

# CLOSING THE REGULATORY GAP IN MICHIGAN'S PUBLIC TRUST DOCTRINE: SAVING MICHIGAN MILLIONS WITH STATUTORY REFORM

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*The Great Lakes are some of Michigan's most valuable and important environmental resources. The public trust doctrine requires Michigan to protect and preserve the lands along the shores of the Great Lakes for the use of future generations. Unfortunately, the public trust doctrine in Michigan is in disarray and as a result, public and private rights to the lands along the Great Lakes are poorly delineated. This Note presents an economic argument for why the public trust doctrine should be reformed to better define public and private rights to the land along Michigan's Great Lakes. It also suggests a statutory reform that would solve many of the problems that currently exist with Michigan's public trust doctrine. Without the statutory reform proposed in this Note, or something similar, Michigan stands to lose millions of dollars in valuable environmental resources associated with the Great Lakes.*

## INTRODUCTION

The American public trust doctrine provides that each state holds the navigable waters and underlying lands within its borders in trust for the benefit of the public, to use for purposes such as navigation, commerce, and fishing.<sup>1</sup> States have an affirmative obligation to protect and preserve the resources held in the public trust for current and future generations.<sup>2</sup> Despite this obligation, the state of Michigan lacks authority to regulate all of the land and resources it holds in the public trust.<sup>3</sup>

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1. See, e.g., Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 452 (1892).

2. See, e.g., Nedtweg v. Wallace, 208 N.W. 51, 53 (Mich. 1926) ("The state may not, by grant, surrender such public rights any more than it can abdicate the police power or other essential power of government.").

3. See *infra* Part II.A–C.

Recent court cases in Michigan have simultaneously expanded the scope of the public trust doctrine and narrowed the State's regulatory authority.<sup>4</sup> As a result, a stretch of Michigan's public trust land along its Great Lakes is entirely unregulated.<sup>5</sup> The State's inability to regulate public trust lands is a problem because it creates ill-defined property rights and uncertainty between private landowners and the public about their relative rights to use those lands and associated resources. These ill-defined property rights encourage overuse and depletion of public trust resources by both private landowners and the public.<sup>6</sup>

The resource depletion associated with ill-defined rights to public trust lands is likely to have significant environmental consequences for the Great Lakes in Michigan.<sup>7</sup> Human activities along the lakeshore—particularly on public trust lands—are substantial causes of environmental damage.<sup>8</sup> For example, development by private littoral landowners often causes erosion, which increases sedimentation, alters fish populations, and affects the entire lake ecosystem.<sup>9</sup> In addition, water quality is affected by the solid waste

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4. Compare *Glass v. Goeckel*, 703 N.W. 2d 58, 62 (Mich. 2005) (extending the public trust doctrine to the ordinary high-water mark) with *Burleson v. Dep't of Env'tl. Quality*, 808 N.W.2d 792, 796–98 (Mich. Ct. App. 2011) (establishing that the scope of the State's regulatory authority is limited to the fixed datum natural ordinary high-water mark, which is more lakeward than the ordinary high-water mark).

5. The court in *Glass v. Goeckel* established the boundary of the public trust doctrine at the ordinary high-water mark, which is the mark where “the presence and action of the water is so continuous as to leave a distinct mark.” *Glass*, 703 N.W.2d at 62 (quoting *State v. Trudeau*, 408 N.W.2d 337, 342 (Wis. 1987)). However, in *Burleson v. Department of Environmental Quality*, the court limited the State's regulatory authority to a statutorily-defined water mark, which is uniformly more lakeward than the ordinary high-water mark in *Glass v. Goeckel*. See *Burleson*, 808 N.W.2d at 796–98. For a depiction of the disparity between the ordinary high-water mark and the fixed datum high-water mark, see *infra* Figure 1.

6. See, e.g., R. Prescott Jaunich, *The Environment, the Free Market, and Property Rights: Post-Lucas Privatization of the Public Trust*, 15 PUB. LAND L. REV. 167, 183–84 (1994) (explaining the effects of unsettled landowner expectations, alienability of land, and clouded title of public trust properties); Jason Scott Johnston, *The Rule of Capture and the Economic Dynamics of Natural Resource Use and Survival Under Open Access Management Regimes*, 35 ENVTL. L.J. 855, 890 (2005) (noting that unregulated private land development essentially follows the rule of capture).

7. See *infra* Part III.C.

8. See U.S. ENVTL. PROT. AGENCY, *Conservation of Biological Diversity in the Great Lakes Basin Ecosystem: Issues and Opportunities*, <http://www.epa.gov/ecopage/gkbd/issues> (last visited Sept. 1, 2012).

9. See MARIO BRAUNS, HUMAN IMPACTS ON THE STRUCTURE AND ECOLOGICAL FUNCTION OF LITTORAL MACROINVERTEBRATE COMMUNITIES IN LAKES (Dec. 22, 2008) (doctoral dissertation, Humboldt University of Berlin), available at <http://edoc.hu-berlin.de/dissertationen/brauns-mario-2009-06-29/PDF/brauns.pdf>; Paul Radomski et al., *Potential Impact of Docks on Littoral Habitats in Minnesota Lakes*, 35 FISHERIES 489, 489, 494 (2010). Littoral lands are those lands adjacent to lakes.

disposal that accompanies private development along the Great Lakes.<sup>10</sup>

Widespread use of public trust lands for recreation can also have negative environmental effects.<sup>11</sup> For example, overfishing has long been a problem in the Great Lakes,<sup>12</sup> and recreational activities like swimming can resuspend sediments and affect fish habitats.<sup>13</sup> All of these potential threats are more likely to occur under the current system in Michigan because ill-defined rights to public trust lands encourage a race between private littoral landowners and the public to gain control over unregulated public trust lands. Therefore, any environmental damage that would normally occur will likely be accelerated under the current regime.

To avoid the environmental damage encouraged under Michigan's current system, the law should be changed to give the State greater regulatory authority and better define both private and public property rights to public trust resources. Change in Michigan must come through statutory reform, because the Michigan Supreme Court has already indicated that it will not review the Court of Appeals decision that created the existing regime.<sup>14</sup> However, any proposals that alter the traditional scope of the public trust doctrine are unlikely to succeed because of deep-rooted legislative understandings about the purpose of that doctrine.<sup>15</sup> Advocates hoping to induce change would, instead, be best advised to present the Michigan legislature with a utilitarian argument that places an economic value on the environmental damage that is likely to occur under the current system.<sup>16</sup> This Note will develop such an argument, focusing on the detrimental economic effects that Michigan could suffer if it does not reform its public trust management system.

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10. See U.S. ENVTL. PROT. AGENCY, *supra* note 8.

11. *Id.*

12. *Impacts on Biodiversity: Population Growth, Overconsumption and Technology*, QUEBEC BIODIVERSITY WEBSITE, <http://redpath-museum.mcgill.ca/Qbp/3.Conservation/impacts.htm> (last visited Aug. 30, 2012) [hereinafter *Impacts on Biodiversity*].

13. Radomski et al., *supra* note 9, at 489.

14. The Michigan Supreme Court denied the Michigan Department of Environmental Quality's (DEQ) request for leave to appeal the decision in *Burleson v. Department of Environmental Quality*, 808 N.W.2d 792 (Mich. Ct. App. 2011), in a one-sentence opinion, *Burleson v. Dep't of Envtl. Quality*, 805 N.W.2d 438 (Mich. 2011), evincing the court's unwillingness to reconsider this issue.

15. See J.B. Ruhl & James Salzman, *Ecosystem Services and the Public Trust Doctrine: Working Change from Within*, 15 SOUTHEASTERN ENVTL. L.J. 223, 226–30 (2007) (discussing unsuccessful previous attempts to expand the public trust doctrine and proposing an alternative solution that focuses on the traditional underpinnings of the doctrine).

16. See *id.* at 230.

Part I of this Note provides an overview of the history of the public trust doctrine and explains the importance of using economic arguments to convince courts and legislatures to alter the public trust doctrine in a way that protects the environment. Part II elaborates on the problem with Michigan's public trust management system and compares it to effective systems used in other Great Lakes states. Part III explains the environmental and economic damage that is likely to result if the current system in Michigan is not altered to bring the State's regulatory authority in line with the scope of the public trust doctrine. Part IV proposes a statutory reform to Michigan's public trust management system that would enable the State to regulate all of the land and resources held in the public trust.

#### I. THE MODERN AMERICAN PUBLIC TRUST DOCTRINE CAN BE AN EFFECTIVE TOOL FOR NATURAL RESOURCE MANAGEMENT

The public trust doctrine has its roots in the Roman Justinian Code.<sup>17</sup> The English later adopted the doctrine, and it eventually became a well-accepted part of American law.<sup>18</sup> Modern American public trust doctrine recognizes the importance of navigable waters to society and provides that a state holds the navigable waters within its borders, as well as the lands underlying them, in trust for the benefit of the public.<sup>19</sup> In the Great Lakes states, the public trust doctrine protects littoral lands, which are those lands adjacent to lakes. In recent years, several court cases in the Great Lakes states have addressed how much littoral land is protected by the public trust doctrine in the Great Lakes states and the extent of each state's regulatory authority over the protected land. To properly understand the nature of this debate and develop an appropriate and effective resolution, it is important to understand the historical underpinnings of the doctrine.

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17. See generally Robert Haskell Abrams, *Walking the Beach to the Core of Sovereignty: The Historic Basis for the Public Trust Doctrine Applied in Glass v. Goeckel*, 40 U. MICH. J.L. REFORM 861, 870-75 (2007).

