESOURCES MANAGEMENT POLICY PLAN 5 (2010), *available at* http://www.metrocouncil.org/planning/environment/wrmpp/wrmpp2005.htm.

120. *Id.* at 6.

121. *See id.* at 24.

122. *See id.* at 25–27.

123. LARK WELLER, NAT'L PARK SERV. & TREVOR A. RUSSELL, FRIENDS OF THE MISSISSIPPI RIVER, STATE OF THE RIVER REPORT: WATER QUALITY AND RIVER HEALTH IN THE METRO MISSISSIPPI RIVER (2012), *available at* http://stateoftheriver.com/state-of-the-river-report.

124. *Id.*

125. *Id.*

use choices. The solutions repeatedly suggested by the report that are closely tied to land use decisions include: reducing urban and rural stormwater runoff through management of impervious surfaces and on-site infiltration; septic system maintenance requirements; and management of agricultural manure, which includes control of land application of manure.[126]

E. Current Intersections Between Minnesota Water Planning and Land Use Planning Statutes

In addition to the intersection between water planning and land use planning through the statutory authorities of the Metropolitan Council described immediately above, there are two other such statutory intersections worth noting.

1. Shoreland Management Act

"Rules providing local units of government with minimum standards and criteria for the development and use of these shorelands have been in effect since July 1970 for unincorporated areas and March 1976 for incorporated areas," with amendments in 1989.[127] The rules establish minimum lot size and structure setbacks from the affected water bodies for any new subdivisions of land. Each local governmental unit (LGU) is required to adopt zoning ordinances that meet or exceed the statewide minimum standards.[128] The Department of Natural Resources, Division of Ecological and Water Resources (DNR Waters) provides technical assistance to LGUs in the adoption and administration of their shoreland controls.

Shoreland zoning has now been in effect for over forty years in many Minnesota counties, yet achieving better lake and river water quality and protecting the values of water bodies and shorelands remains a complex challenge. Because much of the state's

126. *Id.* at 11, 15–17, 29, 31.

127. MINN. R. pt. 6120 (2011); MINN. DEP'T OF NATURAL RES., DIV. OF WATERS, A TECHNICAL REPORT ON MANAGING NONCONFORMITIES IN THE SHORELAND MANAGEMENT DISTRICT 2 (1995), *available at* http://files.dnr.state.mn.us/waters/watermgmt_section/shoreland/Technical_Report_on_Nonconformities_opt.pdf; *see* MINN. STAT. §§ 103F.201-227 (2010). The statutory definition of "shoreland" is "land located within the following distances from public water: 1000 feet from the ordinary high water level of a lake, pond, or flowage; and 300 feet from a river or stream, or the landward extent of a flood plain designated by ordinance on a river or stream, whichever is greater." MINN. R. pt. 6120.2500, subpart 15.

128. MINN. DEP'T OF NATURAL RES., *supra* note 127, at 2 (1995).

shoreland was subdivided or developed prior to adoption of subdivision or zoning controls by local governments—let alone adoption of the shoreland rules—pre-existing substandard lots, cabins, resorts, and commercial buildings have been allowed to continue as legal nonconformities. When shoreland zoning was initially established, nonconforming uses were allowed to continue under the standards of Minnesota Statutes chapter 394, applicable to counties, which stated that "if the nonconformity is discontinued for more than one year or if the nonconforming building or structure 'is destroyed by fire or other peril to the extent of 50 percent of its market value, any subsequent use or occupancy *shall* be conforming.'"[129] These requirements were changed in 2006 to state that if a building permit is applied for within 180 days of the date of damage, the nonconforming use may be rebuilt.[130]

A further amendment in 2009 provided that a single nonconforming shoreland lot in a group of two or more contiguous lots of record in common ownership may be sold and developed separately, provided the lot can accommodate a subsurface sewage treatment system (or is connected to a public sewer) and can meet sixty-six percent of the dimensional standards for lot size and width for its shoreland classification.[131]

This increasing permissiveness in how substandard shoreland lots are developed and nonconforming uses are continued is consistent with one trend in Minnesota land use law: an increased emphasis on individual property rights. A countervailing trend is shown in the recent development and adoption of alternative shoreland standards by counties concerned with increased development and the impacts on water quality and lake use. In 2005, the Governor's Clean Water Initiative pilot project in the five-county north central lakes area around Brainerd (Aitken, Cass, Crow Wing, Hubbard, and Itasca counties) raised these concerns.[132] The project's stakeholders group worked to develop alternative

129. *Id.* at 4 (emphasis added) (quoting MINN. STAT. § 394.36, subdiv. 1 (1989) (amended 2006)).

