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Evaluating the Use of Mandatory Edge-of-Field Buffers as a Land Use Tool to Combat Harmful Algal Blooms

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— Note —

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Introduction

In August 2014, Lake Erie, off the shores of Toledo, Ohio, experienced a harmful algal bloom resulting in high levels of toxic

microcystin bacteria in the lake.[1] The microcystin bacteria entered Toledo's water supply, which forced the city to shut off water for nearly half a million residents in the metropolitan area for almost three days.[2] Agricultural runoff of fertilizer[3] is one of the primary causes of these algal blooms on the Ohio coast of Lake Erie.[4] In the months after this massive algal bloom, the Ohio General Assembly enacted legislation that, in part, amended existing statutes to impose mandatory requirements for farmers' use of fertilizer and manure on their land.[5]

Improving fertilizer application methods and timing is a key land use tool for reducing algal blooms, but it is only one of many best management practices (BMPs) that landowners and agricultural producers[6] ("farmers") should follow to combat this problem.[7] As climate change threatens to exacerbate algal blooms in Ohio and across the country,[8] states should expand their efforts to combat these blooms to include more binding requirements on agricultural operations to reduce nutrient pollution runoff.[9] One such solution is to impose binding BMPs on agricultural operations.[10] Installing riparian buffer strips along

1. Cheryl Dybas, *Lake Erie's Toxic Algae Blooms: Why Is the Water Turning Green?*, NAT'L SCI. FOUND. (Apr. 8, 2019), https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=298181 [https://perma.cc/928L-6F25]. For an explanation of harmful algal blooms see *infra* Part I.

2. Dybas, *supra* note 1.

3. This Note uses the term "fertilizer" to also encompass farmers' application of manure as a form of a fertilizer.

4. *See* OHIO ENV'T. PROT. AGENCY, OHIO LAKE ERIE PHOSPHOROUS TASK FORCE FINAL REPORT 83 (2010), https://www.epa.state.oh.us/portals/35/lakeerie/ptaskforce/Task_Force_Final_Executive_Summary_April_2010.pdf [https://perma.cc/8XNS-ZSDF] [hereinafter TASK FORCE REPORT I]; *infra* Part I.

5. OHIO REV. CODE ANN. §§ 905.326(A)(1), 939.08(A) (West Supp. 2020) (formerly codified at § 1511.10).

6. A broader term for farmer. *E.g.*, 7 C.F.R. § 4284.3 (2021) ("Persons or entities, including farmers, ranchers, loggers, agricultural harvesters and fishermen, that engage in the production or harvesting of an agricultural product."). This Note primarily uses the term "farmer," but for the purposes of this Note, the terms are interchangeable.

7. TASK FORCE REPORT I, *supra* note 4, at 36; *see* Kenneth K. Kilbert, *Distressed Watershed: A Designation to Ease the Algae Crisis in Lake Erie and Beyond*, 124 DICK. L. REV. 1, 21–23 (2019).

8. ENV'T PROT. AGENCY, IMPACTS OF CLIMATE CHANGE ON THE OCCURRENCE OF HARMFUL ALGAL BLOOMS (2013), https://www.epa.gov/sites/default/files/documents/climatehabs.pdf, [https://perma.cc/LA8Y-5M65] [hereinafter IMPACTS OF CLIMATE CHANGE].

9. *See* Kilbert, *supra* note 7, at 23.

10. OHIO REV. CODE ANN. §§ 905.326(A)(1), 939.08(A).

the edge of farm fields is a commonly encouraged, voluntary BMP.[11] These edge-of-field buffers act to filter out nutrients from fertilizers after they run off the field but before they enter waterways that lead to waterbodies such as Lake Erie.[12]

Permanent "buffers" are strips of land that often include grass, trees, shrubs, and other vegetation.[13] They reduce nutrient loading—most importantly, phosphorous—and are a valuable land use tool when paired with other land management practices.[14] This Note will largely focus on edge-of-field buffers.[15] Buffer width will depend on the landscape of the farm, particularly the slope of the land, but the most effective buffers are typically at least fifteen meters wide.[16] Experts do suggest that depending on which plants comprise the buffer, narrower buffers (0.5–1.2 meters) can still effectively reduce some nutrient runoff.[17] One general reason that these edge-of-field buffers are not a first-choice BMP is that they take up productive crop and pasture space, so farmers would have to reduce the total acreage available for their crops and pastures.[18]

Climate change is a substantial and unmanageable factor in efforts to reduce algal blooms,[19] which makes reducing pollutant runoff a

11. H2OHIO, H2OHIO ACCOMPLISHMENTS FOR FISCAL YEAR 2021, at 15 (2021), https://h2.ohio.gov/h2ohio-accomplishments-for-fiscal-year-2021 [https://perma.cc/X9XM-6VCW].

12. TASK FORCE REPORT I, *supra* note 4, at 51.

13. S.M. Gene, P.F. Hoekstra, C. Hannam, M. White, C. Truman, M.L. Hanson & R.S. Prosser, *The Role of Vegetated Buffers in Agriculture and Their Regulation Across Canada and the United States*, 243 J. ENV'T. MGMT. 12, 14 (2019) [hereinafter *Role of Vegetated Buffers*].

14. Lorna J. Cole, Jenni Stockan & Rachel Helliwell, *Managing Riparian Buffer Strips to Optimise Ecosystem Services: A Review*, AGRIC., ECOSYSTEMS & ENV'T, July 1, 2020, at 2, 6–7 (explaining that some upkeep is required after installation, so buffers work best when paired with other nutrient reduction methods).

15. *Role of Vegetated Buffers*, *supra* note 13, at 14 ("Field borders are permanent vegetation established on the edges of crop fields.").

16. Cole et al., *supra* note 14, at 3 ("[W]idths of 7.5m are effective at trapping sediments and sediment-bound pollutants (e.g. nonsoluble phosphates), whereas to control soluble pollutants (e.g. nitrates and dissolved phosphorus) widths of 15 m are recommended.").

17. *Id.*

18. *See id.* (describing effective widths of buffers).

19. Kasha Patel, *Earth's Lakes Are Warming at a Feverish Pace, with the Great Lakes Leading the Way*, WASH. POST (Nov. 4, 2021, 11:07 AM), https://www.washingtonpost.com/weather/2021/11/04/great-lakes-fastest-warming-study/ [https://perma.cc/5CQN-47J6] ("Less ice also allows the surface of the lake to warm earlier and more intensely, resulting in more algal blooms that can sometimes contaminate the water for humans.").

crucial land management goal. Voluntary cost-share programs to help farmers implement BMPs for fertilizer application, especially Ohio's recently established program,[20] are a great start to addressing this issue, but statutory land use tools with enforcement power could serve as an additional, more effective and enduring tool for combatting nutrient pollution. In 2015, Minnesota enacted a law requiring all owners of land abutting certain waterways to either construct fifty-foot-wide vegetated buffers or comply with other specific shoreline criteria.[21] This Note will evaluate the legality of a similar state law that would require commercial farming operations[22] and concentrated animal feeding operations[23] to construct buffers along the edge of their fields to prevent nutrients from running off into abutting waterways.

Part I explains existing tools for combatting algal blooms and why, alone, they may not do enough to prevent future catastrophic blooms. Part II further explains Minnesota's buffer statute and evaluates a similar proposed statute that would require agricultural producers to construct edge-of-field buffers along the edge of their properties and explains that these statutory buffers do not amount to a compensable taking under the U.S. and Ohio constitutions. These edge-of-field buffers are neither a per se taking nor a taking under the regulatory takings doctrine. Part II also explains why, if a court does determine that the proposed statute is a taking, states still may want to consider exercising eminent domain. Part III details potential alternatives to the proposed statute.

I. HARMFUL ALGAL BLOOMS AND HOW THEY ARE BEING ADDRESSED

Harmful algal blooms (HABs) occur in lakes and ponds under conditions of increased lighting, warm water temperature, and increased nutrients.[24] These conditions cause naturally existing cyanobacteria to

20. *See infra* Part I.B.2.

21. MINN. STAT. § 103F.48; *infra* Part II.

22. The exact size of farms that this proposed statute would cover is outside the scope of this Note and should be left up to either the municipality or state, and state environmental and agricultural departments. In Ohio, most farms are over ten acres, so perhaps farms under ten acres would be exempt under the statute given that the statute would slightly reduce crop area size. DEP'T OF AGRIC., 2017 CENSUS OF AGRICULTURE: OHIO STATE AND COUNTY DATA 28 (2017), https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Ohio/ [https://perma.cc/L2AQ-4SE7].

23. "An 'animal feeding operation' essentially is a facility where animals are confined and fed for at least 45 days a year and crops are not grown." Kilbert, *supra* note 7, at 13 n.6 (citing 40 C.F.R. § 122.23(b)(1) (2018)).

24. IMPACTS OF CLIMATE CHANGE, *supra* note 8.

multiply rapidly, resulting in an algal "bloom."[25] HAB events produce toxins that can cause serious health problems in humans and animals, including death.[26] Warmer waters are a key component in HABs' formation, so it is clear that climate change contributes to this problem.[27] The key nutrients that cause algal blooms are nitrogen and phosphorous, which enter waterbodies through multiple channels, such as agricultural runoff and runoff from urbanized areas.[28] In the Lake Erie watershed and freshwater systems generally, phosphorous is the main cause of HABs.[29] Approximately 80 percent of the phosphorous that enters the Lake Erie watershed comes from agricultural runoff into the Maumee River, which empties into Lake Erie.[30]

A. Federal Government

The two key sources of pollutants that contribute to HABs are point sources and nonpoint sources. A point source is "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, . . . [or] concentrated animal feeding operation . . . from which pollutants are or may be discharged."[31] Point sources "do[] not include agricultural stormwater discharges and return flows from irrigated

25. *Id.* HABs can also occur in saltwater and brackish environments. *See* Myra McAdory, *A Harmful Algal Bloom Caught Red Handed*, CHESAPEAKE BAY PROGRAM (July 6, 2020), https://www.chesapeakebay.net/news/blog/a_harmful_algal_bloom_caught_red_handed [https://perma.cc/F9QE-C54E]; Josie Fischels, *At Least 600 Tons of Dead Fish Have Washed Up Along Tampa Bay's Shore*, NPR (July 13, 2021, 3:18 PM), https://www.npr.org/2021/07/13/1015312707/a-summer-red-tide-has-left-hundreds-of-tons-of-dead-fish-along-tampa-bays-shore [https://perma.cc/3YPV-US8M].

26. ENV'T PROT. AGENCY, HARMFUL ALGAL BLOOMS, https://www.epa.gov/nutrientpollution/harmful-algal-blooms [https://perma.cc/3BMN-BVJB] (Aug. 25, 2022).

27. *See* Patel, *supra* note 19.

28. *Basic Information About Nonpoint Source (NPS) Pollution*, ENV'T PROT. AGENCY, https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution [https://perma.cc/73SY-ZKJ6] (July 7, 2022).

29. Kenneth Kilbert, Tiffany Tisler & M. Zach Hohl, *Legal Tools for Reducing Harmful Algal Blooms in Lake Erie,* 44 U. TOL. L. REV. 69, 70 n.6 (2012) ("Nitrogen tends to be the key nutrient driving the formation of HABs in marine environments, whereas phosphorus tends to be the driver in freshwaters.").

30. OHIO DEP'T OF AGRIC., OHIO DEP'T OF NAT. RES., OHIO ENV'T PROT. AGENCY & LAKE ERIE COMM'N, OHIO LAKE ERIE PHOSPHORUS TASK FORCE II FINAL REPORT (2013), https://www.epa.ohio.gov/dsw/lakeerie/index [https://perma.cc/SDS2-GAYQ].

31. 33 U.S.C. § 1362(14); *see* Kilbert et al., *supra* note 29, at 73 ("Point sources" are "discrete" sources of pollutants, such as direct "effluent from wastewater treatment plants").

agriculture."[32] The Clean Water Act (CWA)[33] requires point source polluters to obtain National Pollutant Discharge Elimination System (NPDES) permits before discharging pollutants into waterways.[34] The EPA issues NPDES permits, but will delegate this authority to state governments when a governor submits a state NPDES permitting program proposal and the EPA approves it.[35] Anyone who violates an NPDES permit (for example, by discharging a higher volume of pollutants than an NPDES permit allows) or discharges a pollutant without an NPDES permit can face civil or criminal penalties.[36] The CWA does not define nonpoint source, but it is generally considered as "land runoff," which includes agricultural runoff.[37] Nonpoint sources such as agricultural runoff pose an increasingly complex problem for regulating pollutants that enter into waterbodies because they "are virtually unregulated by" the CWA.[38] Although point sources contribute to HABs, nonpoint sources currently account for a much larger volume of pollutants entering the Lake Erie watershed.[39]

1. The Clean Water Act, TMDLs, and the Coastal Zone Management Act

The CWA requires states to identify and submit to the EPA a section 303(d) list of impaired waters within the state.[40] States include

32. 33 U.S.C. § 1362(14).