18. See generally Kenneth K. Kilbert, *The Public Trust Doctrine and the Great Lakes Shores*, 58 CLEV. ST. L. REV. 1, 4 (2010).

19. See, e.g., *Ill. Cent. R.R. v. Illinois*, 146 U.S. 387, 452 (1892).

*A. The Evolution of the Public Trust Doctrine*

Under Roman law, the public trust doctrine provided that the rivers, the sea, and the shores “[b]y the law of nature . . . [were] common to mankind.”<sup>20</sup> The area protected by the Roman public trust doctrine included the navigable rivers and seas, as well as their adjacent lands up to the “highest point reached by the water on a predictable basis.”<sup>21</sup> When the Romans implemented their public trust doctrine, they balanced private and public rights to maximize the total benefit to society without allowing private ownership to burden the larger public interest.<sup>22</sup> As a result, the Romans were able to use the public trust doctrine to glean economic and social value from their waters.

During the nineteenth century, a series of Supreme Court decisions led to the adoption of the public trust doctrine in the United States.<sup>23</sup> The American public trust doctrine differs from prior versions of the doctrine in two significant ways. First, in the United States, numerous non-tidal but navigable lakes and rivers, including the Great Lakes, were deemed sufficiently important to prompt the Supreme Court to extend the public trust doctrine to non-tidal navigable waters.<sup>24</sup> Second, the Supreme Court determined that states have an affirmative duty to protect and preserve the land held in the public trust and to only allow uses that advance the public’s interest with respect to that land.<sup>25</sup>

In the Great Lakes region, the true lodestar in the public trust doctrine is *Illinois Central Railroad v. Illinois*.<sup>26</sup> In that case, the Supreme Court held that, like tidal waters and the borders of the seas, the Great Lakes were subject to the public trust doctrine and any State ownership that followed.<sup>27</sup> The Court’s holding affirmed that Illinois held the lands under Lake Michigan in trust for people of

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20. See Kilbert, *supra* note 18, at 4.

21. Abrams, *supra* note 17, at 869.

22. See *id.* at 874 (explaining how the Romans mediated between public and private interests in, and the uses of, public trust lands).

23. See, e.g., *Shively v. Bowlby*, 152 U.S. 1 (1894); *Ill. Cent. R.R.*, 146 U.S. 387; *Pollard v. Hagan*, 44 U.S. 212 (1845); *Martin v. Waddell’s Lessee*, 41 U.S. 367 (1842).

24. See *infra* Part II.A.

25. See *Ill. Cent. R.R.*, 146 U.S. at 453 (holding that a grant by Illinois to the Illinois Central Railroad of littoral lands along Lake Michigan was invalid because it did not fit within the public’s interest in public trust resources and “[t]he State can no more 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 . . . than it can abdicate its police powers in the administration of government and the preservation of the peace.”).

26. 146 U.S. 387 (1892).

27. See *id.* at 436–37.

the state to use for purposes of navigation, commerce and fishing.<sup>28</sup> Courts and scholars have interpreted *Illinois Central Railroad* to mean that the states cannot divest themselves of their trust obligations by alienating public lands.<sup>29</sup>

Following *Illinois Central Railroad*, the Michigan Supreme Court acknowledged that the State of Michigan became vested with title to the beds of all navigable waters when it joined the Union.<sup>30</sup> In *Nedtweg v. Wallace*, the Michigan Supreme Court, applying *Illinois Central Railroad*, held that the State must hold those navigable waters and their underlying lands in trust for the public and could not, by grant to private landowners, “surrender such public rights any more than it [could] abdicate the police power or other essential power of government.”<sup>31</sup> Pursuant to *Illinois Central Railroad* and *Nedtweg*, Michigan is obligated to take affirmative steps to protect and preserve the lands held in public trust for current and future generations.<sup>32</sup>

### B. *The Push for a More Environmentally-Conscious Public Trust Doctrine*

Despite states’ affirmative obligation to protect the land and resources held in the public trust, the primary purpose of the public trust doctrine has generally not been viewed to be environmental protection.<sup>33</sup> Instead, the public trust doctrine was historically used to maximize the total value of waters to society.<sup>34</sup> Nonetheless, because of the close ties that exist between the public trust doctrine and natural resources, some scholars have argued that the public trust doctrine should be invoked as a tool for efficient resource management.<sup>35</sup>

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28. See *id.* at 452.

29. See, e.g., David B. Hunter, *An Ecological Perspective on Property: A Call for Judicial Protection of the Public’s Interest in Environmentally Critical Resources*, 12 HARV. ENVTL. L. REV. 311, 368 (1988).

30. See *Nedtweg v. Wallace*, 208 N.W. 51, 53 (Mich. 1926).

31. *Id.* at 53, 54.

32. See *Nedtweg*, 208 N.W. at 53; *Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 453 (1892).

33. See Ruhl & Salzman, *supra* note 15, at 228 (“[T]he chief impact of the public trust doctrine is facilitating access to and use of tidelands and beaches. The doctrine has not been transformed into a broadly applied judicial ecosystem protection program in any state.”).

34. See *supra* Part I.A.

35. See, e.g., Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 474 (1970).

Prior to a 1970 article by Professor Joseph Sax, the public trust doctrine was not seen as a tool that could be used to promote resource management.<sup>36</sup> Although Sax hoped that environmentalists would be able to use the doctrine to advance their cause,<sup>37</sup> he did not believe that the doctrine as it existed in 1970 could be used to accomplish their resource management goals.<sup>38</sup> One of the most significant reasons for Sax's doubt of the public trust doctrine during the 1970's was the judiciary's apparent unwillingness to consider the environmental effects of a particular land use on public trust resources.<sup>39</sup> The land uses with detrimental unconsidered environmental effects included oil production and construction of bridges, restaurants, bars, shopping complexes, airport runways, highways, and driving ranges.<sup>40</sup> Sax felt that the public trust doctrine would have to undergo significant change to serve as a tool of resource management.<sup>41</sup> Unfortunately, the doctrine has not changed in the way Sax had hoped, and it seems unlikely to do so in the future.

One of the greatest challenges to an attempt to retool the public trust doctrine is the tendency of many courts to rely heavily on historical arguments to define the appropriate scope and content of the doctrine.<sup>42</sup> In light of this historical approach, environmental law professors J.B. Ruhl and James Salzman have suggested that it may be more effective for environmental activists to adopt an approach that does not require a change in how the doctrine is understood.<sup>43</sup> According to Ruhl and Salzman, there is no need for courts to expand or alter the public trust doctrine to use it as a tool

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36. Ruhl & Salzman, *supra* note 15, at 226. Sax was a well-known University of Michigan Law School professor who conducted research regarding "citizen efforts to use the law in environmental-quality controversies." Sax, *supra* note 35, at 473.

37. *See id.* at 474 ("Of all the concepts known to American law, only the public trust doctrine seems to have the breadth and substantive content which might make it useful as a tool of general application for citizens seeking to develop a comprehensive legal approach to resource management problems.").

38. *See* Ruhl & Salzman, *supra* note 15, at 556–57.

39. *See id.* at 564.

40. *See id.* at 226.

41. *See id.*

42. *See id.* at 229 (quoting Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 710–11 (1986)) (explaining that "[t]he strength of the public trust doctrine necessarily lies in its origins"); *see also* State *ex rel.* Merrill v. Ohio Dep't of Natural Res., 955 N.E.2d 935, 949 (Ohio 2011) (indicating that its decision was not novel, but rather pursuant to longstanding precedent that reflects the history of the public trust doctrine); Glass v. Goeckel, 703 N.W.2d 58, 64–66 (Mich. 2005) (relying heavily on the history of the public trust doctrine in its decision).

43. *See* Ruhl & Salzman, *supra* note 15, at 230.

for achieving ecological protection.<sup>44</sup> Instead, those who want a more efficient system of resource management must simply reframe the way that ecological resources are valued.<sup>45</sup> Ruhl and Salzman suggest that the best tactic is to present courts with economic arguments about the value of the resources held in the public trust. These economic arguments will help to facilitate a traditional utilitarian analysis that results in an outcome that is beneficial to resource management objectives.<sup>46</sup>

Ruhl and Salzman argue that courts would be more willing to consider resource management concerns when they are placed in an economic context. Although courts have not previously considered ecological economics in their public trust analyses, the Supreme Court has recognized that changed circumstances may require an approach different from that ordinarily used at common law.<sup>47</sup> According to Ruhl and Salzman, “the growing knowledge of the presence of natural capital” and economic value in public trust resources is sufficiently accepted to prompt courts to consider changes to public trust management that may better preserve that economic value.<sup>48</sup>

Ecological economics illuminates the valuable services that ecosystems render to the public, including flood mitigation, groundwater recharge, and carbon sequestration.<sup>49</sup> These economically valuable services produce “natural capital,” which provides economic benefit to littoral landowners and the public in much the same way as do the fishing grounds and navigation channels held in the public trust.<sup>50</sup> By identifying public trust resources with high natural capital, advocates can draw an important link between effective resource management and the traditional goal of using public trust resources to maximize social welfare.<sup>51</sup>

When ecological economic studies are able to appropriately value the natural capital available in public trust resources, courts will be justified, and perhaps more comfortable, in considering that value when making decisions regarding public trust resources.

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44. *See id.*

45. *See id.*

46. *See id.*

47. *See id.* at 235–36 (noting that increasing knowledge about the ecological economics behind the public trust doctrine is “precisely the kind of new knowledge *Lucas* contemplates the common law will use to evolve”). *Cf. Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1031 (1992) (“Changed circumstances or new knowledge may make what was previously permissible no longer so.”).