130. MINN. STAT. § 394.36, subdiv. 4 (2006) (amended 2009); Act of Aug. 1, 2006, ch. 270, art. 1, § 5, 2006 Minn. Laws 920, 920.

131. Act of May 21, 2009, ch. 149, § 2, subdiv. 5, 2009 Minn. Laws 2025, 2025–26.

132. *The Alternative Shoreland Management Standards: A Product of Minnesota's North Central Lakes Pilot Project*, MINN. DEPARTMENT NATURAL RESOURCES, http://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/shoreland _rules_update.html (last visited Nov. 15, 2012).

shoreland management standards, which provide options that local governments may use to address specific shoreland issues identified in the five-county area. For example, the alternative standards can require installation of a shoreline buffer consisting of trees, shrubs, and ground cover of native plants and understory in the Shore Impact Zone.[133] The rationale is that the conversion of forest shoreline to "lawn-to-lake" shoreline results in seven to nine times more phosphorus entering the lake. Vegetation condition is critical for reducing pollutant runoffs and to provide wildlife habitat.

Local governments both within and outside of the pilot area have adapted or are considering adapting elements of the alternative shoreland standards for use in their own shoreland ordinances. For example, Cass County's land use ordinance authorizes designation of resource protection districts on portions of a lake shoreline determined to be environmentally sensitive. Shoreline buffers of native vegetation may be required as a condition of certain permits, conditional uses, and variances. The ordinance also includes incentives for conservation development rather than conventional development.[134] However, an effort by DNR Waters to update the statewide shoreland rules to more closely match the alternative standards was halted in 2010 by then-Governor Pawlenty and has yet to be resumed.

2. Wellhead Protection Planning

The MDH administers the state wellhead protection rule that sets standards for wellhead protection planning[135] and works with public water suppliers to prepare and implement wellhead protection plans. As part of the planning process, community public water systems and systems serving schools, factories, hospitals, and similar facilities must delineate, inventory, and manage an inner wellhead management zone. They must also create a formal wellhead protection plan, which identifies land uses

133. The Shore Impact Zone is defined as "land located between the ordinary high water level of a public water and a line parallel to it at a setback of 50 percent of the structure setback, but not less than 50 feet." MINN. DEP'T OF NATURAL RES., MINNESOTA'S ALTERNATIVE SHORELAND MANAGEMENT STANDARDS 13 (2005), *available at* http://files.dnr.state.mn.us/waters/watermgmt_section/shoreland/Alt6120_12_12_2005.pdf.

134. Cass County, Minn., Ordinance 2005-01 (May 27, 2005), *available at* http://www.co.cass.mn.us/ordinances/200501_landuse.pdf.

135. MINN. R. pt. 4720.5100–.5590 (2011).

and other activities within the wellhead management zone that could be potential sources of contamination.[136]

The wellhead protection planning process itself is broken down into two parts. Part one involves a delineation of the wellhead protection area and drinking water supply management area, as well as an assessment of well vulnerability. Part two involves the creation of the wellhead protection plan itself, including goals, objectives, a plan of action, an evaluation program, and a contingency plan. MDH planners and hydrologists and public water suppliers (often a local government utility) work together to develop and implement the plan. A common implementation tool is a wellhead protection overlay zoning district that restricts potentially harmful land uses in the wellhead protection area.

The wellhead protection process is a good example of integration, but typically applies only to a small land area and may not address the health of the source aquifer or land uses at the watershed scale.

VI. CONTINUING THE QUIET REVOLUTION: LAND USE PLANNING AND WATER PLANNING STATUTORY REFORM IN MINNESOTA

Professor Sara Bronin, in *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, argues that our rising understanding of sustainability should lead to structural changes in local land use planning systems.[137] Professor Bronin, reviving concepts first set forth in 1971 by Fred Bosselman and David Callies,[138] observes that negative externalities of certain local land use decisions (e.g., allowing conventional building design) are not borne by the local community making the decision; the negative externalities are "extralocal."[139] Examples of negative externalities of local land use decisions in the water realm include increases in impervious surfaces, which speed pollutant-loaded stormwater runoff into streams and lakes, causing water quality impairments; and allowing industrial development in areas with

136. *Q & A: General Goals and Requirements of Wellhead Protection*, MINN. DEPARTMENT HEALTH (last updated Jan. 10, 2013), http://www.health.state.mn.us/divs/eh/water/swp/whp/fs/qawhp.pdf.

137. Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 231–32 (2008).

138. FRED BOSSELMAN & DAVID CALLIES, THE QUIET REVOLUTION IN LAND USE CONTROL (1971).

139. Bronin, *supra* note 137, at 234.

surficial groundwater supplies, leading to overwithdrawal or contamination risks.[140] Local governments, because they do not bear the "extralocal" consequences, are unlikely to make decisions that consider these effects. Professor Bronin concludes by suggesting that to insert sustainability into land use decisions and reduce negative externalities, states must pursue the "quiet revolution" by working within the existing structure of delegation of state power to local government by taking back some, but not all, of the land use powers previously delegated to local units of government.[141] An effective role for the state in this sharing of delegated land use power may be to set boundaries for local action, performance standards, or systematic decision-making processes. Decision making on individual land use decisions would still remain with the local government.

In a similar vein, Professor Daniel R. Mandelker, in *Controlling Nonpoint Source Water Pollution: Can It Be Done?*,[142] asserts that comprehensive land use controls can be used to reduce nonpoint pollution. He suggests techniques such as development that incorporate open space and natural resource protection, performance-based criteria for development, and carrying capacity analysis.[143] Performance-based criteria establish a quantitative measure against which the characteristics and functions of the proposed development are measured.[144] An example of a performance-based land use control would be requiring stormwater to be retained on site at predevelopment levels. Carrying capacity analysis establishes a threshold at which a natural feature becomes impaired: the capacity of the natural feature to accommodate the impacts of development.[145] This concept underlies the Clean Water Act's impaired waters TMDL analysis and load allocations.[146] Water availability issues lend themselves to a carrying capacity analysis in answering the question, "How much development and its associated water use can be accommodated by available groundwater resources?" If a carrying capacity analysis answered this question by suggesting groundwater resources could

140. ORFIELD & LUCE, *supra* note 108, at 237.
141. Bronin, *supra* note 137, at 269.
142. Daniel R. Mandelker, *Controlling Nonpoint Source Water Pollution: Can It Be Done?*, 65 CHI.-KENT L. REV. 479, 486–88 (1989).
143. *Id.*
144. *Id.*
145. *Id.*
146. 33 U.S.C. § 1313(d) (2006).

accommodate only fifty percent of planned growth, the community would look to alternatives such as the use of surface water resources or placing development in other areas with more abundant groundwater resources.

A. Important Characteristics for Integrated Water Planning and Land Use Planning Systems

Several characteristics appear to be common in the discussion of how to integrate sustainability into land use planning systems (i.e., the "quiet revolution"). These are:

1. Work on reform within the existing structure of delegated land use power;
2. The state sets boundaries for local action, sets performance standards, and establishes systematic decision-making processes; and
3. Decision making on individual land use decisions remains with the local government.

These characteristics also appear in current Minnesota thinking about land use statutory improvements. The Minnesota Chapter of the American Planning Association is undertaking an evaluation of land use statutes in Minnesota for the purpose of suggesting targeted enabling law reforms.[147] The American Planning Association is the national membership organization for planning professionals and, since the first model planning and zoning codes in the 1920s, has advocated for best practices in state planning statutes by producing model enabling statutes in conjunction with the American Bar Association. The Minnesota Chapter evaluation follows in the tradition of efforts to improve land use enabling statutes. The evaluation identifies several issues that point to the need for land use law reform:

> Minnesota's planning laws date from the 1950s and 1960s (and are based on models dating from the 1920s), when most development occurred in cities and when townships and unincorporated parts of counties were largely agricultural, rural, or undeveloped. Since the 1950s:
>
> - [Minnesota's] population has expanded from three

147. *See* Rhees, *supra* note 79 (describing the need for land use law reform in Minnesota).