33. *Id.* §§ 1251–1388.

34. *Id.* §§ 1342, 1362. A person must obtain an NPDES permit before discharging any pollutant, as defined by section 1362(6), from a point source. *Id.* § 1342(k); *see* § 1311(a). The permit imposes effluent limitations on the permit holder, which restricts her ability to discharge pollutants, and the effluent limitation cannot be reduced in future NPDES permit renewals. *Id.* § 1342(o); Kilbert et al., *supra* note 29, at 73 ("Discharges of most other pollutants, including phosphorus, require a National Pollutant Discharge Elimination System (NPDES) permit.").

35. 33 U.S.C. § 1342(a)–(b).

36. 33 U.S.C. §§ 1342(h), 1319(b)–(c).

37. TASK FORCE REPORT I, *supra* note 4, at 12; Shanty Town Assocs. Ltd. P'ship v. EPA, 843 F.2d 782, 785 n.2 (4th Cir. 1988) ("This definition excludes unchanneled and uncollected surface runoff, which is referred to as 'nonpoint source' pollution."); American Farm Bureau Fed'n v. EPA, 792 F.3d 281, 289 (3d Cir. 2015) ("'[N]onpoint' sources. . . . are diffuse sources of pollution, like farms or roadways, from which runoff drains into a watershed.").

38. Kilbert et al., *supra* note 29, at 89–92, 121.

39. TASK FORCE REPORT I, *supra* note 4, at 17.

40. 33 U.S.C. § 1313(d); *see also* 40 C.F.R. § 130.7 (2021). "Impaired waters" are more formally called "water quality limited segments" (WQLS), but this Note will refer to them as impaired waters. 40 C.F.R. § 130.2(j) (2021) ("Water quality limited segment. Any segment where it is known that water quality does not meet applicable water quality standards.").

this section 303(d) list, along with information to satisfy other CWA reporting requirements, in their biennial Integrated Water Quality Monitoring and Assessment Report ("Integrated Report").[41] A state must rank the section 303(d) list based on "severity of the pollution and the uses to be made of such waters," and must identify which specific pollutants cause most of the waters' impairment.[42] States must go through this process every two years and reevaluate which existing state pollution control measures are inadequate to meet water quality standards for waters within their jurisdiction.[43] Based on these lists, states develop Total Maximum Daily Loads (TMDLs) that target the identified pollutants causing waterbody impairment.[44] TMDLs establish the maximum amount "of loading that a water can receive without violating water quality standards" and represent the state's goal for the sum of pollutants coming from point and nonpoint sources.[45] The EPA does not establish a deadline for states to develop TMDLs after receiving approval of their section 303(d) list of impaired waters.[46] When the EPA does not approve a state's section 303(d) list and proposed TMDL, the EPA must establish its own list and TMDL within thirty days of disapproval.[47] The state will then adopt the EPA's 303(d) list and TMDL into its "continuing planning process."[48] After either EPA approval or the EPA providing its own TMDL to the state, the state must "allocate the allowable pollution load among all

41. *Impaired Waters and TMDLs*, ENV'T. PROT. AGENCY, https://www.epa.gov/tmdl/identifying-and-listing-impaired-waters-under-clean-water-act [https://perma.cc/3YCP-YYBL] (Aug. 31, 2022); OFF. OF WETLANDS, OCEANS & WATERSHEDS, Memo on 2002 Integrated Water Quality Monitoring and Assessment Report Guidance (Nov. 19, 2001), https://www.epa.gov/sites/default/files/2015-10/documents/2002_02_13_tmdl_2002wqma.pdf [https://perma.cc/T9X7-M9BJ]. Integrated reports are reports states must submit that include information to comply with sections 303(d), 305(b), and 314 of the CWA. *See* ENV'T PROT. AGENCY, Memo on Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005), https://www.epa.gov/sites/default/files/2015-10/documents/2006irg-report.pdf [https://perma.cc/Y5P4-77SM].

42. 33 U.S.C. § 1313(d)(1); 40 C.F.R. § 130.7(b) (2021).

43. 40 C.F.R. § 130.7(d)(1) (2021).

44. 33 U.S.C. § 1313(d)(1); 40 C.F.R. § 130.7(c) (2021).

45. 40 C.F.R. § 130.2(f)–(i) (2021). "Loading" is the amount of pollutants entering a waterbody. § 130.2(e).

46. *Id.* § 130.7(d)(1) ("Schedules for submission of TMDLs shall be determined by the Regional Administrator and the State.").

47. 33 U.S.C. § 1313(d)(2).

48. 40 C.F.R. § 130.7(d)(2) (2021); 33 U.S.C. § 1313(e).

of the pollution sources" in the impaired waters.[49] The state must "then specify a plan to reduce the pollutant sources to ensure that the daily load is not exceeded."[50]

Some consider TMDLs a potential tool for reducing nonpoint source nutrient pollution, but TMDLs ultimately fall short of providing meaningful pollution abatement because they do not impose enforceable requirements.[51] The EPA's 2002 TMDL guidelines explain that TMDLs should include the origin of point and nonpoint sources for identified pollutants,[52] which helps states guide their nutrient pollution abatement efforts.[53] TMDLs essentially establish a waterbody-wide pollutant "diet."[54] Thus, establishing TMDLs can act as a guide for states and "spur a state to take steps to reduce the amount of pollution loading from point and nonpoint sources" to achieve water quality goals.[55] The problem is that the EPA cannot enforce TMDLs or require states to follow them.[56] The Agency's only real enforcement mechanism is to withhold federal grant money from states that do not meet their TMDLs.[57] While NPDES permits, which impose strict limitations on the loading of TMDL pollutants into impaired waters,[58] regulate point sources, nonpoint sources lack a similar requirement.[59] Without

49. 33 U.S.C. § 1329(a); Eric V. Hull, *Climate Change and Harmful Algal Blooms: Legal and Policy Responses to Protect Human Health, Marine Environments, and Coastal Economies*, 29 N.Y.U. ENV'T L.J. 59, 101 (2021).

50. 33 U.S.C. § 1329(a); Hull, *supra* note 49, at 101.

51. Kilbert, *supra* note 7, at 4; Kilbert et al., *supra* note 29, at 92.

52. ENV'T PROT. AGENCY, Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992 (May 20, 2002), https://www.epa.gov/sites/default/files/2015-10/documents/2002_06_04_tmdl_guidance_final52002.pdf [https://perma.cc/W4WT-9S85].

53. Kilbert, *supra* note 7, at 32.

54. *Chesapeake Bay Total Maximum Daily Load*, ENV'T PROT. AGENCY, https://www.epa.gov/chesapeake-bay-tmdl [https://perma.cc/HLC4-K7Y8] (Oct. 4, 2022) ("The TMDL is a historic and comprehensive 'pollution diet.'").

55. Kilbert, *supra* note 7, at 32.

56. *Id.* at 4; Kilbert et al., *supra* note 29, at 92.

57. 33 U.S.C. § 1329(h) (explaining that states that submit successful nonpoint source management reports, which include TMDLs, can qualify for federal grant money to cover up to fifteen percent of the cost of the state program, but if the state fails to make progress on reducing pollution as outlined in the report, the EPA Administrator may withhold funding).

58. *See supra* note 34 and accompanying text.

59. *See* Kilbert et al., *supra* note 29, at 94.

enforcement mechanisms to make states adhere to their TMDLs, nonpoint sources continue to contribute pollutants to impaired waters.[60]

Ohio's Lake Erie shores, in particular, showcase TMDLs' inadequacy for imposing meaningful enforcement on states to address nonpoint source pollution. Without an apparent penalty, Ohio has consistently failed to comply with the CWA, first by failing to list open waters of the western basin of Lake Erie as impaired under section 303(d),[61] then by failing to provide the EPA with a TMDL for the Lake Erie watershed.[62] In 2012, the EPA "encourage[d] Ohio to engage in [a] water quality assessment" for Lake Erie's open waters, but the State ultimately did not assess the waters or include the area in its 2012 section 303(d) list.[63] In 2014, Ohio listed some sections of the Lake Erie shore as impaired but again did not include Lake Erie's open waters on its list.[64] The EPA approved the 2014 list, despite "water intake points" past the lake's shoreline, in open waters, showing high levels of toxic microcystin.[65] Under the CWA, impaired waters included in section 303(d) lists are waters targeted for TMDLs, so Ohio's failure to list all of the western Lake Erie basin as impaired meant that the state did not have to develop a TMDL for the area at all.[66]

Ohio again declined to include Lake Erie's open waters in its initial section 303(d) list, but ultimately revised that list in 2018 to include these open waters. But despite amending the 2016 section 303(d) list to include open waters, Ohio explicitly refused to "to evaluate the condition of Lake Erie's open waters."[67] The EPA initially approved the list, then revoked approval, and Ohio had to provide a revised section 303(d) list.[68] Ohio's revised 2016 section 303(d) list again included open waters of Lake Erie, but Ohio still explicitly refused to develop a phosphorous TMDL.[69] In 2018, Ohio listed Lake Erie as impaired, and in its Integrated Report (which includes the section 303(d) list of impaired waters), the State explained that "[t]he

60. *See, e.g.*, *supra* note 39 and accompanying text.

61. Env't L. & Pol'y Ctr. v. U.S. Env't Agency, 349 F. Supp. 3d 703, 706–07 (N.D. Ohio 2018).

62. Env't L. & Pol'y Ctr. v. U.S. Env't Agency, 415 F. Supp. 3d 775, 777 (N.D. Ohio 2019).

63. *Env't L. & Pol'y Ctr.*, 349 F. Supp. 3d at 706.

64. *Id.*

65. *Id.* at 706–07.

66. *See supra* note 49 and accompanying text.

67. *Env't L. & Pol'y Ctr.*, 349 F. Supp. 3d at 707 (explaining that Ohio believed the U.S. EPA was responsible for assessing Lake Erie's open waters and developing a plan).

68. *Id.* at 707–08.

69. *Id.* at 708.

western basin is a high priority for action" but that a TMDL was not the proper way to address the issue, despite CWA requirements.[70] Ohio finally committed to develop a TMDL for Lake Erie's western basin in its 2020 Integrated Report,[71] but as of March 20, 2023, the Ohio EPA is still developing the TMDL.[72]

2. Federal Funding and Agreements

There are numerous federal cost-share programs designed to help states as well as individual landowners combat nutrient pollution. The USDA, through the Natural Resources Conservation Service, offers the Environmental Quality Incentives Program.[73] This program gives producers access to both "technical and financial assistance" so they can better address water quality concerns.[74] Another USDA cost-share program, through the Farm Service Agency, is the Conservation Reserve Enhancement Program (CREP), where the USDA pays an "annual rental rate" to producers who remove some portions of their "environmentally sensitive land from production."[75] CREP is voluntary and specifically targets Lake Erie.[76]

70. Env't L. & Pol'y Ctr. v. U.S. Env't Agency, 415 F. Supp. 3d 775, 777–78 (N.D. Ohio 2019); Ohio Env't Prot. Agency, Ohio 2018 Integrated Water Quality Monitoring and Assessment Report (2018), at D-31, https://epa.ohio.gov/static/Portals/35/tmdl/2018intreport/Cover_and_Intro.pdf [https://perma.cc/7GSS-J2XE]; 33 U.S.C. § 1313(d)(1)(C).

71. OHIO ENV'T PROT. AGENCY, Ohio 2020 Integrated Water Quality Monitoring and Assessment Report (2020), at Executive Summary-2, https://epa.ohio.gov/static/Portals/35/tmdl/2020intreport/2020_Final_IR_CompleteReport_May2020.pdf?ver=2020-05-11-150221-420 [https://perma.cc/6BZL-AA8S] [hereinafter 2020 Integrated Report] ("Ohio EPA is assigning a high priority to Lake Erie's western shoreline, western open water, and islands shoreline assessment units for impairments of public drinking water supply (algae) and recreation (algae), and committing to develop a TMDL over the next two to three years.").

72. *Multi-Watershed TMDL Projects*, OHIO ENV'T PROT. AGENCY, https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/multi-watershed-tmdl-projects [https://perma.cc/3DUX-N4JR] (last visited Mar. 20, 2023).

73. *See* Nat. Res. Conservation Serv., *Environmental Quality Incentives Program Fact Sheet*, U.S. DEP'T. OF AGRIC. (July 2019), https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip [https://perma.cc/E8AH-ETNJ]. *See generally* 16 U.S.C. §§ 3839aa to 3839aa-8.