48. *See Ruhl & Salzman, supra* note 15, at 236.

49. *See id.* at 230–31.

50. *See id.* at 234.

51. *See id.* at 233.

Through such considerations, courts may find that there is more economic value in resource preservation than in the construction of a new highway, airport, or shopping mall. In the wake of recent decisions regarding the public trust doctrine and Michigan's regulatory authority, environmental advocates should focus on the economic value of public trust resources as they urge courts and legislatures to develop a regulatory scheme that effectively protects and preserves public trust resources.<sup>52</sup>

## II. THE PROBLEM WITH THE PUBLIC TRUST DOCTRINE IN MICHIGAN AND THE SOLUTIONS REACHED BY OTHER GREAT LAKES STATES

The Great Lakes states have implemented various public trust resource management systems through both case law and statute. Although each state sets the boundaries of its public trust somewhat differently, all have instituted at least some form of permitting system to govern the use of public trust lands. The most important distinction between the various permitting systems is whether they provide the states with authority to regulate all the lands held in the public trust. In those systems where the states lack comprehensive authority, the resulting regulatory gap means that public and private users have unlimited access to unregulated resources. The regulation gap in those lands is unsustainable and inefficient because it is likely to create resource overuse and misuse with serious environmental consequences for the Great Lakes region.<sup>53</sup> This section examines the public trust management system in Michigan and contrasts that system with the comprehensive public trust regulatory schemes of other Great Lakes states.

### *A. Michigan's Public Trust Management System Creates an Inefficient Regulatory Gap*

The boundaries of private ownership over the littoral lands in Michigan are determined by the public trust doctrine and associated permitting requirements. Although the public trust doctrine creates overlapping private and public title to the land between the natural ordinary high-water mark and the low-water mark,<sup>54</sup> private

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52. See *infra* Part II.A.

53. See *infra* Part III.A–C.

54. See *Glass v. Goeckel*, 703 N.W.2d 58, 69–70 (Mich. 2005).

landowners do not have to seek permits for activities that are lakeward of the ordinary high-water mark. Instead, permits are required only for activities that are farther lakeward, below the fixed datum high-water mark established by the Great Lakes Submerged Lands Act (GLSLA).<sup>55</sup>

The Michigan Supreme Court held in *Glass v. Goeckel* that the boundary of the public trust doctrine is the ordinary high-water mark, defined as the mark where “the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristics.”<sup>56</sup> In some cases, however, a littoral landowner’s title may extend past the ordinary high-water mark, thereby creating overlapping public and private ownership interests between the high- and low-water marks in the Great Lakes.

The GLSLA is the primary statutory mechanism by which the Michigan Department of Environmental Quality (DEQ) regulates the use of resources held in the public trust. The current language of the GLSLA provides:

This part shall be construed so as to preserve and protect the interests of the general public in the lands and waters described in this section, to provide for the sale, lease, exchange, or other disposition of unpatented lands and the private or public use of waters over patented and unpatented lands, and to permit the filling in of patented submerged lands whenever it is determined by the department that the private or public use of those lands and waters will not substantially affect the public use of those lands and waters for hunting, fishing, swimming, pleasure boating, or navigation or that the public trust in the state will not be impaired by those agreements for use, sales, lease, or other disposition. The word “land” or “lands” as used in this part refers to the aforesaid described unpatented lake bottomlands and unpatented made lands and patented lands in the Great Lakes and the bays and harbors of the [G]reat [L]akes lying below and lakeward of the natural ordinary high-water mark . . . . For purposes of this part, the ordinary high-

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55. See MICH. COMP. LAWS ANN. § 324.32502 (West 2009); *Burleson v. Dep’t of Env. Quality*, 808 N.W.2d 792, 796–98 (Mich. Ct. App. 2011). The statutorily-defined high-water marks were set in 1955 and are consistently more lakeward than the natural ordinary high-water mark. For a depiction of the space between the bounds of the public trust doctrine and the State’s regulatory authority, see *infra* Figure 1.

56. *Glass v. Goeckel*, 703 N.W.2d at 62 (quoting *State v. Trudeau*, 408 N.W.2d 337, 342 (Wis. 1987)).

*water mark shall be at the following elevations above sea level, international Great Lakes datum of 1955: Lake Superior, 601.5 feet; Lakes Michigan and Huron, 579.8 feet; Lake St. Clair, 574.7 feet; and Lake Erie, 571.6 feet.*<sup>57</sup>

One of the most significant problems with the current statute is that it limits the DEQ's regulatory authority to the "natural ordinary high-water mark" without defining that term, which leaves the boundaries of the public trust lands under the DEQ's regulatory authority open to multiple interpretations.<sup>58</sup> Faced with this ambiguity, the Michigan Court of Appeals in *Burleson v. Department of Environmental Quality* was called on to interpret the GLSLA to discern the boundary of the natural ordinary high-water mark and define the scope of the DEQ's regulatory authority.<sup>59</sup> Unfortunately, the court's statutory interpretation has only created more confusion about the boundaries of the public trust doctrine and the State's regulatory authority.

One factor complicating the court's analysis was the confusing use of both "natural ordinary high-water mark" and "ordinary high-water mark" in such close proximity to one another in the statute.<sup>60</sup> The DEQ argued that, according to the statute, the natural ordinary high-water mark and the ordinary high-water mark are the same, and that both are located at the boundary of the public trust doctrine.<sup>61</sup> The court noted, however, that "the scope of [the DEQ's] regulatory authority under the GLSLA is not *automatically equivalent* to the scope of the public trust," and, using the language and legislative history of the GLSLA, concluded that the DEQ's regulatory authority should be determined by the fixed datum natural ordinary high-water mark.<sup>62</sup> The fixed datum high-water marks were defined in 1955 and are generally more lakeward than the ordinary high-water mark, as defined in *Glass v. Goeckel*.<sup>63</sup>

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57. MICH. COMP. LAWS ANN. § 324.32502 (West 2009) (emphasis added).

58. See *id.* (creating the boundary of regulatory authority at the more lakeward, statutorily-defined fixed datum high-water mark); see also *Burleson*, 808 N.W.2d 792 (deciding the appropriate interpretation of the GLSLA).

59. See *Burleson*, 808 N.W.2d at 796–98.

60. See *id.* at 796.

61. See *id.*

62. See *id.* at 797–98.

63. See Jeffrey R. Dobson, Jr. & Nakisha N. Chaney, *DEQ Seeks New Beachhead in Shoreline Development*, MICH. B.J. 34, 35, 37 (May 2011) (noting that the DEQ may have overstepped its authority by attempting to regulate all of the lands held in the public trust rather than only those lying below the fixed datum high-water mark).

In interpreting the statute, the Court of Appeals reasoned that “natural ordinary high-water mark” in the GLSLA could not possibly have the meaning suggested by the DEQ because “it strains credulity and common sense to conclude that phrases as similar as ‘natural ordinary high-water mark’ and ‘ordinary high-water mark’ ” could have such different meanings when used in the same paragraph.<sup>64</sup> The court also expressed concern about giving the terms “natural ordinary high-water mark” and “ordinary high-water mark” the same meaning, because such a result would “pose serious difficulties concerning why the statutory elevations were included in [the GLSLA] in the first instance.”<sup>65</sup> The court buttressed its conclusion by noting that if lawmakers had wanted to give “natural ordinary high-water mark” the meaning advanced by the DEQ, they could have included language that did so explicitly, particularly because the previously enacted Inland Lakes and Streams Act contained just such a definition.<sup>66</sup>

The court’s conclusion that the GLSLA directs the DEQ to “preserve and protect the interests of the general public in the lands and waters described” resulted in a requirement that private landowners must obtain permits for any activities on land below the fixed datum ordinary high-water mark that could substantially affect the public’s right to hunt, fish, swim, or navigate.<sup>67</sup> On the land above the fixed datum ordinary high-water mark and below the ordinary high-water mark, however, no permits are required. As a result, there is a swath of unregulated public trust land between the fixed datum high-water mark and the ordinary high-water mark. Figure 1, below, depicts the resulting public trust management system in Michigan.

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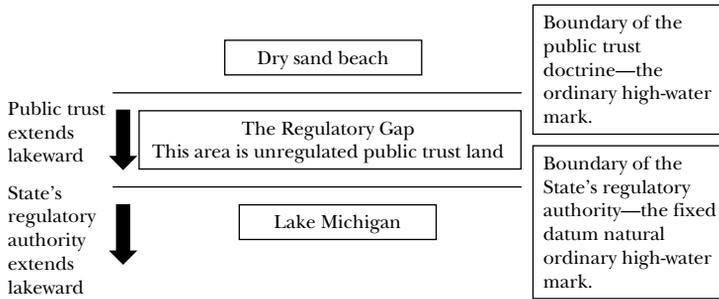
64. See *Burleston*, 808 N.W.2d at 796.

65. *Id.* at 796–97.