> million to five million.[148]
> - Development has spread far from the core cities, and year-round housing is common in areas previously natural or used for agriculture, forestry, or recreation.[149]
> - The number of governmental units and their relationships [have] become more complex.
> - We understand a great deal more about impacts of human activity upon the natural environment.
> - The body of law surrounding planning and land use regulation has changed considerably [and] become more complex, and state planning laws have accreted over time. . . .
>
> There are few if any laws in place to ensure or even encourage orderly and efficient patterns of development. Inefficient land use patterns can result in unintended consequences, which in turn can drive up the costs of services, infrastructure, and transportation improvements. Expensive and divisive conflicts between jurisdictions and individuals have occurred. Natural and historic resources are threatened, and environmental quality is more difficult to achieve. Trust in government declines when the public feels disenfranchised by decisions about development. For these reasons, the Minnesota Chapter of the American Planning Association . . . believes efforts must begin to reform our planning enabling laws.[150]

The APA chapter has also identified several objectives that should guide any land use law reform effort in Minnesota:

- To enhance coordination and cooperation in planning decision making at all levels of government;
- To achieve accountability, consistency, and transparency of planning decisions at all levels of government;
- To set minimum standards for local comprehensive plans;
- To effectively integrate comprehensive planning with land use regulation and public investment in infrastructure and

148. *Resident Population Data: Population Change*, U.S. CENSUS BUREAU, http://2010.census.gov/2010census/data/apportionment-pop-text.php (footnote added by author) (last visited Nov. 17, 2012).

149. LEGISLATIVE CITIZENS COMM'N ON MINN. RES., MINNESOTA STATEWIDE CONSERVATION AND PRESERVATION PLAN: PRELIMINARY PLAN—PHASE I, at 26–28 (2007) (footnote added by author), *available at* http://www.lccmr.leg.mn/documents/scpp/preliminary_plan/2007-09-24_preliminary_report.pdf.

150. Rhees, *supra* note 79, at 1.

transportation, to improve the effectiveness of regulation and the cost-effectiveness of public investments;
- To eliminate inconsistencies and ambiguities in planning statutes as they apply to cities, counties, and townships; and
- To foster healthy communities and protect the environment and natural resources.[151]

B. Targeted Statutory Changes to Better Integrate Water Planning and Land Use Planning in Minnesota

Minnesota water planning laws are fairly comprehensive, despite having arisen in response to individual water quality and quantity issues. Minnesota land use planning laws, however, are antiquated and weak. The water planning and land use planning systems arose separately in Minnesota, and there has been no overall effort to date to integrate the systems for the purpose of promoting sustainability in water quality and quantity. Only to a small degree, as described above in Part III, has Minnesota implemented the quiet revolution concept of structural changes in local land use planning systems to achieve sustainability on water issues.

The *Minnesota Water Sustainability Framework*[152] (*Framework*) details necessary steps that need to be taken to achieve water sustainability in Minnesota. Over 200 leading thinkers and scientists participated in the development of the recommendations. The *Framework* includes several specific recommendations for the integration of water and land use laws in order to move toward the goal of water sustainability. These are:

> D.1 OBJECTIVE: To achieve an effective and enduring connection between water sustainability and land use decisions. . . .
>
> RECOMMENDATION D.1.a: Integrate water sustainability and land use planning. Amend Minnesota land use planning statutes and rules (Minnesota Statutes Chapters 462, 394, and 473) to require water sustainability planning for comprehensive plans, and improve the connection between land use planning and county water planning as required by Minnesota Statutes Chapter 103B. Specifically:

151. *See id.* at 1–2.
152. UNIV. OF MINN. WATER RES. CTR., *supra* note 17.

i. Amend Chapter 103B, the Comprehensive Local Water Management Act, to include a definition of water sustainability, and require local water plans to address water sustainability in addition to other water planning requirements.
ii. Amend Chapter 473 to make water sustainability planning a stated requirement of the regional plan that is required by the Metropolitan Council. Chapter 473 also guides comprehensive planning by local governments in the Twin Cities metropolitan region. Water supply, wastewater treatment, stormwater management, and natural resource components are currently required for comprehensive plans in the metropolitan region. Water sustainability could become a unifying concept for these current requirements and should be extended as a significant criterion for required transportation, land use, and housing elements of these plans.
iii. Require that water sustainability be added as a primary consideration in the development of comprehensive land use plans by all municipalities. Chapter 462 includes comprehensive planning requirements for municipalities. Municipalities in the Twin Cities metropolitan region must create comprehensive plans to conform with provisions as stated in Chapter 473. Other municipalities are not mandated to create comprehensive land use plans: however, if they choose to adopt a plan, they must consider terrestrial natural resources and the provision of water and wastewater services.
iv. Require that water sustainability be added as a primary consideration in the development of comprehensive land use plans by all counties. Minnesota Statutes Chapter 394 lists comprehensive planning requirements for counties. Similar to municipalities, counties outside the Twin Cities metropolitan region are not required to create comprehensive land use plans.
v. Amend Chapter 462 and 394 to require comprehensive plans for communities outside of the metropolitan region to achieve uniform coverage of water sustainability plans throughout the state. This action would produce a strong connection between county water plans and local land use plans.