74. Nat. Res. Conservation Serv., *supra* note 73.

75. 16 U.S.C. § 3831(a); Farm Serv. Agency, *Conservation Reserve Enhancement Program*, U.S. DEP'T OF AGRIC., https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-enhancement/index [https://perma.cc/4BEE-N933] (last visited Oct. 19, 2022).

76. Farm Serv. Agency, *supra* note 75.

The CWA section 319[77] grant program is a separate program that requires states to submit a report to the EPA that includes a detailed description of existing state programs to tackle nonpoint source pollution.[78] If a state's report is approved, the EPA may provide grants to that state to cover up to 60 percent of the proposed program costs per year.[79] This grant program alone is not enough to have much effect on nonpoint source pollution because it is underfunded and does not provide an enforcement mechanism for the EPA to ensure that states submit and implement nonpoint source programs.[80]

The Coastal Zone Management Act[81] functions in part as a "supplement [to] the CWA in coastal states" because it provides additional funding to qualifying states through the Coastal Nonpoint Pollution Control Program.[82] To receive federal funding, coastal states must submit a management program that includes "enforceable policies and mechanisms to implement the applicable requirements of the Coastal Nonpoint Pollution Control Program of the State."[83] Ohio submitted its first Coastal Nonpoint Pollution Control Program in 2000, but the National Oceanic and Atmospheric Administration (NOAA) never fully approved the program.[84] Ohio then submitted addenda to the original plan in both 2016[85] and 2019.[86] NOAA proposed to approve the program in November 2021 and sought public comments,[87] and officially approved Ohio's plan in January of 2022.[88]

77. Clean Water Act of 1972 § 319; 33 U.S.C. § 1329.

78. 33 U.S.C. § 1329(a)–(b).

79. *Id.* § 1329(h).

80. Jan G. Laitos & Heidi Ruckriegle, *Conference on Agriculture and Food Systems: September 28, 2012: The Clean Water Act and the Challenge of Agricultural Pollution*, 37 VT. L. REV. 1033, 1043–45 (2013).

81. 16 U.S.C. §§ 1451–1467.

82. Hull, *supra* note 49, at 102; 16 U.S.C. § 1455(b).

83. 16 U.S.C. § 1455(d)(16).

84. Kilbert et al., *supra* note 29, at 98.

85. *Ohio Coastal Nonpoint Pollution Control Program Plan*, OHIO DEP'T. OF NAT. RES. (June 2016), https://ohiodnr.gov/static/documents/coastal/NSP/6217-OhioResponse-June2016.pdf [https://perma.cc/5X2H-247F].

86. *Ohio Coastal Nonpoint Pollution Control Program Plan*, OHIO DEP'T. OF NAT. RES. (Aug. 2019), https://ohiodnr.gov/static/documents/coastal/NSP/6217-OhioResponse-August2019.pdf [https://perma.cc/2V3Q-NGSF].

87. Proposal to Find that Ohio Has Satisfied Conditions on Earlier Approval and Request for Comments, 86 Fed. Reg. 60616 (Nov. 3, 2021).

88. *Ohio Coastal Nonpoint Program NOAA/EPA Decision on Conditions of Approval*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. & ENV'T PROT. AGENCY (Jan. 2022), https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217oh_decision.pdf [https://perma.cc/B9SV-ZBWT].

In addition to statutes and cost-share programs, a central voluntary measure taken to address HABs in Lake Erie is the Great Lakes Water Quality Agreement (GLWQA)[89] between the United States and Canada. The GLWQA creates a binational framework for identifying and addressing water quality priorities.[90] The original GLWQA, entered in 1972, was largely successful at reaching Canada's and the U.S.'s goals for reducing point source pollution in the 1980s by reducing the "total phosphorus load[s]" in the two countries.[91] As HABs became more severe, the GLWQA was amended for a fourth time in 2012.[92] Annex 4 of the GLWQA specifically lays out objectives for reducing total phosphorus concentration in the Great Lakes, including Lake Erie, and explains the general steps the two countries must take to meet those objectives.[93] The agreement is "not legally binding," so it acts more as a guide for federal and state governments to follow.[94] Critics of the GLWQA highlight the fact that it lacks binding measures.[95]

B. State Government

1. Statutes and Regulations

In 2015, in the aftermath of the 2014 Toledo water crisis, the Ohio General Assembly passed numerous amendments to existing statutes to impose restrictions on how landowners can apply fertilizer and manure.[96] Although this was certainly a step in the right direction, it is not clear whether these requirements, even in combination with voluntary programs, will meaningfully reduce nutrient pollution and agricultural runoff because they do not provide an adequate

89. Great Lakes Water Quality Agreement, Can.-U.S., Sept. 7, 2012, T.I.A.S. No. 13-212.

90. Great Lakes Water Quality Agreement (GLWQA), ENV'T PROT. AGENCY, https://www.epa.gov/glwqa [https://perma.cc/6FYP-DDY9] (Sept. 20, 2022).

91. Kathryn Bryk Friedman & Irena F. Creed, *Harmful Algal Blooms in the Great Lakes St. Lawrence River Basin: Is It Time for a Binational Sub-Federal Approach?*, 45 CAN.-U.S. L.J. 125, 134 (2021).

92. *Id.* at 135.

93. Great Lakes Water Quality Agreement, *supra* note 89; Friedman & Creed, *supra* note 91, at 136.

94. Kilbert et al., *supra* note 29, at 70 n.8; *see also* Kilbert, *supra* note 7, at 28 n.194 ("[E]ach Great Lakes state and nation has prepared action plans.").

95. Friedman & Creed, *supra* note 91, at 141.

96. Act of March 25, 2015, 2015 Ohio Legis. Serv. Ann. L-175 (West) (codified at OHIO REV. CODE ANN. §§ 905.326(A), 939.08(A) (West Supp. 2020)).

enforcement mechanism.[97] When someone violates one of the fertilizer application statutes, the only way to trigger enforcement action is for someone else to witness the violation and file a complaint with the State's director of agriculture.[98] The statute imposes a heavy civil penalty on violators,[99] but the complaint-driven enforcement mechanism essentially requires neighbors to police each other in order for violators of the statute to face consequences—a system that has not proven to be effective.[100] Ohio has enacted other statutes aimed at helping farmers combat HABs, but they mostly provide money for voluntary programs and research.[101]

2. Voluntary Programs

The H2Ohio program is "a comprehensive water quality initiative" aimed at "address[ing] serious water issues . . . includ[ing] harmful algal blooms on Lake Erie caused by phosphorus runoff from farm fertilizer."[102] The program began in 2019, and the Ohio General Assembly invested $172 million in the program for 2020–2021.[103] H2Ohio is voluntary, and "will provide economic incentives to farmers who develop a nutrient management plan that includes a combination of . . . [BMPs]."[104] Although edge-of-field buffers are considered a BMP,

97. Brandi L. Staley, Comment, *Harmful Algal Blooms: Ohio Senate Bill 1 and the Challenge of Agricultural Regulation*, 45 CAP. U. L. REV. 795, 830 (2017).

98. OHIO REV. CODE ANN. § 905.326(C) ("Upon receiving a complaint by any person or upon receiving information that would indicate a violation of this section, the director or the director's designee may investigate or make inquiries into any alleged failure to comply with this section.").

99. OHIO REV. CODE ANN. § 905.327(C)–(D) (authorizing the director to impose a civil penalty of up to $10,000).

100. *See* Staley, *supra* note 97, at 826 ("Because the process is complaint driven, enforcement depends heavily on people caring enough to report violations, or even knowing that someone is in direct violation of the fertilizer and manure restrictions.").

101. OHIO REV. CODE ANN. §§ 939.10 (West Supp. 2020), 3745.50(B)–(C) (West 2018) (requiring the director of environmental protection to consult with experts to "develop and implement protocols and actions" aimed at "[p]rotect[ing] against cyanobacteria in the western basin and public water supplies [and] [m]anag[ing] wastewater to limit nutrient loading into the western basin").

102. *About H2Ohio*, H2OHIO, https://h2.ohio.gov/ [https://perma.cc/WZ8Y-7ZGG] (last visited Mar. 20, 2023).

103. *Id.* H2Ohio is run by the Ohio Department of Agriculture, Ohio Department of Natural Resources, Ohio Environmental Protection Agency, and Ohio Governor DeWine's office. *Id.*

104. *Id.* ("Soil testing, variable rate fertilization, subsurface nutrient application, manure incorporation, conservation crop rotation, drainage

the program does not provide financial support or include a cost-share option for this practice.[105] This could be because the goal of H2Ohio is to reduce phosphorous while maintaining crop yields,[106] which edge-of-field buffers would reduce by replacing former cropland with vegetation. A farmer may not obtain any funding for implementing a BMP for which the producer is already receiving state or federal funding.[107] To qualify for funding from this robust program, producers must follow specific guidelines and develop a voluntary nutrient plan, with help from their county's soil and water conservation district.[108] H2Ohio may have potential to be a turning point for how Ohio handles nutrient pollution, but the program has received mixed reviews. Some advocacy groups approve of the program,[109] others argue that participation being fully voluntary undermines the goal of the program,[110] and at least one farming group states that it is unrealistic to believe that changes in BMPs for agricultural activities will be sufficient to reach H2Ohio's goal of a 40 percent reduction in phosphorus runoff.[111] Ideally, this program will prove to meaningfully reduce nutrient loading in the western basin in the coming years.

Additionally, the Ohio Department of Agriculture, as part of the H2Ohio initiative, began the Water Quality Incentive Program (WQIP)

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water management, two-stage ditch construction, edge-of-field buffers, wetlands.").

105. H2Ohio, *All BMP Guidance Sheets* (Aug. 6, 2020), https://www.lucasswcd.org/uploads/1/1/8/3/118306178/all_bmp_guidance_sheets_exhibit_b.pdf [https://perma.cc/WZ8Y-7ZGG] [hereinafter *BMP Guidance*].

106. Ohio Dep't of Agric., *H2Ohio Farmer Incentive Program: Farmers Answering the Call*, H2OHIO, https://h2.ohio.gov/agriculture/ [https://perma.cc/6QGU-UGNU] (last visited Nov. 11, 2022) ("[P]ractices will have the most effectiveness on their farm while still producing a high yield of crop.").

107. *See generally BMP Guidance*, *supra* note 105.

108. Ohio Dep't of Agric., *supra* note 106.

109. 2020 Integrated Report, *supra* note 71, at D-40, cmt. 37 ("[A] high priority TMDL, coupled with the H2Ohio investment and recommitment to the 40% phosphorus reduction goal, builds a strong strategy needed to prevent harmful algal blooms in western Lake Erie." (Ohio Environmental Council, Freshwater Future, and the Alliance for the Great Lakes)).

110. *Id.* at D-41, cmt. 38 ("Unfortunately, [H2Ohio's] measures are either ineffective, redundant, or rely solely upon voluntary compliance insufficient to meet nutrient reduction targets." (Environmental Law & Policy Center)).

111. *Id.* at D-42, cmt. 39 ("There is no research that indicates that H2O Ohio which uses voluntary measures and BMP's will ever achieve the targeted 40% reduction. H2O Ohio is not an acceptable plan for the 40% nutrient reduction for western Lake Erie." (Lake Erie Waterkeeper)).

in December 2020.[112] WQIP, through the USDA's Lake Erie CREP,[113] "will offer a one-time payment of $2,000 per acre for new Lake Erie CREP wetlands and forested riparian buffers (buffer strip with trees) to help improve water quality in the Lake Erie watershed."[114]

State and federal governments provide a considerable amount of money in grants and cost-share plans to aid in combatting HABs, but these voluntary measures alone may not be enough. With threats that climate change will warm waters and bring more severe rain events,[115] states will need to implement enforceable BMP requirements. "[I]ncreasing public participation" paired with additional "accountability and enforcement mechanisms" may strengthen state and federal governments' ability to combat HABs.[116]

II. THE TAKINGS CLAUSE AND EDGE-OF-FIELD BUFFERS

The state-level statute this Note proposes would require landowners engaged in agricultural work that involves applying fertilizer to crops, and whose land abuts a waterway, to construct edge-of-field buffers between their fields and the waterway. Landowners, however, would not have to pay for this construction out of pocket. The proposed state-level statute would reserve funding for landowners either through existing State or federal programs[117] or through new funds the State legislature would earmark for this purpose. The Ohio EPA, in coordination with regional sewer and water districts and soil and water districts, would issue guidance on how far each buffer should extend based on factors that may include the size and character of the farming operation, the slope of the land, and soil type. This statute would differ from many statutes and regulations the Supreme Court has evaluated because it does not directly involve the government or a third party

112. Ohio Dep't of Nat. Res., *New H2Ohio Incentive Program Helps Improve Water Quality*, OHIO DEP'T OF NAT. RES. (Nov. 12, 2020), https://h2.ohio.gov/new-h2ohio-incentive-program-helps-improve-water-quality [https://perma.cc/8VVD-CWP4].