66. See *id.* at 797 (citing the Inland Lakes and Streams Act, MICH. COMP. LAWS ANN. § 324.30101(m) (West 2009)).

67. See MICH. COMP. LAWS ANN. § 324.32502 (West 2009); *Burleston*, 808 N.W.2d at 796–98.

Figure 1. The Public Trust Doctrine in Michigan



This regulatory gap creates uncertainty about what land falls within the public trust and who has what rights with respect to that land.<sup>68</sup> This ambiguity leads to a significant risk of public trust resource overuse and misuse resulting from the incentives created by ill-defined property rights, which may have serious environmental consequences for the Great Lakes.<sup>69</sup>

A system that promotes resource overuse also amplifies dangers to public trust resources that arise from private development and public recreation on littoral lands. For example, private landowners who want to develop their land may expand structures more quickly to avoid the possibility of public encroachment, which would lead to more erosion, sedimentation, and rapid alteration of littoral habitats.<sup>70</sup> In addition, water quality would deteriorate more quickly because the ecosystem would have to cope with significantly more solid waste.<sup>71</sup> The public may also use public trust resources more intensely in an unregulated system than in one under which use is better regulated. Extensive use can result in overfishing and increased sedimentation from swimming and other traffic in areas close to or below the water line.<sup>72</sup> Michigan's current system thus threatens resources that provide important and economically valuable ecosystem functions, including water filtration and maintenance of fish habitats.<sup>73</sup>

68. See *infra* Part II.A.

69. See *infra* Part III.A–C.

70. See BRAUNS, *supra* note 9, at 23; U.S. ENVTL. PROT. AGENCY, *supra* note 8; FAO Natural Res. Mgmt. & Env't Dep't, *Control of Water Pollution from Agriculture, Chapter 2: Pollution by Sediments*, FOOD & AGRIC. ORG. OF THE UNITED NATIONS, <http://www.fao.org/docrep/W2598E/w2598e05.htm> (last visited Aug. 30, 2012).

71. See U.S. ENVTL. PROT. AGENCY, *supra* note 8.

72. See BRAUNS, *supra* note 9, at 6, 23; Radomski et al., *supra* note 9, at 489.

73. See Ruhl & Salzman, *supra* note 15, at 230–31.

Michigan's resource management system is not only economically inefficient, but also constitutes an impermissible relinquishment of the State's duty to protect and preserve the land.<sup>74</sup> To create an efficient and lawful public trust resource management system, Michigan must close the regulatory gap and extend the State's regulatory authority to the ordinary high-water mark, so that it covers and protects all the resources held in the public trust.

*B. Illinois, Indiana, Wisconsin, and Ohio Have Public Trust Management Systems that Grant the State Authority to Regulate All of the Lands and Resources Held in the Public Trust*

The permitting systems in Illinois, Wisconsin, Indiana, and Ohio cover all of the land held in the public trust.<sup>75</sup> These states do not suffer from the same regulatory gap as Michigan,<sup>76</sup> and are better able to safeguard the interests of both private landowners and the public. Failure to protect the public's interest in the area between the low and high-water marks is the primary deficiency in Michigan's public trust management system. Adopting a system that provides for regulatory authority similar to that of other Great Lakes states is the most effective way to ensure the preservation of economically valuable ecosystem services held in the public trust. Figure 2 illustrates how the public trust doctrine operates in Illinois, Indiana, Ohio, and Wisconsin.

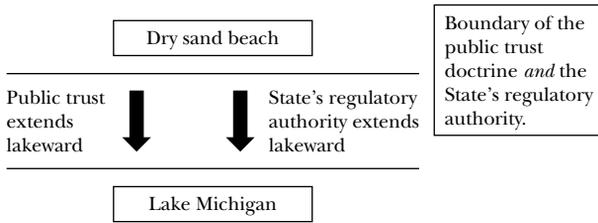
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74. See *Glass v. Goeckel*, 703 N.W.2d 58, 65 (Mich. 2005). For a discussion of the economic inefficiency of Michigan's public trust management system, see *infra* Part III.

75. Compare *Brundage v. Knox*, 117 N.E. 123, 130–31 (Ill. 1917), with 615 ILL. COMP. STAT. § 5/18 (West 2007 & Supp. 2011); compare 312 IND. ADMIN. CODE § 6-1-1 (1941) (indicating that the public trust doctrine extends to the ordinary high-water mark), with IND. CODE ANN. § 14-26-2-23 (West 2011) (requiring permitting for any activity lakeward of the shoreline of any public freshwater lake). See also *State ex rel. Merrill v. Ohio Dep't of Natural Resources*, 955 N.E.2d 935, 948–49 (Ohio 2011); *Waterway & Wetland Permits: Landowners*, WIS. DEP'T OF NATURAL RESOURCES, [http://dnr.wi.gov/waterways/info\\_for/landowners.html](http://dnr.wi.gov/waterways/info_for/landowners.html) (last visited Aug. 30, 2012) (noting that permits are required for almost all activities taking place below the ordinary high-water mark).

76. The public trust management system in Minnesota is similar to that in Michigan because the scope of the public trust doctrine is larger than the scope of the state's regulatory authority. Compare *State v. Korrer*, 148 N.W. 617, 623–24 (Minn. 1914), with MINN. STAT. ANN. § 103G.245 (West 2009). As a result, Minnesota suffers from many of the same economic and environmental inefficiencies as Michigan. Therefore, much of the discussion related to Michigan in this Note could also apply to Minnesota.

Figure 2. The Public Trust Management Systems in Other Great Lakes States



Michigan is not the only Great lakes state to have faced questions about the scope of its regulatory authority with respect to the public trust doctrine. The Ohio Supreme Court recently decided in *Merrill v. Ohio Department of Natural Resources* that the State’s public trust doctrine, which is governed by the Fleming Act, extends to the natural shoreline—defined as “the line at which the water usually stands when free from disturbing causes.”<sup>77</sup> The Fleming Act gives Ohio authority to regulate private land use up to the “natural shore line” and specifies that littoral owners of the upland have no title beyond the natural shoreline.<sup>78</sup> The *Merrill* court presumed that, because the state legislature drafted the Fleming Act to conform to earlier Ohio Supreme Court precedent that placed the boundary of the public trust at the natural shore line, the “natural shore line” as used in the statute must mean “the line at which the water usually stands when free from disturbing causes.”<sup>79</sup>

### C. Comparison of the Public Trust Management Systems in the Great Lakes States

Although the public trust management system in each of the Great Lakes states varies slightly, all define the boundary of the public trust doctrine at the ordinary high-water mark. The differences lie in the scope of each state’s regulatory authority to protect and preserve the resources held in the public trust. Illinois, Wisconsin, Indiana, and Ohio have the power to regulate all of the land held in the public trust, while Michigan does not. This regulatory gap is inefficient and will cause significant environmental and economic consequences for Michigan.

77. *Merrill*, 955 N.E.2d at 950.

78. See OHIO REV. CODE ANN. § 1506.10 (LexisNexis 2007).

79. *Merrill*, 955 N.E.2d at 950.

### III. MICHIGAN'S PUBLIC TRUST MANAGEMENT SYSTEM ENCOURAGES RESOURCE OVERUSE AND MISUSE AND WILL BE DETRIMENTAL TO ECONOMICALLY VALUABLE PUBLIC TRUST RESOURCES

The public trust doctrine is intended to create a system of resource use that maximizes total social benefit to both private landowners and the general public.<sup>80</sup> Unfortunately, a management system like Michigan's, which leaves important public trust resources unregulated, causes socially inefficient use of resources. As a result, it is almost certain that a significant portion of the potential social benefit generated by these resources will be lost, significant environmental costs will be incurred, and the purpose of the public trust doctrine will be frustrated. Past efforts by environmental activists and prior case law show that a normative argument for reforming the public trust management system is unlikely to succeed.<sup>81</sup> Using ecological economics may therefore be a more effective way to convince courts and legislators to improve public trust resource management and environmental protection.<sup>82</sup>

There is significant natural capital and economic value in the Michigan's presently unregulated public trust resources.<sup>83</sup> Failing to reform the public trust management system to protect those resources would result in Michigan potentially losing hundreds of millions of dollars.<sup>84</sup> Michigan should enact statutory reform to change its management system and permit regulation of all public trust lands. This is the best way for the State to avoid significant economic loss and fulfill its duty to protect and preserve the resources held in the public trust for the use of its citizens.

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80. See Abrams, *supra* note 17, at 874.

81. See Ruhl & Salzman, *supra* note 15, at 227–28.

82. See *id.* at 230–31.

83. See JOHN C. AUSTIN ET AL., AMERICA'S NORTH COAST: A BENEFIT-COST ANALYSIS OF A PROGRAM TO PROTECT AND RESTORE THE GREAT LAKES 5 (2007), available at [http://www.healthylakes.org/site\\_upload/upload/America\\_s\\_North\\_Coast\\_Report\\_07.pdf](http://www.healthylakes.org/site_upload/upload/America_s_North_Coast_Report_07.pdf). Austin's report discusses future economic benefit available to Great Lakes states if they undertake Great Lakes restoration efforts. Although his calculations are not of the present day value of Great Lakes resources, his valuations are still useful for the purposes of this Note. See *infra* Part III.D.1.

84. See LYNN VACCARO ET AL., MICHIGAN'S ECONOMIC VITALITY: THE BENEFITS OF RESTORING THE GREAT LAKES 5 (2009), available at <http://www.miseagrant.umich.edu/downloads/coastal/economy/09-102-Restoration-Report.pdf>. Similar to the Austin report, Vaccaro's report provides helpful calculations for this Note despite the fact that the report primarily focuses on the economic benefits that might arise from affirmative restoration projects. See *infra* Part III.D.1.