> vi. State agencies should review and adjust timing requirements for local water planning, water permitting, and land use planning to better align schedules, so local water planning can occur concurrently to reduce duplicated efforts. . . .
>
> RECOMMENDATION D.1.b: Integrate water sustainability principles and accountability into local land use permitting. Minnesota land use statutes require local governments to amend land use ordinances to implement adopted land use plans and implement required local water plans. Following the adoption of local land use plans incorporating water sustainability, local land use ordinances should be updated to reflect water sustainability. Local land use ordinances establish criteria for reviewing and approving land use permits. Updated ordinances should specifically include water sustainability criteria for approval of land use permits. A record of variances from water sustainability criteria should be kept and reported to the state."[153]

The *Framework* recommendations are consistent with the reform characteristics of working within the existing structure of delegated land use power; having the State take the role of setting boundaries for local action, setting performance standards, and establishing systematic decision-making processes; and supporting decision making on individual land use decisions that remains with the local government.

In addition to directly implementing the *Framework* recommendations, there are a few additional watershed-based planning improvements that should be implemented to move toward sustainability by integrating water planning and land use planning in Minnesota. While the reforms suggested below may seem modest, they are designed to achieve significant integration of land use planning and water planning while working within the existing structure of delegated land use power. The proposals are also pragmatic. Legislative appetite for comprehensive reform of state land use laws is currently low in Minnesota. Some fear opening up entire statutes will result in weakening of environmental protections or undermining the basic foundations of land use law, including its historical purpose of protecting public health, safety, and welfare.

153. *Id.* at 65–66.

1. Take the Final Step: Require One-Watershed, One-Plan

As discussed above, Minnesota has taken two steps toward integrating water planning on a watershed scale: (1) adopting a watershed-based data collection and assessment system; and (2) authorizing local governments to integrate multiple local water plans under the "one-watershed, one-plan" legislation.[154] Allowing local governments to integrate local water planning on a watershed basis is not the same as requiring watershed-based planning. Some local governments will see the value in watershed-based integration; others will not. Since their inception in Minnesota, local water plans have been county-based efforts within an area defined by the county political boundary. When the local water planning requirements were established, it was logical and convenient to use the county-based soil and water conservation districts established in 1937 to address the crises of the Great Depression and the Dust Bowl.[155] At present, there are ninety SWCDs in Minnesota, covering the state's entire land area and each of its eighty-seven counties (some large counties have more than one SWCD).

By contrast, Minnesota's forty-six watershed districts cover less than half of the state's land area and are concentrated in flood-prone areas in western Minnesota, such as the Red River Valley. Requiring future water plans to be watershed-based would necessitate creating incentives for local governments to cooperatively plan within watershed boundaries or to form new watershed districts. One model for this effort is that of the Red River Watershed Management Board, which has, through a mediated agreement in the mid-1990s, worked cooperatively across its eight member watersheds to develop and implement plans for flood damage reduction.[156]

154. *See supra* Part II.A.

155. Act of Apr. 26, 1937, ch. 441, § 1, 1937 Minn. Laws 660, 660 ("Improper land use practices have caused and contributed to serious erosion of farm and grazing lands of this state by wind and water.").

156. CHARLES ANDERSON & AL KEAN, RED RIVER BASIN FLOOD DAMAGE REDUCTION WORK GROUP, RED RIVER BASIN FLOOD DAMAGE REDUCTION FRAMEWORK (2004), *available at* http://www.rrwmb.org/files/FDRW/TP11.pdf.