113. *See supra* Part I.A.2.

114. Ohio Dep't of Nat. Res., *supra* note 112.

115. Patel, *supra* note 19; Casey Smith, *Heavier Rainfall Will Increase Water Pollution in the Future*, NAT'L GEOGRAPHIC (July 27, 2017), https://www.nationalgeographic.com/science/article/water-quality-hypoxia-environment-rain-precipitation-climate-change [https://perma.cc/JS32-9S9C] ("A study states that changes in the climate would alter precipitation patterns in the U.S. and increase nutrient pollution by one-fifth by the end of the century, with the strongest impacts occurring in the Corn Belt and in the Northeast.").

116. Alisa Tschorke, *Great Lakes Water Quality Agreement: Is Honesty Without Accountability or Enforcement Still Enough?*, 15 MO. ENV'T. L. & POL'Y REV. 273, 276, 301 (2008).

117. *See supra* Introduction.

constructing anything on a landowner's property.[118] However, landowners may need assistance constructing the buffers, which could involve contracting with a third party or the government and could possibly implicate similar access issues as in *Cedar Point Nursery v. Hassid*.[119] This statute would be an affirmative land use regulation because it would require landowners to use their land in a certain way rather than placing a restriction on landowners' land use options.

Minnesota enacted a similar vegetated buffer statute requiring landowners "owning property adjacent to a water body identified and mapped on a buffer protection map [to] maintain a buffer to protect the state's water resources."[120] To comply with this statute, landowners abutting "public waters" must choose "the more restrictive of: (i) a 50-foot average width, 30-foot minimum width, continuous buffer of perennially rooted vegetation; or (ii) the state shoreland standards and criteria adopted by the commissioner under section 103F.211."[121]

Part (b) of the statute provides an alternative to the buffer for landowners engaged in farming practices, allowing them to "adopt[] an alternative riparian water quality practice, or [a] combination of structural, vegetative, and management practices . . . that provide[s] water quality protection comparable to the buffer protection for the water body that the property abuts."[122] A few landowners have challenged the Minnesota Department of Natural Resource's designation of their land as abutting "public waters," but no court has answered whether the Minnesota buffer statute itself amounts to a compensable taking.[123]

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118. *E.g.*, Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 421 (1982).

119. 141 S. Ct. 2063 (2021); *infra* Part II.A.1.

120. MINN. STAT. § 103F.48 (West 2017).

121. *Id.* The Minnesota Department of Natural Resources created a "Public Waters Inventory" in 1979, and the State's 2015 buffer statute applies to waters included in that inventory. *In re* Big Stone Cty. Request, No. A17-1255, 2018 WL 1145736, at *2 (Minn. Ct. App. Mar. 5, 2018).

122. MINN. STAT. § 103F.48 (West 2017).

123. *E.g.*, *In re* Improper Inclusion of Certain Water Courses Within Pub. Waters Inventory Maps for 71 Counties, No. A17-0904, 2018 WL 1902441 (Minn. Ct. App. Apr. 23, 2018); *see also In re Big Stone Cty*, 2018 WL 1145736, at *2, *16–17. In *In re Big Stone Cty*, the court affirmed the Minnesota Department of Natural Resources' refusal to remove a public water from its public water inventory because the landowner's appeal was time barred. *Id.* at *2. Plaintiff argued in the alternative that a county-level fifty-foot vegetated buffer requirement was an unconstitutional taking under both the U.S. and Minnesota constitutions, but the court did not reach this question. *Id.* at *16–17. Instead, the court held that the Minnesota Department of Natural Resources was not responsible for enforcing the buffer requirement. Rather the local Board of Water and

A. Federal Takings Law

The classic example of a taking is where the government exercises eminent domain to take private property for public use after paying the private landowner just compensation.[124] In 1922, the Supreme Court in *Pennsylvania Coal Co. v. Mahon*[125] first recognized that a taking can also occur in the context of government regulations. The Court explained that the government can regulate property "to a certain extent, [but] if regulation goes too far it will be recognized as a taking."[126] When a "land-use regulation 'does not substantially advance legitimate state interests *or denies an owner economically viable use of his land*,' it is a taking."[127] If the Court finds that a government action is a taking, then the government must pay the affected landowners just compensation.[128] Takings jurisprudence remained fairly stable from the 1990s to today, until the current Supreme Court issued its *Cedar Point* decision in June 2021.[129]

This idea of a regulatory taking, also called an "implicit" taking, developed into a robust area of law in the years leading up to the Court's *Cedar Point* decision.[130] According to Professor Lee Fennell, a prominent property law scholar, before *Cedar Point*, the analysis for implicit (regulatory) takings contained four main steps. If the regulation "compel[s] a permanent physical occupation" of one's property, then it is a per se physical taking requiring compensation.[131] If the regulation "forbid[s] uses that were already forbidden under applicable background principles," such as nuisance, then it is not a taking.[132] If the regulation, while not necessarily a physical invasion, "den[ies] an owner all economically viable use of her land," then it is likely a taking.[133] Courts

Soil Resources had that power, so plaintiff could not obtain relief from the Department of Natural Resources on his takings claim. *Id.*

124. *See* Lee A. Fennell, *Escape Room: Implicit Takings After* Cedar Point Nursery, 17 DUKE J. CONST. L. & PUB. POL'Y 1, 5 (2022).

125. 260 U.S. 393 (1922).

126. *Id.* at 415.

127. Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1016 (1992) (quoting Agins v. City of Tiburon, 447 U.S. 255, 260 (1980)).

128. U.S. CONST. amend. V ("No person shall . . . be deprived of . . . property, without due process of law; nor shall private property be taken for public use, without just compensation.").

129. 141 S. Ct. 2063 (2021); Fennell, *supra* note 124, at 5–6.

130. Fennell, *supra* note 124, at 6–8.

131. *Id.* at 9 fig.1. *See generally* Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982).

132. Fennell, *supra* note 124, at 9 fig.1.

133. *Id. See generally* Lucas v. South Carolina Coastal Council, 505 U.S. 1003 (1992).

analyze anything falling outside these three tests, such as regulations that restrict a landowner's use of her land but do not diminish *all* of the land's economic value, with the *Penn Central Transportation Co. v. City of New York*[134] factors.[135]

Under *Penn Central*, the Court balances three factors to determine whether a regulation amounts to a compensable taking: (1) the economic impact of the regulation, (2) the landowner's investment-backed expectations, and (3) the character of the government action.[136] However, *Cedar Point* may change a court's analysis under factor three of *Penn Central* by categorizing temporary physical invasions of property as per se takings, meaning temporary access by the government or a third party would not undergo the *Penn Central* analysis at all.[137] Previously, only permanent physical invasions of private property escaped *Penn Central* analysis and the courts considered them per se takings instead.[138]

1. *Cedar Point*

In *Cedar Point Nursery v. Hassid*, the Supreme Court held that a California law granting representatives of an agricultural workers' union temporary access to agricultural employers' land amounted to a physical per se taking requiring compensation.[139] The California law granted these union representatives access to private growers' property for one hour before work began, one hour during lunch, and one hour after work ended for a total of four, thirty-day periods in each calendar year.[140] The Court explained that although past cases "described use restrictions that go 'too far' as 'regulatory takings,'" when a government's actions "physically appropriate[] property . . . [it] is no less a physical taking because it arises from a regulation."[141] The Court reasoned that this regulation, although it only grants temporary access, "appropriates for the enjoyment of third parties the owners' right to exclude."[142] The Court held that the California law amounted to a per

134. 438 U.S. 104 (1978).

135. Fennell, *supra* note 124, at 7, 9 fig.1. *See generally Penn Cent.*, 438 U.S. 104.

136. *Penn Cent.*, 438 U.S. at 124.

137. *Infra* Part II.A.1; Fennell, *supra* note 124, at 8.

138. Fennell, *supra* note 124, at 8; *see* Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 425–26 (1982).

139. Cedar Point Nursery v. Hassid, 141 S. Ct. 2063, 2072 (2021).

140. *Id.* at 2069.

141. *Id.* at 2072.

142. *Id.*

se taking that would not undergo regulatory taking analysis.[143] The Court's *Cedar Point* decision is in tension with its earlier decision in *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*,[144] where the Court held that a government's temporary physical invasion of private property was not necessarily a per se taking, so the government did not have to pay compensation to the property owner in all such cases.[145]

Cedar Point was about a government regulation related to access to private property, so it may not bear much weight in an evaluation of land use regulations, such as the edge-of-field buffer statute proposed in this Note. Despite this, Fennell speculates that this case shows the current Court's trend toward preserving "the status quo," which could signal that the Court may continue to scale back the "muddled" regulatory takings law generally.[146] Additionally, Fennell concludes that "*Cedar Point* thus advances a line of doctrine that buffers owners from certain kinds of garden variety governmental acts by making them more expensive to carry out," because *Cedar Point*'s holding will likely require governments to pay compensation more often or develop new regulatory routes.[147] Notably, Fennell also believes that because the majority in *Cedar Point* in part sought to preserve the status quo, "Court-favored" land use regulations like zoning may continue, free from heightened per se takings scrutiny.[148]

2. Per Se Physical Takings

Per se takings are broken down into two categories: regulations that are a "permanent physical occupation" and regulations that "deprive[] the owner of all economically beneficial use of the property."[149] In

143. *Id.* ("Whenever a regulation results in a physical appropriation of property, a *per se* taking as occurred and *Penn Central* has no place.").

144. 535 U.S. 302 (2002).

145. *See Tahoe-Sierra*, 535 U.S. at 319–20 (finding that a temporary moratorium on all construction activities within a landowner's property was not a regulatory taking); Fennell, *supra* note 124, at 39–40.

146. Fennell, *supra* note 124, at 45–46.

147. *Id.* at 46.

148. *Id.*

149. *Id.* at 6; Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 434–35 (1982) (quoting Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978)) ("[W]hen the 'character of the governmental action' . . . is a permanent physical occupation of property, our cases uniformly have found a taking to the extent of the occupation, without regard to whether the action achieves an important public benefit or has only minimal economic impact on the owner."); Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1019 (1992) ("We think, in short, that there are good reasons for our frequently expressed belief that when the

Loretto v. Teleprompter Manhattan CATV Corp.,[150] decided in 1982, the Court established that any permanent, physical incursion, either by the government or by a third party at the government's direction, is a compensable taking even if the incursion is extremely minor.[151] In *Cedar Point*, the Court reiterated *Loretto*'s central holding, explaining that "[g]overnment action that physically appropriates property is no less a physical taking because it arises from a regulation."[152] Whether through a regulation or not, when "the government has physically taken property for itself or someone else . . . a per se taking has occurred."[153] *Cedar Point* took this holding a step further than *Loretto*. *Loretto* established only that *permanent* physical invasions are categorical *per se* takings that do not require *Penn Central* analysis.[154] *Cedar Point* essentially extended this holding, categorizing regulations that permit *temporary* government access to private property as per se takings.[155] But the Court did not overturn *Tahoe* because Chief Justice Roberts limited the holding in *Cedar Point* to apply to temporary access to private property only, rather than explicitly applying *Cedar Point* to the physical invasions of property covered by *Tahoe*.[156] So courts will still analyze regulations that temporarily deny a landowner all economically beneficial use under *Penn Central*.[157] But *Cedar Point* solidifies and is consistent with the Court's long-standing view that the right to exclude is the paramount "stick" in the bundle of property rights.[158]

Lucas v. South Carolina Coastal Council[159] established "the 'total taking' concept," that when a regulation prevents "all economically productive or beneficial uses of land [and] goes beyond what the relevant background principles would dictate," the regulation is a

owner of real property has been called upon to sacrifice all economically beneficial uses in the name of the common good, that is, to leave his property economically idle, he has suffered a taking.").

150. *Loretto*, 458 U.S. at 419.

151. *Id.* at 421.

152. Cedar Point Nursery v. Hassid, 141 S. Ct. 2063, 2072 (2021).

153. *Id.*

154. *Loretto*, 458 U.S. at 426.

155. *Cedar Point*, 141 S. Ct. at 2074–75.

156. Fennell, *supra* note 124, at 40; *see also* Part II.B.

157. Fennell, *supra* note 124, at 40.

158. *Cedar Point*, 141 S. Ct. at 2072 (quoting Kaiser Aetna v. United States, 444 U.S. 164, 176, 179–80 (1979)).