A. *Michigan's Public Trust Management System Provides Private Landowners with Inadequate Incentives to Limit Resource Use*

In Michigan, the inconsistent scope of the public trust doctrine and its associated permitting requirement create uncertainty among both private littoral landowners and the public. The public trust management system creates overlapping private and public ownership between the natural ordinary high-water mark and the low-water mark.<sup>85</sup> However, the DEQ only has authority to require permits for activities that are farther lakeward, below the fixed datum high-water mark established by the GLSLA.<sup>86</sup>

The speed at which public trust resources will deplete is a problem because Michigan has, in essence, created a Rule of Capture for public trust resources lying between the ordinary high-water mark and the statutorily defined high-water mark.<sup>87</sup> Under a Rule of Capture, the first to effectively take ownership and control of a given resource gains exclusive rights to that resource.<sup>88</sup> The Rule of Capture creates negative externalities, including resource depletion and unsustainable or irrational land development.<sup>89</sup> For example, private landowners may act quickly to attempt to gain control over public trust resources without considering the long-term consequences of developing that land. Such behavior is likely to lead to rapid environmental degradation.<sup>90</sup>

In addition to the race to use resources that is created by the Rule of Capture, the fact that neither public nor private users have well-defined or enforceable rights<sup>91</sup> reduces the value and alienability of this land for private landowners.<sup>92</sup> With alienability hindered,

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85. See *Glass v. Goeckel*, 703 N.W.2d 58, 69–70 (Mich. 2005).

86. See MICH. COMP. LAWS ANN. § 324.32502 (West 2009); see also *Burleson v. Dep't of Env't. Quality*, 808 N.W.2d 792, 796–98 (Mich. Ct. App. 2011). The statutorily defined high-water marks were set in 1955 and are consistently more lakeward than the natural ordinary high-water mark. For a depiction of the space between the bounds of the public trust doctrine and the state's regulatory authority, see Figure 1, *supra* p. 113.

87. See *Johnston*, *supra* note 6 at 890 (noting that unregulated land development essentially follows the Rule of Capture). The Rule of Capture was adopted from English common law and over time has developed a few related meanings. In this Note, the Rule of Capture is meant to embody a regime in which a person has a right to unlimited use of whatever natural resources that person has gained control of. See *id.* at 856 (explaining the various possible conceptions of the Rule of Capture).

88. See *id.* at 892.

89. See *id.* at 891–92.

90. For a discussion of the environmental effects associated with development, see *supra* notes 7–13 and accompanying text.

91. See *Jaunich*, *supra* note 6, at 183 (discussing the uncertainty that accompanies the expansion of the public trust doctrine).

92. See *id.* at 183–84.

private landowners have no incentive to preserve resources.<sup>93</sup> Instead, the primary incentive for private landowners is to glean as much present value from public trust resources as quickly as possible. As a result, private landowners may develop their land quickly, without worrying about the long-term environmental effects of that development. These include erosion and destruction of the diverse shoreline ecosystem, which increase sedimentation<sup>94</sup> and alter fish populations.<sup>95</sup> Rapid development also diminishes water quality, because more solid waste comes into contact with the water and more stressors are placed on the ecosystem.<sup>96</sup> The lack of incentive to conserve resources for later sale or use, combined with the incentive for fast and unsustainable development of public trust lands, suggest that, under the current regime, unregulated public trust resources in Michigan will not remain available for use by Michigan residents in the future.

*B. Michigan's Public Trust Management System  
Encourages Overuse by the Public*

Because the land and resources lying between the statutorily defined high-water mark and the ordinary high-water mark in Michigan are both held in the public trust and remain entirely unregulated,<sup>97</sup> the public has complete and unlimited rights to use them. Although the public trust doctrine traditionally grants the public a right of use, that right is not intended to be absolute.<sup>98</sup> With an absolute right to use, the effects of human recreational activities in the Great Lakes littoral zones are likely to do great harm to the ecosystem. Access to littoral lands provides access to fisheries, which have long been overexploited in the Great Lakes.<sup>99</sup> In addition, recreational activity like swimming can resuspend sediments, thereby increasing sedimentation and potentially altering or diminishing fish habitats.<sup>100</sup>

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93. See *id.*

94. See BRAUNS, *supra* note 9, at 23.

95. See Radomski et al., *supra* note 9, at 489, 494.

96. See U.S. ENVTL. PROT. AGENCY, *supra* note 8.

97. See *Burleson v. Dep't of Env'tl. Quality*, 808 N.W.2d 792, 796–98 (Mich. Ct. App. 2011) (limiting DEQ's regulatory authority to the ordinary high-water mark).

98. See Kevin J. Lynch, *Application of the Public Trust Doctrine to Modern Fishery Management Regimes*, 15 N.Y.U. ENVTL. L.J. 285, 300 (2007).

99. See *Impacts on Biodiversity*, *supra* note 12. Fisheries, in this context, mean fishing grounds or areas where fish are caught.

100. See Radomski et al., *supra* note 9, at 489.

The public's unlimited right to use publicly owned natural resources invokes the Rule of Capture,<sup>101</sup> because public users have an incentive to use as much of the unregulated public land as they can as quickly as possible with no immediate cost to them or other members of the public.<sup>102</sup> As a result, public users will use the littoral areas more intensely than they otherwise might, and will worsen the environmental effects from their activities.

*C. Overuse and Misuse of Public Trust Resources by Private Landowners and the Public Will Cause Significant Environmental Damage to the Great Lakes*

This section demonstrates that, because public trust resources are not appropriately regulated, there is a significant threat to the health of the Great Lakes, and specifically to Great Lakes fish populations and water quality.

1. Human Activity in the Littoral Zone  
Threatens the Great Lakes

Unregulated public trust lands in Michigan fall within the littoral zone of the Great Lakes, which is particularly important to the health of the Great Lakes. The littoral zone includes the area between the natural ordinary high-water mark and the portions of the shoreline that are permanently submerged.<sup>103</sup> The zone provides diverse habitats for many aquatic organisms, and its ecological features are important to the overall health and function of the lake ecosystem.<sup>104</sup> The littoral zone is very susceptible to damage from human development activities on or near beaches.<sup>105</sup> Several

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101. See Johnston, *supra* note 6, at 856.

102. See *supra* Part III.A.

103. See Richard P. O'Neal & Gregory J. Soulliere, *Conservation Guidelines for Michigan Lakes and Associated Natural Resources*, 38 FISHERIES SPECIAL REP. 5 (2006), available at <http://michiganlakes.msue.msu.edu/uploads/files/139/introduction.pdf> (defining the littoral zone as the area of a lake beginning where rooted aquatic plants grow and ending at the point on the shore where the land is unaffected by lake water at the high-water mark).

104. See, e.g., Reuben R. Goforth & Stephanie M. Carman, *Nearshore Community Characteristics Related to Shoreline Properties in the Great Lakes*, 31 J. GREAT LAKES RES. 113, 113–14 (2005); Scudder D. Mackey & Reuben R. Goforth, *Great Lakes Nearshore Habitat Science*, 31 J. GREAT LAKES RES. 1, 1 (2005); Strayer & Findlay, *supra* note 104, at 127.

105. See David L. Strayer & Stuart E.G. Findlay, *Ecology of Freshwater Shore Zones*, 72 AQUATIC SCI. 127, 127, 151 (2010) (noting that human use of, and building in, shore zones has reduced the ability of those shore zones to provide necessary ecological services). With respect

human activities damage littoral zone habitats, including agriculture, air emissions, development, solid waste disposal, and recreation.<sup>106</sup> With respect to public trust resources, the most important of those activities are development, solid waste disposal, and recreation. These activities, which are encouraged under Michigan's current public trust management system, will likely have a severe and concrete impact on several important components of the Great Lakes ecosystem.

## 2. Overuse and Misuse of Unregulated Public Trust Resources Will Harm Fish Populations in Michigan's Great Lakes

Substantial human interference with Michigan's unregulated public trust resources will reduce substrate stability, and cause a corresponding negative impact on fish populations.<sup>107</sup> Development on beaches, including the construction of vacation homes and docks, can increase erosion, reduce the complexity of the shoreline ecosystem, and change the composition of substrates.<sup>108</sup> Recreational activities along the Great Lakes in Michigan are also liable to resuspend substrates due to the erosion and other ecosystem changes that often accompany human recreational activities.<sup>109</sup> Addition of new substrates and resuspension of previously settled substrates significantly affects habitat composition and the structure and production levels of fish communities.<sup>110</sup> The worsening of substrate stability resulting from private and public overuse of unregulated public trust resources significantly reduces shallow water fish densities.<sup>111</sup> Although larger fish are somewhat more resistant to changes in substrate stability human activities, they prey on shallow

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to the Great Lakes, human development often includes home construction and other alterations to the landscape resulting from frequent human use.

106. See U.S. ENVTL. PROT. AGENCY, *supra* note 8.

107. See Goforth & Carman, *supra* note 105, at 121–22 (noting that nearshore areas close to highly developed shorelines are characterized by a decrease in biological and ecological integrity). Substrates are earthy materials like rocks, sand, or soil that are located along the lakebed and contribute to habitat heterogeneity. See *id.* at 113–14 (explaining the effects of reduced substrate stability in lakebed areas).

108. See BRAUNS, *supra* note 9, at 23; Radomski et al., *supra* note 9, at 494; FAO Natural Res. Mgmt. & Env't Dep't, *supra* note 70.

109. See Goforth & Carman, *supra* note 105, at 113–14; U.S. ENVTL. PROT. AGENCY, *supra* note 8.

110. See Goforth & Carman, *supra* note 105, at 121–22.

111. See *id.* at 117, 121–22 (noting that substrate stability is highest at “unique” test sites, which are unaltered near-shore areas).

water fish that are less resistant, and will therefore also suffer the effects of resource overuse in the long term.<sup>112</sup>

Michigan's public trust management system also promotes rapid and unsustainable land use and development that will reduce vegetation cover and harden land on the shoreline, which will affect Great Lakes fish populations.<sup>113</sup> Rapid land use and development necessarily involves clearing littoral lands and reducing the complexity of the shoreline ecosystem.<sup>114</sup> Fish diversity is correlated with the diversity of vegetation cover and structure, which is harmed when humans artificially alter and tidy the shoreline.<sup>115</sup> The current public trust management system creates an unfortunate incentive for private landowners and the public to engage in construction and other resource uses that damage the shoreline and alter the natural vegetation structure, reducing the quality and integrity of Great Lakes fish populations.