2. Require Water-Conscious Land Use Planning Throughout the State

Coining the term "water-conscious land use planning,"[157] Sarah Bates provides a vision for integrated water and land use planning in her recent article, *Bridging the Governance Gap: Emerging Strategies to Integrate Water and Land Use Planning*:[158]

> Vision: Land use decisions take into account where the necessary water will come from, and at what economic, environmental, and social cost. Land use decisions are coordinated on a large-landscape scale across jurisdictional boundaries. Land use planning is mindful of water supply constraints, and prioritizes development that is most consistent with maintaining water quality and ensuring sustainable supplies.[159]

Ms. Bates created this vision based on a survey of water and land use planning integration strategies used across the country. The vision contains elements that can guide Minnesota policymakers in targeted efforts to integrate water and land use planning. These elements include:

1. *Requiring a water-planning element in comprehensive land use plans throughout the state.* Communities within the Twin Cities metropolitan area are already required to comply[160]—however, the majority area of the state does not have such a requirement. Land use planning is permissive outside of the metro area, and there are no required elements if non-metro communities choose to create a land use plan. At a minimum, the state could adopt a requirement that if land use planning is undertaken anywhere in the state, a water element must be included. To get closer to achieving sustainability through water planning, the state should require land use planning throughout the state, including water plan elements. Water plan elements should include: an analysis of anticipated demand and water availability projected over the planning period; policies supporting stormwater management that

157. Sarah Bates, *Bridging the Governance Gap: Emerging Strategies to Integrate Water and Land Use Planning*, 52 NAT. RESOURCES J. 61, 78 (2012).

158. *Id.*

159. *Id.*

160. MINN. STAT. § 473.859, subdiv. 2(a) (2010) ("A land use plan shall include the water management plan required by section 103B.235.").

complies with Clean Water Act MS4 requirements;[161] wellhead and source water protection policies; and recommendations for appropriate land uses, densities, and best management practices in shorelands and around wetlands.

2. *Requiring coordination among water plans and land use plans.*[162] Local water plans are encouraged to be consistent with local land use plans, where those exist,[163] but we should also require coordination in the other direction. We need to reverse the dynamic by which local land use decisions having an impact on water quality and quantity are made without having to systematically consider these impacts prior to approval.
3. *An "assured water supply"*[164] *requirement in land use plans and/or as a condition of approval for development permits.* The basic concept is that an adequate drinking water or processing water supply must be identified prior to development approval. The concept could also be extended to include assurance of access to wastewater treatment. This approach is similar to the concept of concurrency, also known as adequate public facilities—that the infrastructure needed by development must be available concurrent with the development. Under concurrency, development would not be allowed if transportation, utilities, stormwater management, schools, or other infrastructure is not available or built at the same time. Local governments are already authorized in Minnesota law to require that roads, water, stormwater and wastewater facilities, parks and open space, and other infrastructure be provided as part of a subdivision. However, there are no provisions that authorize local governments to require adequate public facilities *beyond the boundaries* of that subdivision, with one exception: the authority to require that a fee may be paid to a fund used for parks and recreation instead of dedication of land.[165]

161. *See* Clean Water Act, 33 U.S.C. §§ 1251–1387 (2006); 40 C.F.R. §§ 122–125.

162. Bates, *supra* note 157, at 79.

163. MINN. STAT. § 103B.311, subdiv. 1(2) (stating that counties must "review water and related land resources plans and official controls submitted by local units of government to assure consistency with the local water management plan").

164. Bates, *supra* note 157, at 79.

165. §§ 394.25, subdiv. 7(c); 462.358, subdiv. 2(b).

The assured water supply requirement cannot merely require connection to an adequate public water supply, but must also apply to private groundwater withdrawals in order to capture attempts to bypass public water supplies by individual landowners who dig private wells. In reaction to public water supply strains due to recent drought conditions, some communities in Minnesota have instituted lawn-watering restrictions. Landowners have attempted to circumvent the watering restrictions by drilling private wells not subject to the restrictions. Assured water supply planning must be based on the most up-to-date scientific information and account for cycles of drought and abundance. Some states, like Nevada, require a certification of water availability from the appropriate state agency prior to development approval.[166]

V. CONCLUSION

The inextricable relationship of land and water within watersheds and the direct, sometimes significant, impact of land use decisions on water quality necessitate a change in policy to achieve federal and state goals of clean water. The histories of the Shoreland Management Act, wellhead protection planning, and metropolitan area land and water planning[167] illustrate the power of integrating water planning and land use decisions. Minnesota should extend this concept of integration to all areas of the state to protect the waters that make up such a large part of our landscape, economy, and identity. We challenge Minnesota policy makers to require water-planning elements in comprehensive plans statewide; to require two-way coordination between water planning and land use planning; and to reform development permit approval processes to require an assured water supply prior to development. These policy reforms will reinforce Minnesota as a national leader in water quality innovation.

166. Bates, *supra* note 157, at 81.
167. *See* discussion *supra* Part III.D–E.