159. 505 U.S. 1003 (1992).

taking requiring compensation.[160] In *Lucas*, the South Carolina legislature, after plaintiff had already purchased coastal land and planned to construct single-family dwellings on it, banned all coastal development in specific locations on the Isle of Palms.[161] This regulation left plaintiff's land "valueless," so the Court held that it was a taking without just compensation.[162]

Lucas complicated the analysis for determining when *all* of someone's property is taken.[163] Courts must first determine what the "denominator" of the private property is, then use it to figure out if a regulation results in a complete loss of value to a landowner's *entire* property or if the loss of value is only to a *portion* of a landowner's property.[164] This means the court must determine whether to consider only the land a regulation effects when undergoing a takings claim analysis or the entire amount of land the plaintiff owns. For example, in *Murr v. Wisconsin*,[165] a state law banned the sale and development of adjacent lots under common ownership when the lot to be sold or developed consisted of less than one acre of developable land.[166] Plaintiffs owned two adjacent lots and both were over one acre in size but less than one acre was developable on each lot.[167] Plaintiffs planned to sell one lot to finance development of the other lot but were unable to do so because plaintiffs owned both of the lots (i.e., the lots were in common ownership) and each lot individually was under one acre.[168] Plaintiffs brought a regulatory takings claim, arguing that the regulation "depriv[ed] them of 'all, or practically all, of the use of'" the lot they wished to sell.[169] They argued that the Court should consider only the lot that the state law affected, likely in order to make a successful "categorical" total takings claim under *Lucas*.[170] The Court held that the denominator is not always the specific portion of land affected by a regulation.[171] Instead, courts must balance four factors to

160. *Id.* at 1019, 1030–31. "Background principles" are "inherent limits on title," such as nuisance law. Fennell, *supra* note 124, at 6–7; *see Lucas*, 505 U.S. at 1029–30.

161. *Lucas*, 505 U.S. at 1008–09.

162. *Id.* at 1019–20.

163. Fennell, *supra* note 124, at 6.

164. *Id.* at 39.

165. 137 S. Ct. 1933, 1943–44 (2017).

166. *Id.* at 1940.

167. *Id.*

168. *Id.* at 1941.

169. *Id.*

170. *Id.* at 1941, 1943.

171. *Id.* at 1945.

determine the proper denominator: (1) "the treatment of the land under state and local law," (2) "the physical characteristics of the land," (3) "the prospective value of the regulated land," and (4) whether the owner's "reasonable expectations about property ownership" would make her believe that her land "would be treated as one parcel, or, instead, as separate tracts."[172]

3. Exactions

Exactions became an important component of the regulatory takings doctrine in *Nollan v. California Coastal Commission*.[173] In *Nollan*, plaintiff needed to obtain a permit from the government to demolish and redevelop a plot of land.[174] The government approved plaintiff's permit request on the condition that plaintiff grant a public access easement along the beach behind his property.[175] The Court ultimately held that this condition amounted to a taking requiring state compensation because there was no "essential nexus" between the public access condition and the state's asserted goal of ensuring that the public has access to and can view the beach.[176] The Court in *Dolan v. City of Tigard*[177] added a second component. After finding an "essential nexus," a court must also determine if there is a "rough proportionality" between the required exaction and the impact of the landowner's proposed use.[178] To show a rough proportionality, the government entity imposing the exaction "must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed

172. *Id.* In *Palazzolo v. Rhode Island*, the Court concluded that although "a State may not evade the duty to compensate on the premise that the landowner is left with a token interest, . . . [a] regulation permitting a landowner to build a substantial residence on an 18-acre parcel does not leave the property 'economically idle.'" 533 U.S. 606, 631 (2001) (quoting *Lucas*, 505 U.S. at 1019). Notably, this case was decided "on the premise that petitioner's entire parcel serves as the basis for his takings claim," but did not reach the denominator question. *Id.* at 631–32.

173. 483 U.S. 825 (1987).

174. *Id.* at 828.

175. *Id.*

176. *Id.* at 825. The Court held that there was no "essential nexus" because the easement condition completely failed to advance the government's stated justification for imposing the condition. *Id.* at 837. The Court reasoned that the government could not justify requiring the public access to the Nollans' property when (1) the public is already on the beach and (2) the government's justification was to "reduce[] any obstacles to viewing the beach created by the new house." *Id.* at 838.

177. 512 U.S. 374 (1994).

178. *Id.* at 397–98.

development."[179] If the exaction has both an "essential nexus" and a "rough proportionality," then the government regulation is probably not a taking.[180]

4. Eminent Domain

If a court completes the above analysis and concludes that the government action is a regulatory taking, the government can "amend . . . the regulation, withdraw[] . . . the invalidated regulation, or exercise . . . eminent domain."[181] The Takings Clause of the Fifth Amendment requires that the government pay just compensation for any property the government takes through eminent domain for a "public use."[182] In *Kelo v. City of New London*,[183] the Supreme Court defined "public use" broadly to include "public purpose," which encompasses governments taking private "property for the purpose of [private] economic development."[184] If the taking is for a public use, then the government can exercise eminent domain and pay the landowner just compensation.[185] If the taking is not for a public use, then the government action violates the Takings Clause.[186]

The Supreme Court's broad interpretation of public use reflects "its longstanding policy" of "affording legislatures broad latitude in determining what public needs justify the use of the takings power."[187] The government's burden to show public purpose "is not onerous,"[188] and only requires showing that the action is "related to a conceivable

179. *Id.* at 391.

180. *E.g.*, Cedar Point Nursery v. Hassid, 141 S. Ct. 2063, 2079 (2021).

181. First Eng. Evangelical Lutheran Church of Glendale v. Los Angeles County, Cal., 482 U.S. 304, 321 (1987). If the government action already took all use of property by the time a court held that the action was a taking, then "no subsequent action by the government can relieve it of the duty to provide compensation for the period during which the taking was effective." *Id.* at 321.

182. U.S. CONST. amend. V ("No person shall . . . be deprived of . . . property, without due process of law; nor shall private property be taken for public use, without just compensation.").

183. 545 U.S. 469 (2005).

184. *Id.* at 477, 479–80.

185. U.S. CONST. amend. V.

186. *See Kelo*, 545 U.S. at 477. The key controversy in this case was whether taking a *private* residence for a *private* economic development rightly constitutes a public purpose. *Id.* at 472, 477. Although the issue in this Note does not involve private economic development, the general principles in *Kelo* are important for evaluating the proposed statute.

187. *Id.* at 480, 483.

188. Friend v. New Lexington Tree Farm, L.L.C., No. 2:18-CV-198, 2018 WL 4334593, at *4 (S.D. Ohio Sept. 11, 2018).

public purpose."[189] A court cannot "substitute its judgment for a legislature's judgment" about what is or is not a public use, "unless the use be palpably without reasonable foundation."[190] To calculate "just compensation," courts use the "market value of the property at the time of the taking."[191]

B. Federal Takings Law Applied to the Edge-of-Field Buffer Statute

Federal case law is not clear-cut, but based on the above takings analyses, a court will likely find this statute is not a per se taking requiring compensation. When evaluating this proposed statute, a court might view this situation similarly to *Tahoe* or *Loretto*. In *Tahoe*, the Court held that the government's thirty-two-month temporary hold on construction within certain areas surrounding Lake Tahoe was not a regulatory taking.[192] The goal of the moratorium was for the government to study at-risk areas surrounding Lake Tahoe to determine how nearby development would impact Lake Tahoe's water quality, including its nitrogen and phosphorous levels.[193] The Court held that this temporary moratorium on development did not amount to a per se taking and instead required the ad hoc factor analysis that *Penn Central* provides.[194] The proper denominator in this situation was not the thirty-two months that development was banned but rather the total time of ownership, and thus *Lucas* did not apply.[195]

To argue in support of the proposed buffer statute, similarly to the *Tahoe* moratorium, this regulation is not "the 'classi[c] taking' in which the government directly appropriates private property for its own use."[196] Rather, it is a regulation requiring landowners to use their land in a certain way in order to "'adjust[] the benefits and burdens of economic life to promote the common good.'"[197] Under the *Murr*

189. Hawaii Hous. Auth. v. Midkiff, 467 U.S. 229, 241 (1984).

190. *Id.* (quoting United States v. Gettysburg Elec. Ry. Co., 160 U.S. 668, 680 (1896)).

191. United States. v. 50 Acres of Land, 469 U.S. 24, 29 (1984) (quoting Olson v. United States, 292 U.S. 246, 255 (1934)).

192. *Id.* at 308–12, 318, 320.

193. *Id.* at 307, 309–10.

194. *Id.* at 324–27 ("'This case does not present the "classi[c] taking" in which the government directly appropriates private property for its own use,' . . . instead the interference with property rights 'arises from some public program adjusting the benefits and burdens of economic life to promote the common good.'" (first quoting E. Enters. v. Apfel, 524 U.S. 498, 522 (1998); and then quoting Penn Cent. Transp. Co. v. New York City, 438 U.S. 104, 124 (1978))).

195. *Id.* at 330–32.

196. *Id.* at 324 (quoting *Apfel*, 524 U.S. at 522).

197. *Id.* at 324–25 (quoting *Penn Cent.*, 438 U.S. at 124).

denominator factors,[198] a court could choose to view the denominator as the entirety of a landowner's farm, meaning *Lucas* would not apply and a court would have to use the *Penn Central* factors to analyze the statute.

A key issue with using *Tahoe* as controlling precedent is *Cedar Point*. As explained above, *Cedar Point* established that any permanent or temporary access to property, by the government or a third party, is a per se taking.[199] *Cedar Point* appears to "introduce[] a sharp asymmetry between temporary physical occupations and temporary deprivations of all economically beneficial use" because it leaves *Tahoe* in place.[200] It is not clear how the Court will view *Tahoe* in future cases and whether the Court's apparent decision to differentiate between temporary physical access and temporary takings will continue.[201] Fennell explains that this differentiation likely leaves the Court with two paths: scale back *Cedar Point* or overturn *Tahoe*, and Fennell concludes that the latter is more likely.[202] Others argue this differentiation between temporary access and temporary deprivation of economically beneficial use is consistent with precedent.[203] Given the Court's recent push for private property rights and, as Fennell explains, the Court's desire to preserve the "status quo,"[204] the Court would likely find that this edge-of-field buffer statute is a per se physical taking requiring compensation.

It is possible that a court could view this buffer statute as an invasion of property by the government, but reaching this conclusion is not inevitable, as this Note will explain later in this Part. Although the government is not directly taking a farmer's property and the farmer is responsible for the construction of the buffers, the government is causing a permanent structure to be placed on the farmer's land. Under this view of the statute, a court may apply *Loretto* and find that the buffer statute is a per se physical invasion requiring compensation. In

198. Murr v. Wisconsin, 137 S. Ct. 1933, 1945 (2017) ((1) "the treatment of the land under state and local law," (2) "the physical characteristics of the land," (3) "the prospective value of the regulated land," and (4) whether the owner's "reasonable expectations about property ownership" would make her believe that her land "would be treated as one parcel, or, instead, as separate tracts").

199. Fennell, *supra* note 124, at 28.

200. *Id.* at 40.

201. *Id.* at 40–41.

202. *Id.* at 41.

203. Sarah Haddon, Note, *Property Rights: Fiercely Contested, Strongly Guarded, and Continually Defended. How the Supreme Court's Decision in* Cedar Point *Emphasized the Court's Devotion to Private Property Rights*, 71 AM. U. L. REV. 349, 365 (2021).

204. Fennell, *supra* note 124, at 61.

Loretto, a New York statute mandated that all landlords allow cable companies to install cable wires on their property.[205] As explained above, the Court held that any physical invasion of private property, no matter how minor, is a taking; thus, New York owed compensation to the landlord even though the statute had the proper purpose of achieving some public benefit.[206] In explaining the importance of property rights with respect to physical invasions, the Court specified that when the "government permanently occupies physical property, it effectively destroys" the landowner's right to "possess, use[,] and dispose" of her property.[207] Ownership and the power to exclude are central components of the Court's analysis here, and the Court specifically differentiated affirmative land use regulations from physical invasions.[208]

But unlike *Loretto*, the edge-of-field buffer statute does not "effectively destroy" all three key aspects of property ownership. Supporters could argue the statute only interferes with a landowner's right to use the edge of her property abutting a waterway, but it does not strip her of her right or ability to possess or dispose of the property, nor her right to exclude. Further, this buffer statute is best characterized as an affirmative land use regulation, which the Court in *Loretto* explained (as dicta) may carry different implications from a per se physical invasion.[209] A court may also analogize this statute to

205. Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 423 (1982).

206. *Id.* at 434–35, 441 ("In short, when the 'character of the governmental action,' . . . is a permanent physical occupation of property, our cases uniformly have found a taking to the extent of the occupation, without regard to whether the action achieves an important public benefit or has only minimal economic impact on the owner." (quoting Penn Cent. Transp. Co. v. New York City, 438 U.S. 104, 124 (1978))).

207. *Id.* at 435 (quoting United States v. Gen. Motors Corp., 323 U.S. 373, 378 (1945)).