### 3. Unsustainable Human Activity and Resource Use in the Littoral Zone Will Lead to Reduced Great Lakes Water Quality

Overusing and overdeveloping the littoral zone along the Great Lakes also causes excessive sedimentation and decreased water quality. Land use changes that arise from human development, particularly home construction, affect the landscape and produce sediments. These sediments, together with other natural factors like precipitation, drainage, and soil quality, significantly diminish water quality in the Great Lakes.<sup>116</sup> Development along the lakeshore also increases the amount of solid waste deposited in the Great Lakes watershed, adding contaminants to the water.<sup>117</sup> These human activities can increase the aging process of lakes and may result in algal blooms, which reduce water quality.<sup>118</sup> Reduced water quality harms

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112. See *id.* at 122.

113. Annet S. Trebitz et al., *Geographic, Anthropogenic, and Habitat Influences on Great Lakes Coastal Wetland Fish Assemblages*, 66 CAN. J. FISHERIES AND AQUATIC SCI. 1328, 1335 (2009) (noting that the condition of the immediate shoreline affects fish populations).

114. See BRAUNS, *supra* note 9, at 23.

115. See Trebitz et al., *supra* note 113, at 1337; see also BRAUNS, *supra* note 9, at 23 (noting that fish compositions are most significantly affected when human development reduces the complexity of the shoreline); Strayer & Findlay, *supra* note 104, at 141.

116. See Titus S. Seilheimer et al., *Comparative Study of Ecological Indices for Assessing Human-induced Disturbance in Coastal Wetlands of the Laurentian Great Lakes*, 9 ECOLOGICAL INDICATORS 81, 81 (2009).

117. See U.S. ENVTL. PROT. AGENCY, *supra* note 8.

118. Detroit River-W. Lake Erie Basin Indicator Project, *Indicator: Algal Blooms in Western Lake Erie*, U.S. ENVTL. PROT. AGENCY, [http://www.epa.gov/med/grosseile\\_site/indicators/](http://www.epa.gov/med/grosseile_site/indicators/)

the organisms that live in Great Lakes waters.<sup>119</sup> Furthermore, low water quality negatively affects the health and safety of citizens who rely on the Great Lakes for drinking water, as well as those who utilize the water for recreational purposes.<sup>120</sup>

*D. The Resources Threatened by Michigan's Current Public Trust Management System Have Significant Economic Value*

Using figures developed by other researchers, it is possible to estimate the economic costs that would likely result from Michigan's current public trust management system.

1. Explanation of the Figures Used in this Note and Assumptions Necessary for Economic Valuation

Michigan's public trust resources have significant economic value. As a result, the current management system poses a threat to both the environmental and economic wellbeing of the State.<sup>121</sup> Recognizing both the value of and threat to these resources, a task force led by the federal Environmental Protection Agency (EPA) recommended a \$26 billion investment in a regional Great Lakes restoration program that would benefit the entire Great Lakes region.<sup>122</sup> Following that recommendation, in 2007, a group of researchers led by John Austin commenced a study to ascertain the economic benefits that would flow from such an investment, as well as the costs of inaction.<sup>123</sup>

Austin's study provides a useful valuation of the ecosystem services provided by many threatened Great Lakes resources. To the extent possible, this Note uses Austin's valuations and assumptions

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algae-blooms.html (last visited Sept. 1, 2012). Lake aging is a natural process that occurs as a lake is filled with sediments and other erosional materials. See N.H. DEP'T OF ENVTL. SERVS., LAKE EUTROPHICATION 1 (2010), available at <http://des.nh.gov/organization/commissioner/pip/factsheets/bb/documents/bb-3.pdf>.

119. See Trebitz et al., *supra* note 115, at 1337–38 (discussing the effects of changes in water clarity and water quality on other factors that relate to the health of an aquatic ecosystem).

120. See AUSTIN ET AL., *supra* note 83, at 33, 45.

121. See *id.* at 3–4 (discussing the potential costs of failing to improve resource management of Great Lakes resources and how those compare to the benefits that could arise from an EPA investment related to Great Lakes resource management).

122. See *id.*

123. See *id.* John Austin is a nonresident senior fellow at The Brookings Institute. He directs the Great Lakes Economic Initiative, which was created to improve the economic vitality of the Great Lakes region.

about present value discounting.<sup>124</sup> Austin's study, however, presumes a \$26 billion investment in restoration efforts that this Note does not presume, because there is no indication that those funds are available or will be available in the future. For the calculations related to fisheries, this Note assumes that no reforms will be enacted, and that the losses projected by Austin will occur. With respect to sedimentation and property values, this Note assumes that, with reform, there will be a modest improvement over the current situation.<sup>125</sup>

This Note also relies on the work of Lynn Vaccaro and her colleagues in translating Austin's valuations of the benefits and losses to the entire Great Lakes region into Michigan-specific calculations.<sup>126</sup> Vaccaro's study presumes that because Michigan has 41 percent of the population in the Great Lakes region, it stands to gain or lose 41 percent of the values calculated by Austin.<sup>127</sup> This Note assumes that Vaccaro's intuition about the distribution of gains and losses is accurate and reliable, and therefore uses 41 percent of Austin's calculations as a baseline for all other calculations.

## 2. Reforming Michigan's Public Trust Management System Will Help Avoid a 25–50 Percent Reduction in Fish Populations and an Associated \$360 Million–\$1.47 Billion Dollar Loss in Economic Value

If Michigan does not adjust its public trust resource management system, the State risks losing \$360 million–\$1.47 billion over a period of twenty years resulting from the consequences of decreasing

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124. Present value discounting is a calculation used to "reflect the fact that benefits [or losses] in the future are not worth as much as those received today." AUSTIN ET AL., *supra* note 83, at 30.

125. These assumptions were selected based on the data available. For example, there is sufficient baseline data available to predict what will happen to fisheries if the public trust management system is not reformed. With respect to sedimentation and property values, however, there is not as much baseline data. Therefore, the only reliable estimates available are those based on a modest improvement after reform.

126. See VACCARO ET AL., *supra* note 84. Vaccaro is a project coordinator with Michigan Sea Grant, which is a program of the University of Michigan and Michigan State University that supports understanding and stewardship of the Great Lakes.

127. *Id.* at 4. A population-based approach is reasonable because the reforms proposed in this Note will affect how Michigan residents use public trust resources. Therefore, the impact of the reform is likely to be proportional to the number of people it affects. See *id.* at 4 ("[M]ost of the environmental improvements are likely to affect how people use a resource[,] . . . and a state with a larger population close to the coast will benefit more.").

fish populations and diversity and the corresponding losses to fisheries. Human activities on littoral lands that agitate substrates, increase sedimentation, and decrease water quality place significant pressure on Great Lakes fish and fisheries.<sup>128</sup> Absent action to reduce these human activities and bolster Great Lakes fisheries, fish abundance is projected to decline by 25–50 percent.<sup>129</sup> According to Austin, there are 23.1 million Great Lakes fishing days each year.<sup>130</sup> “Fishing days” are calculated by multiplying the number of days in which the Great Lakes are fished by the number of fishers (anglers) who fish on each of those days. Anglers value each 1 percent change in fish abundance at \$0.15–\$0.30 per fishing day, meaning that the entire Great Lakes region is at risk of losing \$87–\$350 million annually.<sup>131</sup> Assuming a gradual decline over twenty years with a discount rate of 6 percent, the overall loss to the Great Lakes region from fishery decline, if no action is taken, will be \$0.9–\$3.5 billion.<sup>132</sup> Michigan’s failure to reform its public trust management system to encourage better resource management would therefore lead to a fishery decline valued of \$360 million–\$1.47 billion.<sup>133</sup>

Additional costs would result from the inevitable loss of fishery-related jobs that would accompany fishery decline in Michigan.<sup>134</sup> Austin estimates that a 20 percent reduction in fisheries in the Great Lakes would lead to \$200 million in lost wages immediately and as much as \$20–\$40 million annually.<sup>135</sup> Michigan’s share of lost wages associated with fishery decline would be \$8.2–\$16.4 million annually.<sup>136</sup> If the legislature does not reform the public trust management system and forestall fishery decline, losses could total \$94–\$188 million over twenty years.<sup>137</sup> Equations one through four, below, show how the projected losses to fisheries and associated losses to Michigan are calculated.

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128. See *supra* Part III.C.2.

129. AUSTIN ET AL., *supra* note 83, at 28.

130. *Id.* at 29.

131. *Id.*

132. *Id.*

133. See VACCARO ET AL., *supra* note 84, at 6.

134. *Id.*; see also AUSTIN ET AL., *supra* note 83, at 33.

135. AUSTIN ET AL., *supra* note 83, at 33.

136. This number represents 41 percent of the annual losses projected for the Great Lakes as a whole. This Note assumes that Michigan will experience 41 percent of the economic effects discussed by Austin because Michigan is home to 41 percent of the population of the Great Lakes states. See VACCARO ET AL., *supra* note 84, at 4.

137. See *id.* at 6.

Equation 1. Annual Loss to Michigan from Fishery Decline Without Reform

Annual Loss = (Projected Loss x Daily Value of 1% Change x Number of Fishing Days) x .41 = \$36–\$144 million

Table 1. Values Used in Equation 1

Projected Decline	Value Per Day of 1 Percent Change in Fish Abundance	Number of Fishing Days in Great Lakes per Year
25–50 percent	\$0.15–\$0.30	23.1 million

Equation 2. Discounting Loss to Michigan Over 20 Years

Net Present Value =  $\sum_{t=1}^{20} \frac{\text{Total Fishery Loss at Time, } t}{(1 + \text{Discount Rate})^t}$  = \$360 million — \$1.47 billion

Table 2. Values Used in Equation 2

Total Fishery Loss at Time, <i>t</i>	Time, <i>t</i>	Discount Rate
\$36–\$144 million	1–20 years	6 percent

Equation 3. Calculation of Annual Loss to Michigan from Loss of Fishery-Related Jobs Without Reform

Annual Loss = (Annual Value of Great Lakes’ Reduction in Fishery-Related Jobs) x .41 = \$8.2 — \$16.4 million

Table 3. Values Used in Equation 3

Annual Value of Fishery-Related Jobs in Great Lakes	Estimated Reduction in Fishery-Related Jobs
\$100–\$200 million	20 percent

## Equation 4. Discounting Loss to Michigan over Twenty Years

$$\text{Net Present Value} = \sum_{t=1}^{20} \frac{\text{Total Fishery Loss in Fishery - Related Jobs at Time, } t}{(1 + \text{Discount Rate})^t}$$

= \$94 — \$188 million

Table 4. Values Used in Equation 4

Total Loss in Fishery-Related Jobs at Time, <i>t</i>	Time, <i>t</i>	Discount Rate
\$8.2–\$16.4 million	1–20 years	6 percent

### 3. The Reduction in Sedimentation that Would Result from Reform of the Public Trust Management System Would Save Michigan \$4.2 Million over Twenty Years

An improved public trust management system would reduce sedimentation in the Great Lakes, improving the quality of drinking water and saving Michigan approximately \$4.2 million over a period of twenty years. When sediment levels are high, Great Lakes water must undergo an extensive and expensive water treatment process before it is safe to drink.<sup>138</sup> The estimated annual cost of water treatment for Great Lakes water is \$600 million throughout the region and \$246 million in Michigan.<sup>139</sup> According to Austin, a 1 percent decrease in sedimentation levels will lead to a 0.05 percent reduction in operations and maintenance costs for water treatment plants.<sup>140</sup>

Though it is difficult to know the degree to which an improved public trust management system could reduce sedimentation, it would be more feasible for Michigan to control its lake sedimentation levels if public trust lands were effectively regulated. It is estimated that the proposed restoration plan would decrease sediment levels by 40 percent.<sup>141</sup> The precise impact of that reform on sediment levels is difficult to ascertain, but a modest 3 percent reduction is not improbable. A 3 percent decrease in sediment levels

138. See AUSTIN ET AL., *supra* note 83, at 33.

139. See *id.* at 34; see also *supra* text accompanying notes 121–122 (\$246 million is 41 percent of Austin's \$600 million figure).

140. AUSTIN ET AL., *supra* note 83, at 34.

141. *Id.*

would save water treatment plants in Michigan 0.15 percent of their operation costs—a \$369,000 annual savings.<sup>142</sup> Over twenty years, Michigan can expect to save about \$4.2 million from an improved public trust management system that helps reduce sedimentation levels in the Great Lakes. The savings are calculated in Equations five and six below.

Equation 5. Calculation of Savings for Michigan Resulting from Reduced Sedimentation

$$\text{Michigan's Annual Savings} = \text{Annual Water Treatment Costs} \times \frac{0.05\% \text{ Savings}}{\% \text{ Reduction in Sedimentation}} \times \text{Reduction in Sedimentation} = \$369,000$$

Table 5. Values Used in Equation 5

Total Cost of Annual Great Lakes Water Treatment	Estimated Reduction in Sedimentation
\$600 million	3 percent

Equation 6. Discounting Michigan's Savings over Twenty Years

$$\text{Net Present Value} = \sum_{t=1}^{20} \frac{\text{Total savings from reduced sedimentation at time, } t}{(1 + \text{discount rate})^t} = \$4.2 \text{ million}$$

Table 6. Values Used in Equation 6

Total Savings From Reduced Sedimentation at Time, <i>t</i>	Time, <i>t</i>	Discount Rate
\$369,000	1–20 years	6 percent

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142. See *id.* at 33.

#### 4. Reform of the Public Trust Management System Would Improve Water Clarity and Result in a \$590 Million Increase in Property Values Along the Great Lakes

Reforms of Michigan's public trust management system could increase property values on the Great Lakes by approximately \$590 million from the improved water clarity that would result from improved water quality and fewer algal blooms. According to Austin, with eight million housing units along the Great Lakes, a 1 percent increase in water clarity along Great Lakes beaches could improve property values by about \$60 per unit.<sup>143</sup> Austin expects that the proposed restoration plan would improve water quality by approximately 25 percent.<sup>144</sup> The calculations in this Note are based on a much more modest estimated 3 percent increase in water quality, which would result in an increase in property value along Michigan's Great Lakes of approximately \$180 per unit. That property value increase would amount to more than \$590 million in present value terms.<sup>145</sup> The total property value increase that Michigan is likely to attain if it reforms its public trust doctrine is calculated in Equation seven below.

#### Equation 7. Calculation of Increased Property Value in Michigan That Would Result From Reform

$$\text{Increased Property Value in Michigan} = (\text{Number of Affected Units}) \times \frac{\text{Value of Improvement}}{1\% \text{ Improvement}} \times \text{Improvement in Water Quality} = \$590 \text{ million}$$

Table 7. Values Used in Equation 7

Total Number of Affected Housing Units in Michigan	Value of Improvement	Estimated Improvement in Water Quality
333 million <sup>146</sup>	\$60 per unit for every 1 percent improvement	3 percent

143. See *id.* at 36.

144. See *id.* at 34.

145. See VACCARO ET AL., *supra* note 84, at 7.

146. Vaccaro estimates a 5 percent increase in property value, or \$300 per unit. *Id.* She goes on to say that Michigan will gain \$1 billion in property value as a result of these reforms.

### 5. Michigan Will Be Unable to Capitalize on Significant Intangible Economic Value if it Does Not Reform its Public Trust Management System

Adding up the potential losses associated with inaction and the gains resulting from reform, Michigan's economy has \$959 million—\$2 billion at stake over a period of twenty years.<sup>147</sup> However, the value of protecting Michigan's ecosystem services should not be considered in isolation. The Great Lakes region is suffering economically, and Michigan is no exception.<sup>148</sup> Although the Great Lakes do not themselves create jobs, they can certainly play a role in boosting economic activity.<sup>149</sup> People are substantially more willing to pay to live in areas of high environmental quality, and workers enjoy higher real wages in environmentally advantageous areas than is reflected in the nominal wages they take home.<sup>150</sup> As a result, the increased economic value of the area would create incentives for increased investment.<sup>151</sup> Increased investment would serve as an excellent source of tax revenue for many struggling communities in the Great Lakes region.<sup>152</sup> This so-called "follow-on economic activity" should not be underestimated, because it will help the State maximize the economic value of ecosystem services provided by the Great Lakes.

The economic data presented in this section illustrate the consequences of the resource overuse and misuse encouraged by Michigan's current public trust management system. There are hundreds of millions of dollars at stake for Michigan's economy if the State does not reform its public trust management system. The next section proposes specific language for a reform to best meet the needs of Michigan and its residents.

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*Id.* Given these calculations, Vaccaro is assuming that there are about 3.3 million affected housing units in Michigan.

147. \$360 million in fisheries losses + \$4.2 million in extra water treatment costs as a result of sedimentation + \$590 million in lost property value due to poor water clarity = \$954,200,000; \$1.47 billion in fisheries losses + \$4.2 million in extra water treatment costs as a result of sedimentation + \$599 million in lost property value due to poor water clarity = \$2,073,200,000.

148. See AUSTIN ET AL., *supra* note 83, at 12.

149. See *id.*

150. See *id.* at 24–25.

151. See *id.* at 49.

152. See *id.*

## IV. PROPOSED STATUTORY LANGUAGE

Under Michigan's current public trust management regime, the State is unable to fulfill its duty to protect and preserve resources held in the public trust.<sup>153</sup> The State could potentially lose up to \$2 billion in ecosystem services as a result of the resource overuse and misuse promoted under the current system.<sup>154</sup> Reforming the public trust management system is necessary to avoid these losses, and economic arguments will make the state legislature more likely to consider such reforms.<sup>155</sup>

The present regulatory scheme in Michigan is a product of state courts' interpretations of various provisions of the GLSLA and precedent related to the public trust doctrine.<sup>156</sup> Although reform could take place either through judicial reconsideration of precedent or through statutory reform, Michigan courts appear reluctant to reevaluate their interpretation of the GLSLA.<sup>157</sup> In addition, statutory reform may be more expedient, because it would not require that the right case to arise and make its way through the courts. To avoid the result produced by *Burleson v. Department of Environmental Quality*, where the State was denied regulatory authority over some public trust resources, the statutory revision must clearly establish that the scope of the State's regulatory authority with respect to public trust resources is coextensive with the scope of the public trust doctrine as defined in *Glass v. Goeckel*.<sup>158</sup> Expanding State regulatory authority to encompass the entirety of lands held in the public trust would define rights of both private littoral landowners and the public, and eliminate the incentives for inefficient and wasteful use of public trust resources.

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153. For a discussion of the State's duty to protect public trust resources, see *Nedtweg v. Wallace*, 208 N.W. 51, 53 (Mich. 1926). See also *supra* Part I.A. Under the current system, there are incentives for resource overuse and misuse, leading to rapid resource depletion. See *supra* Part III.A–B.