208. *Id.* at 435–36, 440 n.19 ("If § 828 required landlords to provide cable installation if a tenant so desires, the statute might present a different question from the question before us, since the landlord would own the installation. Ownership would give the landlord rights to the placement, manner, use, and possibly the disposition of the installation. The fact of ownership . . . would give a landlord . . . full authority over the installation except only as government specifically limited that authority. The *landlord* would decide how to comply with applicable government regulations concerning CATV and therefore could minimize the physical, esthetic, and other effects of the installation. Moreover, if the landlord wished to repair, demolish, or construct in the area of the building where the installation is located, he need not incur the burden of obtaining the CATV company's cooperation in moving the cable.").

209. *See id.* at 436, 440 n.19.

setback requirements, similar to those used in zoning ordinances or building codes.[210]

Alternatively, a court could consider the buffers themselves as physical government invasions because although the government does not have complete control over them, the government is requiring landowners to construct them. This takes control, land use decisions, and productive and valuable farmland away from landowners, which severely disrupts the status quo. These buffers are government-mandated, permanent, physical structures upon landowners' private property. As explained above, given the Court's clear path toward strengthening private property rights, *Loretto* and *Cedar Point* seem to provide a clear indication that this buffer statute may be a taking.

If a court agrees with the dicta in *Loretto* or otherwise believes that the buffer statute is not a per se taking, then the court must apply *Penn Central*. In *Penn Central*, New York enacted a law restricting "development of individual historic landmarks," which prohibited the owners from constructing an office building in the airspace above Grand Central Terminal, a historic landmark.[211] The purpose of this law was to benefit the citizens of New York City in part by enacting "comprehensive measures to safeguard desirable features of the existing urban fabric" of the city.[212] Additionally, the law provided for "transferrable development rights," meaning if the regulation prohibited development on a landowner's historic landmark property, then the landowner would have development rights in nearby lots.[213] The regulation also allowed for affected landowners to apply for permission to place "additions [on] designated buildings."[214] To analyze this use restriction, the Court used three factors: (1) the "economic impact of the regulation," (2) the landowner's "investment-backed expectations," and (3) "the character of the government action."[215] The Court held that the New York City land use regulation did not amount to a taking because (1) the regulation did not prevent landowners from "obtain[ing] a 'reasonable return' on [their] investment," (2) it did not interfere with current use of the parcel and thus did not interfere with the landowner's investment-backed expectations, and (3) the regulation did not involve government appropriation of private land, but rather was a permissible land use regulation designed to "enhance the quality of life" of New York City's residents.[216]

210. *See infra* Part II.D.3.a.

211. *Penn Cent.* 438 U.S. at 107, 115–16.

212. *Id.* at 109.

213. *Id.* at 113–14, 129.

214. *Id.* at 116–17.

215. *Id.* at 124.

216. *Id.* at 129, 134–36, 138.

The Court has stated that the *Penn Central* analysis "turns in large part, albeit not exclusively, upon the magnitude of a regulation's economic impact and the degree to which it interferes with legitimate property interests."[217] In *Keystone Bituminous Coal Association v. DeBenedictis*,[218] the Court focused primarily on the remaining profitability of petitioners' (coal mining companies) land use after a regulation prohibited removal of more than 50 percent of subsurface coal from beneath specific structures.[219] This 50-percent rule required petitioners to keep 27 million tons of their coal underground. For takings analysis purposes, the Court looked to the total amount of coal Keystone owned in the aggregate, and 27 million tons was only 2 percent of their total subsurface coal ownership. So, the Court held that petitioners failed to show an economic impact under *Penn Central* because the regulation only prevented petitioners from mining about 2 percent of their subsurface coal.[220]

The economic impact of the edge-of-field buffer statute will vary depending on how large a landowner's property is, how much of her farmland abuts a waterway, and how far the buffer will need to extend into her property. The second and third *Penn Central* factors are likely the determinative factors. Here, a landowner might have the investment-backed expectation that she will be able to grow crops on her entire farm. A supporter of the statute might argue that even if the landowner cannot grow crops up to the edge of her property, she could still farm on the remainder of her property.[221] A court could compare this to the regulation in *Penn Central*, where although the landowners could not construct the specific building they planned to above the terminal, the landowners could still continue to use their property as they had before the statute and could potentially construct a different building in the air space above the terminal.[222] Alternatively, a court might find that requiring a farmer to stop farming to the edge of her property means she cannot use her property exactly as she did before the statute, even if this loss of use is small. Similarly, focusing on the actual economic impact of the buffer size like in *Keystone*, the percentage of profitable cropland that the buffer statute removes depends largely on the size of the farm. If a significant portion of a small farm abuts a waterway, a landowner may have a stronger argument that the buffer statute, as applied, takes too much of her property. For larger farms, this may not be the case. If the buffer

217. Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 540 (2005).

218. 480 U.S. 470 (1987).

219. *Id.* at 475–77, 499.

220. *Id.* at 496, 498–499.

221. *See Penn Cent.*, 438 U.S. at 124–26.

222. *Id.* at 129, 136–37.

statute only results in a small portion of a large farm's land being used as a buffer, then the statute's economic effect on the landowner's investment-backed expectations is smaller.

Under the edge-of-field buffer statute, farmers could continue to farm as they did before, but this regulation does appear to go further than *Penn Central*. It will interfere with landowners' present use of their property and will essentially prevent them from using a set amount of their land for any crop-growing purpose. If a landowner challenges this statute, the regulatory takings analysis will turn on the size of the farm and buffer, and the length of farmland abutting a waterbody. A twelve-acre farm that abuts waterways on multiple sides and requires a thirty-meter buffer will have a much stronger takings claim than a fifty-acre farm that abuts a waterway on only one side and requires an eight-meter buffer.

C. Ohio Law

1. Takings Law

The Ohio Supreme Court follows the same regulatory takings analyses as federal courts.[223] The court is "bound to follow the guidelines which [the U.S. Supreme Court] has set up on facts involving federal constitutional questions,"[224] so the Fifth Amendment Takings Clause analysis at the state court level is the same as at the federal court level. In *Wymsylo v. Bartec, Inc.*,[225] the Ohio Supreme Court applied *Penn Central*[226] rather than *Loretto* or *Lucas* where "there [was] no physical invasion of appellants' property" and a property owner did not claim the government "deprive[d him] of all economically beneficial uses of [the] property."[227] In this case, a bar owner sued the Ohio Department of Health Director, alleging that the Smoke Free Act ("the Act"), which banned smoking in "public places of employment," amounted to a regulatory taking.[228] The Act required owners of these public places to

223. *See supra* Part II.A; *see, e.g.*, State *ex rel.* Shelly Materials, Inc. v. Clark Cnty Bd. of Comm'rs, 2007-Ohio-5022, ¶¶ 16–20, 875 N.E.2d 59, 64–65 (Ohio 2007) (acknowledging that *Penn Central* applies where *Lucas* and *Loretto* do not apply); Home Builders Ass'n of Dayton & the Miami Valley v. City of Beavercreek, 729 N.E.2d 349, 355 (Ohio 2000) (explaining that *Nollan* and *Dolan* establish the test for land use exactions).

224. State v. Fletcher, 271 N.E.2d 567, 569 (Ohio 1971).

225. 2012-Ohio-2187, 970 N.E.2d 898 (Ohio 2012).

226. *See supra* Part II.A and text accompanying note 136 ("Under *Penn Central*, the Court balances three factors to determine if a regulation amounts to a compensable taking: (1) the economic impact of the regulation, (2) the landowner's investment-backed expectations, and (3) the character of the government action.").

227. *Wymsylo*, 2012-Ohio-2187 ¶ 54, 970 N.E.2d at 914.

228. *Id.* ¶¶ 2–3, 54, 970 N.E.2d at 902, 914.

comply or pay a fine.[229] Compliance included "remov[ing] all ashtrays and receptacles used for disposing of smoking materials and . . . post[ing] at every entrance 'no smoking' signs."[230] The bar owner argued that the Act "confiscate[d] a proprietor's control over its indoor air" and therefore impermissibly interfered with private property rights.[231] The court held that the Act did not amount to a regulatory taking under the *Penn Central* factors because (1) the bar owner did not experience a decrease in gross sales following the implementation of the Act, (2) control over "indoor air space" is not the kind of property right that the Fifth Amendment of the United States Constitution or the Ohio State Constitution protects, and (3) the Act was a "minimally invasive way" of protecting the public from the harms of smoke, so it did not interfere with the bar owner's investment-backed expectation for his ownership of the property.[232]

2. Eminent Domain

The Ohio legislature retains power to exercise eminent domain after showing the action is necessary for some public use, but the legislature also delegated this power to other government entities. The Ohio Water Development Authority,[233] regional water and sewer districts,[234] and various other entities all have the power to exercise eminent domain. The key difference between Ohio takings law and federal takings law is when the government can exercise eminent domain. After the *Kelo* decision announced a broad definition of "public use" under the Takings Clause,[235] many state legislatures and courts, including those in Ohio, adopted a narrow view of public use as a matter of state law.[236] In

229. *See id.* ¶ 3, 970 N.E.2d at 902.

230. *Id.* ¶ 15, 970 N.E.2d at 905 (quoting OHIO REV. CODE ANN. § 3794.06 (West 2018)). "Only private residences and certain family-owned and-operated places of employment, retail tobacco shops, outdoor patios, private clubs, and designated smoking rooms in hotels and nursing homes are exempt from the reach of the act." *Id.* (citing § 3794.03).

231. *Wymsylo*, 2012-Ohio-2187 ¶ 54, 970 N.E.2d at 914.

232. *Id.* ¶¶ 55–57, 970 N.E.2d at 915.

233. OHIO REV. CODE ANN. §§ 6121.04(J) (West Supp. 2020), 6121.041, 6121.18 (West 2007).

234. *Id.* §§ 6119.04(D) (West 2007), 6119.06(M) (West Supp. 2020), 6119.11(A) (West 2007).

235. *See supra* Part II.A.4 and text accompanying notes 183–86.

236. City of Norwood v. Horney, 2006-Ohio-3799, ¶¶ 75–76, 853 N.E.2d 1115, 1140–41 (Ohio 2006) (applying the *Kelo* dissenters' analysis to the Ohio Constitution's version of the public use requirement); Marc Mihaly & Turner Smith, Kelo*'s Trail: A Survey of State and Federal Legislative and Judicial Activity Five Years Later*, 38 ECOLOGY L.Q. 703, 715 (2011).

Norwood v. Horney,[237] the Ohio Supreme Court held that the government can consider "economic benefit to the government and community" when deciding whether to exercise eminent domain, but evidence of an economic benefit alone is not enough to demonstrate public use.[238] However, this limited definition of public use only applies where a government entity takes property for a third-party private entity.[239] The Ohio Supreme Court has actually interpreted "public use" broadly in other cases. The court does not interpret the "public use" requirement in the Ohio Constitution[240] as a constraint on when a government entity[241] may exercise eminent domain.[242] Instead, the court views "public use" as including "public welfare."[243] In addition to public use, an Ohio government entity may only exercise eminent domain "upon [showing] necessity for the common good."[244] The Ohio legislature established that a government entity's determination that eminent domain is necessary creates a rebuttable presumption of validity when challenged.[245]

Although Ohio does not generally have strong property laws limiting government or government agency use of eminent domain,[246]

237. 2006-Ohio-3799, 853 N.E.2d 1115 (Ohio 2006).

238. *Id.* ¶ 9, 853 N.E.2d at 1123.

239. OHIO REV. CODE ANN. § 163.01(H) (West 2016).

240. OHIO CONST. art I, § 19 ("Private property shall ever be held inviolate, but subservient to the public welfare. . . . [W]here private property shall be taken for public use, a compensation therefor shall first be made in money, or first secured by a deposit of money; and such compensation shall be assessed by a jury, without deduction for benefits to any property of the owner.").

241. State governments have power to exercise eminent domain, along with government agencies or entities to which the state delegates eminent domain authority. *See* Pontiac Improvement Co. v. Bd. of Comm'rs, 135 N.E. 635, 637 (Ohio 1922).

242. *See* City of Toledo v. Kim's Auto & Truck Serv., Inc., 2003-Ohio-5604, ¶ 21, No. L–02–1318, 2003 WL 22390102, at *4 (Ohio Ct. App. 6th Dist. Oct. 17, 2003) ("The Ohio Supreme Court has taken a broad view of the term 'public use.'"); *see also Norwood* ¶ 103, 853 N.E.2d at 1145 ("Although we adhere to a broad construction of 'public use,' we hold that government does not have the authority to appropriate private property based on mere belief, supposition, or speculation that the property may pose such a threat [to the public] in the future.").

243. State *ex rel.* Bruestle v. Rich, 110 N.E.2d 778, 786 (Ohio 1953).

244. State *ex rel.* Ohio Hist. Connection v. Moundbuilders Country Club Co., 2020-Ohio-276, ¶ 37, 143 N.E.3d 614, 621 (Ct. App. 5th Dist. 2020), *appeal accepted*, 2020-Ohio-3634, 148 N.E.3d 591 (Ohio 2020) (citing *Norwood* ¶ 43, 853 N.E.2d at 1131).

245. OHIO REV. CODE ANN. § 163.09(B)(1)(a) (West Supp. 2020).

246. Mihaly & Smith, *supra* note 236, at 715–17.

Ohio does have restrictive property laws relating to agricultural uses.[247] Among other benefits to farmers,[248] the government cannot exercise eminent domain over more than ten acres or 10 percent, whichever is larger, of an agricultural operator's land if that land is used for "agricultural production in an agricultural district."[249] Most farms in Ohio are at least ten acres.[250]

Additionally, some states have takings "compensation" laws that "require the government to pay property owners subject to regulatory restrictions when compensation is not owed under the federal (or state) constitution[]."[251] These statutes essentially broaden the types of situations where regulations amount to compensable takings and thus "require the public to pay to enforce regulatory requirements."[252] Some have argued that these types of laws may "undermine environmental and land use protections."[253] Importantly, these types of laws reduce governments' abilities and willingness to "adopt laws and regulations they would have otherwise adopted," and often lead to less enforcement of existing regulations.[254]

D. Ohio Law Applied to the Edge-of-Field Buffer Statute

As explained above, Ohio takings law is similar to federal takings law. It is likely that Ohio courts would reach a similar conclusion about

247. *See generally* OHIO REV. CODE ANN. §§ 929.01–929.05 (West 2012 & Supp. 2020).

248. *E.g.*, *id.* § 1.08(D)(1) (West Supp. 2020) ("[A]bsent any environmental or public health hazard that cannot be corrected under its current use or ownership, a property is not a blighted parcel because of any condition listed in division (B) of this section if the condition is consistent with conditions that are normally incident to generally accepted agricultural practices and the land is used for agricultural purposes.").

249. *Id.* § 929.05(A) (West 2012); *id.* § 929.02(A)(1) (West Supp. 2020) ("Any person who owns agricultural land may file an application . . . to place the land in an agricultural district for five years if, during the three calendar years prior to the year in which that person files the application, the land has been devoted exclusively to agricultural production . . . and if: (a) The land is composed of tracts, lots, or parcels that total not less than ten acres; or (b) The activities conducted on the land produced an average yearly gross income of at least twenty-five hundred dollars during that three-year period.").

250. *See supra* note 22 and accompanying text.

251. John D. Echeverria & Thekla Hansen-Young, *The Track Record on Takings Legislation: Lessons from Democracy's Laboratories*, 28 STAN. ENV'T L. J. 439, 442 (2009).

252. *Id.* at 443.

253. *Id.*

254. *Id.* at 444 ("Despite their label as 'compensation' measures, these measures have very, very rarely resulted in actual financial payments to property owners subject to regulatory restrictions.").

the edge-of-field buffer statute to federal courts' conclusion. Notably, in *Wymsylo*, the court stated that the Smoke Free Act did not amount to a "physical invasion" of the bar owners' property.[255] The court found this despite the fact that the statute required the owner to install "no smoking" signs at each entrance and "remove all ashtrays and receptacles used for disposing of smoking materials."[256] When evaluating the edge-of-field butter statute, a state court might view the affirmative requirement to construct a buffer similarly to the requirements in the Smoke Free Act. If so, a court might hold that the buffer requirement is not a physical taking and apply the fact-specific *Penn Central* factors rather than find that the statute created a permanent physical invasion and apply *Loretto*.

1. Eminent Domain

Although the Ohio Supreme Court established a more narrow "public use" scope than the U.S. Supreme Court for eminent domain purposes, that narrower interpretation applies only where the government takes property and gives it to a private entity.[257] Here, the state government would retain ownership of the land and use it to reduce pollution in Lake Erie and other waterways, which would provide a clear benefit to the public that may satisfy the Ohio public use requirement. Although the definition of public use can include public benefits,[258] and the Ohio Supreme Court interprets public use broadly, most of the enumerated public uses in the Ohio legislature's statutory definition of "public use" involve actual *use* of appropriated land.[259] But because the court construes public use broadly, courts could adopt a broad interpretation of the statutory definition of public use, and perhaps conclude that "similar . . . uses of land"[260] encompasses the

255. Wymsylo v. Bartec, Inc., 2012-Ohio-2187, ¶ 54, 970 N.E.2d, 898, 914–15 (Ohio 2012).

256. *Id.* ¶ 15, 970 N.E.2d at 905.

257. *See* City of Norwood v. Horney, 2006-Ohio-3799, ¶ 1, 853 N.E.2d 1115, 1122 (Ohio 2006) ("[W]e decide the constitutionality of a municipality's taking of an individual's property by eminent domain and transferring the property to a private entity for redevelopment."); *id.* ¶ 72, 853 N.E.2d at 1139 ("Similarly, when the state takes an individual's private property for transfer to another individual or to a private entity rather than for use by the state itself, the judicial review of the taking is paramount.").

258. *See id.* ¶¶ 66–67, 853 N.E.2d at 1136–37 (using public benefit and public use interchangeably).

259. OHIO REV. CODE ANN. § 163.01(H)(2) (West 2016) ("[U]tility facilities, roads, sewers, water lines, public schools, public institutions of higher education, private institutions of higher education . . . , public parks, government buildings, port authority transportation facilities, projects by an agency that is a public utility, and similar facilities and uses of land.").

260. *Id.*

buffers. Ultimately, the contours of the public use definition are not necessarily clear from the text alone, and the judiciary retains the right to conclude what constitutes a public use.[261]

If courts today agree with the Ohio Supreme Court's 1953 interpretation[262] of public use and find that it includes public welfare, then courts could find that the buffer statute satisfies the public use requirement. Dicta from *Norwood* specifically may support this conclusion. In *Norwood*, the court indicated that "[a] public benefit may inure from . . . the preservation of open land to secure recreational, ecological, and aesthetic value in a community."[263] The purpose of a government entity, likely a regional sewer and water district or the Ohio Water Development Authority, exercising eminent domain would be to make Ohio waterways cleaner, reduce the frequency of HABs leading to toxic conditions, and reduce the threat that toxic algae will enter public water supplies.[264] These goals clearly focus on improving public welfare and address the ecological value of Ohio waterways.

Further, in *City of Wadsworth v. Yannerilla*,[265] Wadsworth obtained an easement from another city for seventeen acres, on which Wadsworth planned to build "and operate drinking-water production wells."[266] Wadsworth then needed to obtain transport easements across defendants' property.[267] These "easements were necessary to transport and provide water service to the citizens of Wadsworth."[268] The Ohio Ninth District Court of Appeals held that "providing a new source of drinking water for Wadsworth's residents is well within the meaning of 'public use,'" and that "delivering the water to the citizens of Wadsworth" clearly served a public purpose.[269] Applying *Wadsworth* to the buffer statute, a court could certainly find that constructing buffers

261. *See Norwood* ¶ 69, 853 N.E.2d at 1138 ("[O]ur precedent does not demand rote deference to legislative findings in eminent-domain proceedings, but rather, it preserves the courts' traditional role as guardian of constitutional rights and limits."); *see also id.* ¶ 72, 853 N.E.2d at 1139–40 ("A primordial purpose of the public-use clause is to prevent the legislature from permitting the state to take private property from one individual simply to give it to another. Such a law would be a flagrant abuse of legislative power, . . . and to give deference to it would be a wholesale abdication of judicial review.").

262. State *ex rel.* Bruestle v. Rich, 110 N.E.2d 778, 786–87 (Ohio 1953).

263. *Norwood*, ¶ 75 n.12., 853 N.E.2d at 1140 n.12.

264. *See supra* Part I.

265. 2006-Ohio-6477, 866 N.E.2d 1113 (Ct. App. 9th Dist. 2006), *appeal denied*, 2007-Ohio-1986, 865 N.E.2d 914 (Ohio 2007).

266. *Id.* ¶ 2, 866 N.E.2d at 1115.

267. *Id.* ¶ 3, 866 N.E.2d at 1115.

268. *Id.* ¶¶ 3, 12, 866 N.E.2d at 1115–16.

269. *Id.* ¶ 12, 866 N.E.2d at 1116.

to reduce water pollution for the public, much like delivering water to the public, is not exactly a use by the public. Perhaps a court could characterize it as an indirect public use. Transporting water across property creates an indirect public use much like reducing runoff pollution with edge-of-field buffers results in an indirect public use—cleaner water.

If a court concludes that the edge-of-field buffer statute rises to the level of a compensable taking, calculating the exact compensation value is complex, and a complete calculation of compensation is beyond the scope of this Note. Generally, courts determine compensation value based on what the property "is worth . . . for any and all uses for which it can reasonably and practically be adapted."[270] This is the "fair market value" of the land.[271] For a taking where the entire parcel is not taken, "the owner is entitled to receive compensation not only for the property taken, but also for damage to the residue as a result of the take."[272] To determine the fair market value of the land before and after the taking, courts weigh several factors, including "loss of ingress and egress, diminution in the productive capacity or income of the remainder area, and any other losses reasonably attributable to the taking."[273] When a property owner challenges compensation value in an appropriation action, a jury will assess the proper amount for compensation.[274] If a government entity files an appropriation action and the property owner does not challenge it, then the government entity itself can move for the court to "declare the value of the property taken and the damages, if any, to the residue."[275]

As of 2021, the USDA estimates the average cost of farm real estate at $6,600 per acre, cropland at $6,800 per acre, and pasture at $3,440.[276] The buffer statute targets cropland, so that is likely the value a court would apply. A landowner would likely argue that the value is much higher than $6,800 per acre because the removal of productive cropland would result in permanent loss of annual crop profits. Despite this

270. Masheter v. Kebe, 359 N.E.2d 74, 76–77 (Ohio 1976).

271. City of Norwood v. Forest Converting Co., 476 N.E.2d 695, 699 (Ohio Ct. App. 1st Dist. 1984).

272. Wray v. Frank, 2015-Ohio-4248, ¶ 18, 44 N.E.3d 998, 1004 (Ct. App. 4th Dist. 2015) (quoting Beasley v. Watkins-Alum Creek Co., 2011-Ohio-6792, ¶ 17, Nos. CA2010-09-021, CA 2010-09-027, 2011 WL 6920732, at *3 (Ct. App. 12th Dist. Dec. 30, 2011)).

273. *Id.* ¶ 18, 44 N.E.3d at 1004–05.

274. OHIO REV. CODE ANN. § 163.09(A) (West Supp. 2020).

275. *Id.*

276. Nat'l. Agric. Stat. Serv., *Farm Real Estate Values and Cash Rents*, DEP'T OF AGRIC. 1 (Aug. 9, 2021), https://www.nass.usda.gov/Statistics_by_State/Ohio/Publications/Current_News_Releases/2021/nr2137oh.pdf [https://perma.cc/Y9NL-ZHQB].

argument, Ohio government entities could still consider eminent domain as a viable option even if the fair market value is higher than $6,800. First, the buffer statute only targets farms abutting waterways without existing buffers. This means the government would not need to take any land from landowners (1) whose land does not abut waterways or (2) who enrolled in a federal or state cost-share program[277] and thus already have edge-of-field buffers in place.

Second, the size of the buffer will vary based on the Ohio EPA's findings, as explained in the proposed buffer statute, but will likely range from ten to twenty meters.[278] Depending on how large the property is, this size of buffer may not encompass much land, relative to the size of the property. It is also possible that the buffer statute only amounts to a compensable taking when challenged as applied, meaning the government would not need to exercise eminent domain over every single farm in the state. This would considerably reduce projected costs.

Finally, the benefit of reducing the size of HABs outweighs the cost of exercising eminent domain, especially if the buffer statute is not facially invalid. A 2015 Canadian study found that the projected costs of HABs to economies in the Lake Erie basin are incredibly high. If HABs in Lake Erie continue, the "blooms will impose equivalent annual costs equal to $272 million [Canadian dollars ($347,830,535 U.S. dollars)] in 2015 prices over a 30-year period."[279] These costs will largely affect the tourism industry and recreational users of the lake.[280] The study found that intervention methods, which are, combined, under $1.294 billion 2015 Canadian dollars ($1.01 billion 2015 U.S. dollars),[281] are justified from a cost-benefit analysis perspective.[282] One of the specific intervention methods the study suggests is constructing "natural buffers along . . . riparian zones found in farmland."[283]

Additional variables for assessing the actual compensation value under this buffer statute include the many statutory protections that agricultural property in agricultural districts enjoys. These include protection from eminent domain actions taking more than ten acres or

277. *See supra* notes 73–88 and accompanying text.

278. *See supra* notes 16–17 and accompanying text.