154. See *supra* Part III.D.

155. See Ruhl & Salzman, *supra* note 15, at 230–32 (explaining the need to reframe the argument about the public trust doctrine in ecological economic terms).

156. See, e.g., *Glass v. Goeckel*, 703 N.W.2d 58, 61–62 (Mich. 2005); *Burleson v. Dep't of Env'tl. Quality*, 808 N.W.2d 792, 792 (Mich. Ct. App. 2011) (both cases interpreting the GLSLA and relying on prior case law).

157. See *supra* note 14.

158. Cf. *Burleson*, 808 N.W.2d at 797 (“[T]he scope of [the DEQ’s authority] under the GLSLA is not *automatically equivalent* to the scope of the public trust.”).

A. *Michigan's Current Statutory Language Has Several Ambiguities that Led the Court of Appeals to Limit the DEQ's Regulatory Authority in Burleson*

The current language of the GLSLA provides:

This part shall be construed so as to preserve and protect the interests of the general public in the lands and waters described in this section, to provide for the sale, lease, exchange, or other disposition of unpatented lands and the private or public use of waters over patented and unpatented lands, and to permit the filling in of patented submerged lands whenever it is determined by the department that the private or public use of those lands and waters will not substantially affect the public use of those lands and waters for hunting, fishing, swimming, pleasure boating, or navigation or that the public trust in the state will not be impaired by those agreements for use, sales, lease, or other disposition. The word "land" or "lands" as used in this part refers to the aforesaid described unpatented lake bottomlands and unpatented made lands and patented lands in the [G]reat [L]akes and the bays and harbors of the great lakes lying below and *lakeward of the natural ordinary high-water mark . . . . For purposes of this part, the ordinary high-water mark shall be at the following elevations above sea level, international Great Lakes datum of 1955: Lake Superior, 601.5 feet; Lakes Michigan and Huron, 579.8 feet; Lake St. Clair, 574.7 feet; and Lake Erie, 571.6 feet.*<sup>159</sup>

One of the most significant problems with the current statute is that it establishes limits on the DEQ's authority to monitor and regulate the resources held in the public trust without defining the phrase "natural ordinary high-water mark." As a result, the extent of the public trust lands subject to the DEQ's regulatory authority is open to interpretation.<sup>160</sup> The current statute also uses "natural ordinary high-water mark" and "ordinary high-water mark" in close proximity to one another, which causes confusion for courts trying to interpret the statute.<sup>161</sup> Finally, the current statute suggests that "the scope of [the DEQ's] regulatory authority under the GLSLA is not automatically equivalent to the scope of the public trust," which

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159. MICH. COMP. LAWS ANN. § 324.32502 (West 2009) (emphasis added).

160. See *supra* Part II.A.

161. See *id.*

is what gave the Court of Appeals latitude to create the existing regulatory gap.<sup>162</sup>

### *B. The Proposed Revised Statute*

The proposed revised statute, below, would eliminate the aspects of the current law that created the result in *Burleson*, and would establish a regime under which the DEQ must regulate all of the resources held in the public trust. The statute should read as follows:

#### **Covered Lands**

1. The lands and waters covered and affected by this part are all of those lands and waters covered by the public trust doctrine.
  - a. The public trust doctrine applies to all of the unpatented lake bottomlands, unpatented made lands, and patented lands in the Great Lakes and the bays and harbors of the Great Lakes lying below and lake-ward of the natural ordinary high-water mark.
  - b. The natural ordinary high-water mark is the mark where the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.
2. This part shall be construed so as to preserve and protect the interests of the general public in the lands and waters described, which are those lands and waters covered by the public trust doctrine. Pursuant to such purpose, the Department of Environmental Quality shall regulate all of the lands and waters described. No private littoral landowner shall sell, lease, exchange, fill in, or construct on the lands and waters described without first applying for and receiving a permit from the Department of Environmental Quality.
  - a. The State shall not issue a permit unless it is determined by the Department that the private or public use of those lands and waters will not substantially affect the public use of those lands and waters for hunting, fishing, swimming, pleasure boating, or navigation or

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162. *Burleson v. Dep't of Envtl. Quality*, 808 N.W.2d 792, 797–98 (Mich. Ct. App. 2011).

that the public trust in the state will not be impaired by such use.

b. The State shall develop guidelines for public use of the lands and waters described such that the activities of the public do not substantially affect the public use of those lands and waters for hunting, fishing, swimming, pleasure boating, or navigation or that the public trust in the state will not be impaired by such use.

In section (1) (b), the revised statute clearly defines the scope of the public trust doctrine, using the same language as the Michigan Supreme Court used in *Glass v. Goeckel*.<sup>163</sup> According to the Michigan Court of Appeals, under the current statute “the scope of [the DEQ’s] regulatory authority under the GLSLA is not automatically equivalent to the scope of the public trust.”<sup>164</sup> The revised statute establishes that State regulatory authority and the scope of the public trust doctrine are equivalent by requiring that the Act be “construed so as to preserve and protect the interests of the general public in the lands and waters described, which are those lands and waters included within the public trust doctrine,” and that “the Department of Environmental Quality shall regulate all of the lands and waters described.”

The revised statute clarifies the meaning of “the natural ordinary high-water mark,” and eliminates any potential ambiguity by excluding references to the fixed datum high-water mark. By defining the natural ordinary high-water mark as “the mark where the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic,” and by eliminating any reference to the fixed datum high-water mark, the revised statute eliminates the statutory text that led to the Court of Appeals’ interpretation in *Burleson*.<sup>165</sup>

Finally, the revised statute clarifies and amends the permitting requirements to better protect the resources held in the public trust. Under the revised statute, private landowners may not alienate or build on public trust land without first seeking a permit<sup>166</sup>

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163. Compare *supra* § 1(b) of the proposed revised statute, with *Glass v. Goeckel*, 703 N.W.2d 58, 62 (Mich. 2005).

164. *Burleson*, 808 N.W.2d at 797.

165. See *id.*; see also *supra* Part IV.A. Although the revised statute does not precisely incorporate the definition used in the Inland Lakes and Streams Lands Act, it is very similar and is the exact language used to define the scope of the public trust in *Glass v. Goeckel*. Compare MICH. COMP. LAWS ANN. § 324.32502 (West 2009), with *Glass v. Goeckel*, 703 N.W. 2d at 62.

166. See *supra* § (2)(a) of the proposed revised statute.

and the public must follow any guidelines for use promulgated by the Department of Environmental Quality.<sup>167</sup> When the DEQ issues permits and creates guidelines, it must consider the impact on public trust resources and residents' ability to use those resources for traditional purposes such as hunting, fishing, and navigation.<sup>168</sup> These permitting requirements and public use guidelines will better delineate rights of both private landowners and the public, which would prevent much of the wasteful resource use that will occur if the current regulatory regime remains in place.

*C. The Proposed Revised Statute Would Eliminate the Incentives for  
Resource Overuse and Misuse Created Under the Current  
Regulatory Scheme*

Under the existing regulatory scheme, overuse and degradation of resources is likely, because ill-defined private and public rights hinder the alienability of littoral land.<sup>169</sup> Although the permitting requirements of the revised statute limit alienability by requiring private landowners who seek to sell, lease, or exchange land held in the public trust to apply for a permit, they do so in a way that promotes sustainable use of public trust resources.<sup>170</sup> Under the proposed revised statute, private landowners who might be encouraged to use resources wastefully in an attempt to maximize present value are expressly prohibited from using public trust lands in any way that would "substantially affect the public use of those lands and waters for hunting, fishing, swimming, pleasure boating, or navigation."<sup>171</sup>

The regulatory scheme currently in force in Michigan creates a Rule of Capture. This promotes resource overuse by both private landowners and the public, because the first to take control of public trust resources has exclusive rights to those resources.<sup>172</sup> As revised, the statute eliminates this system by establishing a means of control for all public trust resources and creating prerequisites for use and ownership of those resources.<sup>173</sup> Eliminating the Rule of

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167. See *id.* § (2)(c).

168. See *id.* § (2)(b)-(c).

169. See *supra* Part III.A-B.

170. See *supra* § 2 of the proposed revised statute.

171. See *id.* § (2)(b).

172. See *supra* Part III.A.

173. See *supra* § 2 of the proposed revised statute.

Capture would encourage more sustainable use of these resources, helping ensure their existence for future generations.<sup>174</sup>

#### CONCLUSION

The existing public trust management system in Michigan creates a regulatory gap between the scope of the public trust doctrine and the extent of the State's regulatory authority. As a result, the rights of both private landowners and the public to use public trust lands and resources are uncertain and ill-defined. This uncertainty creates an incentive to overuse and misuse those resources, which has a significant environmental impact on the Great Lakes in Michigan. This is a problem not just because the environmental resources along the Great Lakes have intrinsic and normative value, but also because they have great economic value. If Michigan does not reform its public trust management system, the State stands to lose up to \$2 billion over twenty years as a result of environmental damage to unregulated public trust lands.

The most effective way to bring about such reform of the public trust management system is to present economic arguments to the state legislature and create a revised statute to govern both the public trust doctrine and the State's regulatory authority over the lands and resources held in the public trust. That statute must eliminate any ambiguity regarding the bounds of the public trust doctrine and unequivocally establish that the State's regulatory authority is equivalent to the scope of the public trust doctrine. Under the revised statute, the State would be able to effectively regulate all lands and resources held in the public trust, which would reduce environmental damage and help save Michigan from significant economic losses.

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174. See *supra* Part III.A.