279. Robert B. Smith, Brad Bass, David Sawyer, David Depew & Susan B. Watson, *Estimating the Economic Costs of Algal Blooms in the Canadian Lake Erie Basin*, 87 HARMFUL ALGAE, June 2019, at 1, 1; Werner Antweiler, *Foreign Currency Units per 1 Canadian Dollar, 1950–2020*, Univ. of British Columbia 1, https://fx.sauder.ubc.ca/etc/CADpages.pdf [https://perma.cc/GQ88-DVQP] (last visited Aug. 25, 2022).

280. Smith et al., *supra* note 279, at 1.

281. *See* sources cited *supra* note 279.

282. Smith et al., *supra* note 279, at 1, 14.

283. *Id.* at 14.

10 percent of farm property[284] and tax benefits owners receive for placing their land in these districts and devoting land to purely agricultural use.[285]

Based on Ohio's public use jurisprudence and legislation, it seems that the buffer statute would satisfy the public use requirement. Ultimately, it is unlikely that the Ohio General Assembly would exercise eminent domain over a large amount of farmland to protect Ohio's waterways. The legislature both enacted numerous statutes to protect agricultural land from being regulated[286] and has not enacted meaningful legislation to combat the persistent issue of nutrient pollution.[287]

2. Home Rule

An additional concern about a state-level edge-of-field buffer statute is whether this type of land use action is a function of local self-governance or if the state retains ultimate authority. Ohio is a municipal "home rule" state, meaning that the police powers and powers of local self-government that the Ohio Constitution gives municipalities are reserved for those municipalities, while "matters of statewide concern" remain within the General Assembly's control.[288] *Canton v. State*[289] established Ohio's home rule test, explaining that "[a] state statute takes precedence over a local ordinance when (1) the ordinance is in conflict with the statute, (2) the ordinance is an exercise of the police power, rather than of local self-government, and (3) the statute is a general law."[290]

When reviewing the second prong of the *Canton* test, the Ohio Supreme Court looks to the effects of legislation to determine whether the "legislation . . . falls within the area of local self-government."[291] If the result of the legislation does not have "extraterritorial effects," and instead only affects the municipality, it is a matter of local self-

284. OHIO REV. CODE ANN. § 929.05(A) (West 2012).

285. *Id.* § 5713.03 (West Supp. 2022).

286. *See supra* notes 247–50 and accompanying text.

287. *See supra* notes 96–101 and accompanying text.

288. Wendy H. Gridley, *Municipal Home Rule*, LEGIS. SERVS. COMM. 1–3, (Feb. 12, 2020), https://www.lsc.ohio.gov/documents/reference/current/membersonlybriefs/133Municipal%20Home%20Rule.pdf [https://perma.cc/CV7H-C3SF].

289. 2002-Ohio-2005, 766 N.E.2d 963 (Ohio 2002).

290. *Id.* ¶ 9, 766 N.E.2d at 966.

291. State *ex rel.* Bd. of Comm'rs. v. Tablack, 714 N.E.2d 917, 919–20 (Ohio 1999) (quoting Village of Beachwood v. Cuyahoga Cnty. Bd. of Elections, 148 N.E.2d 921, 923 (Ohio 1958)).

government.[292] Otherwise, the "matter [is] for the General Assembly."[293] A law is a "general law" and therefore satisfies the third prong of the *Canton* test if the statute:

> (1) [is] part of a statewide and comprehensive legislative enactment, (2) appl[ies] to all parts of the state alike and operate[s] uniformly throughout the state, (3) set[s] forth police, sanitary, or similar regulations, rather than purport[s] only to grant or limit legislative power of a municipal corporation to set forth police, sanitary, or similar regulations, and (4) prescribe[s] a rule of conduct upon citizens generally.[294]

Notably, in *Canton*, the Ohio Supreme Court also explained that a state-level statute serving an "overriding statewide interest" will satisfy the "police, sanitary, or other similar regulations" requirement of the third *Canton* test prong.[295]

In *Cleveland v. State*,[296] the Ohio Supreme Court held that a state-level statute giving the "Public Utilities Commission of Ohio authority to regulate towing companies as 'for-hire motor carriers'" was "a general law" under the *Canton* test when viewed as a whole.[297] First, the statute is part of a "statewide . . . legislative enactment" because the Public Utilities Commission of Ohio is tasked with regulating towing entities statewide.[298] Second, the statute applies "uniformly throughout the state" because it applies to anyone "engaged in the towing of motor vehicles" in Ohio.[299] Third, the statute is an exercise of the state's police power because rather than limiting municipalities' power to use their local police powers, it simply places a state-level regulation on for-hire motor vehicles.[300] Finally, the court held that because the statute applied to "all entities engaged in towing operations throughout the state, without exception," the statute meets the fourth component of the third prong of the *Canton* test.[301]

If a municipality created an ordinance that conflicted with the proposed edge-of-field buffer statute, the statute would likely "take

292. *Id.* at 920 (quoting *Beachwood*, 148 N.E.2d at 923).

293. *Id.* (quoting *Beachwood*, 148 N.E.2d at 923).

294. *Canton* ¶ 21, 766 N.E.2d at 967–68.

295. *Id.* at 970.

296. City of Cleveland v. State, 2014-Ohio-86, 5 N.E.3d 644 (Ohio 2014).

297. *Id.* ¶ 1, 5 N.E.3d at 646–47 (quoting OHIO REV. CODE ANN. § 4921.25 (West Supp. 2022)).

298. *Id.* ¶¶ 10–11, 5 N.E.3d at 648–49.

299. *Id.* ¶ 12, 5 N.E.3d at 649 (quoting § 4921.25).

300. *Id.* ¶ 13, 5 N.E.3d at 649.

301. *Id.* ¶ 14, 5 N.E.3d at 649.

precedence" over the municipal ordinance as a general law under the *Canton* test. First, the purpose of the edge-of-field buffer statute is to reduce phosphorous pollution in Ohio waterways, especially those waterways that empty into Lake Erie. Certainly, a statute designed to prevent phosphorus from entering those waterways will have "extraterritorial effects," specifically reduced nutrient pollution in all Ohio waterways.

Second, the edge-of-field buffer statute is a general law. The statute will apply uniformly across Ohio to all landowners engaged in farming operations whose land abuts a waterway. Third, the statute is a clear exercise of a police power because it does not limit a municipality's ability to regulate local land use decisions and addresses the "overriding statewide interest" of reducing nutrient pollution and HABs. Fourth, the statute applies uniformly to all farmers engaged in growing crops on land abutting Ohio waterways, so the statute should pass the *Canton* test.[302]

3. Analogous Law

a. Setback Requirement

A court might also analogize the statute this Note proposes to zoning setback requirements. Zoning is one of many "police powers" inherent to states as sovereigns.[303] In Ohio, the state constitution delegates police powers, including the power to implement zoning regulations, to local governments.[304] Municipalities may enact zoning ordinances under this delegated police power so long as the ordinances "protect the public health, safety, or morals, or the general welfare of the public."[305] Ohio courts presume that zoning ordinances are constitutionally valid unless the government acted arbitrarily or the action was not reasonably related to its exercise of the police powers.[306] Counties and townships are more limited in their powers to zone. These governments may only zone pursuant to state law and must develop a

302. In addition, states that operate under "Dillon's Rule" rather than home rule will also have power to enact the edge-of-field buffer statute because under Dillon's Rule, localities only have powers that state law specifically delegates to them. JESSE J. RICHARDSON, MEGHAN ZIMMERMAN GOUGH & ROBERT PUENTES, THE BROOKINGS INSTITUTION, IS HOME RULE THE ANSWER? CLARIFYING THE INFLUENCE OF DILLON'S RULE ON GROWTH MANAGEMENT 1 (2003), https://www.brookings.edu/wp-content/uploads/2016/06/dillonsrule.pdf [https://perma.cc/Q5HZ-7UU7].

303. Nat'l Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 519, 536–37 (2012).

304. Gridley, *supra* note 288, at 1, 4.

305. Ohioans for Concealed Carry, Inc. v. City of Clyde, 2008-Ohio-4605, ¶ 30, 896 N.E.2d 967, 972 (Ohio 2008) (quoting Marich v. Bob Bennett Constr. Co., 2008-Ohio-92, ¶ 11, 880 N.E.2d 906, 911 (Ohio 2008)).

306. Jaylin Invs., Inc. v. Village of Moreland Hills, 2006-Ohio-4, ¶ 10, 839 N.E.2d 903, 906 (Ohio 2006).

comprehensive plan before enacting any zoning ordinance.[307] When a landowner challenges a zoning ordinance on its face, courts apply rational basis scrutiny, so the landowner must show that the ordinance "has no rational relationship to a legitimate governmental purpose and it may not constitutionally be applied under any circumstances."[308] Thus, for a zoning ordinance to remain valid, it must only pass rational basis review and not violate other provisions of the state or federal constitution, including the Takings Clause.[309] Courts will also "balance the benefits to the public against the disadvantages to the private interests of the landowner" when analyzing a zoning ordinance.[310] Further, any action taken at the municipal or city level pursuant to delegated police powers must not conflict with any general laws created at the state level.[311]

Notably, in most situations, Ohio law specifically bars counties and townships from prohibiting or limiting agricultural land uses and construction of buildings used for agriculture.[312] Township and county zoning boards and commissions do not have the power "to regulate agriculture, buildings or structures, and dairying and animal and poultry husbandry on lots greater than five acres."[313] These local governments may only restrict "[a]griculture on lots" through zoning in "platted subdivisions" where the agricultural lot is under one acre in size.[314] The General Assembly thus retains the power to regulate agricultural uses at the county and township level.[315] Whether at the

307. OHIO REV. CODE ANN. §§ 303.02(A) (West 2019), 519.02(A) (West 2022); Gridley, *supra* note 288, at 10 n.2. *But see* B.J. Alan Co. v. Cong. Twp. Bd. of Zoning Appeals, 2009-Ohio-5863 ¶ 1, 918 N.E.2d 501, 502, (holding that an unincorporated township "may rely on a comprehensive plan created at the county level").

308. *Jaylin* ¶ 11, 839 N.E.2d at 906.

309. *Id.* ¶¶ 11, 12, 839 N.E.2d at 906–07.

310. *Id.* ¶ 14, 839 N.E.2d at 907.

311. Gridley, *supra* note 288, at 4.

312. OHIO REV. CODE ANN. §§ 303.21 (West 2019), 519.21 (West Supp. 2022). Additionally, buildings that township or county inspectors certify as agricultural buildings are exempt from certain construction requirements. *Id.* § 3781.061.

313. *Id.* §§ 519.21(B)(3) (West Supp. 2022), 303.21(B) (West 2019).

314. *Id.* §§ 303.21(B) (West 2019), 519.21(B), (B)(1) (West Supp. 2022).

315. *See* Yorkavitz v. Bd. of Twp. Trs., 142 N.E.2d 655, 656 (Ohio 1957) ("[T]ownships of Ohio have no inherent or constitutionally granted police power, the power upon which zoning legislation is based. Whatever police or zoning power townships of Ohio have is that delegated by the General Assembly, and it follows that such power is limited to that which is expressly delegated to them by statute.").

state or local level, Ohio governments have the power to implement setback requirements.[316]

If a court analogized the edge-of-field buffer statute to a zoning ordinance that imposes a setback or other requirement, then the court might find that the statute is a valid government action if it does not amount to a taking and does not apply retroactively.[317] The Ohio Supreme Court held that a setback requirement included in a zoning ordinance "is not confiscatory if the property could be used in a manner permitted by the zoning resolution, and would not deny the owner reasonable use of his land."[318] However, if the zoning ordinance "restricts the use of the land as to render it valueless, the permitted uses are not economically feasible, or the regulation permits only uses which are highly improbable or practically impossible under the circumstances," then the ordinance is unconstitutional.[319]

In *Valley Auto Lease of Chagrin Falls, Inc. v. Auburn Township Board of Zoning Appeals*,[320] the Board of Zoning Appeals conditioned Valley Auto's receipt of a car dealership zoning permit on Valley Auto ensuring the dealership was "located at least 500 feet from any R–1 or PUD [Planned Unit Development] District, dwelling, public facility, cemetery or church."[321] The appellate court held that this setback requirement was "confiscatory in nature because [it was] not substantially related to the legitimate exercise of the police power."[322] On appeal, the Ohio Supreme Court held that the setback requirement was not unconstitutional because Valley Auto could still use the land "for a car repair shop, and [the land was] being used for the rental of two apartments," which are permitted uses under the Auburn

316. *See* OHIO REV. CODE §§ 303.02(A) (West 2019), 519.02(A) (West 2012), 4906.20(A), (B)(2)(a) (West Supp. 2022) ("The [Ohio Power Siting Board] rules also shall prescribe a minimum setback for a wind turbine of an economically significant wind farm."); K. Hovnanian Oster Homes, L.L.C. v. Lorain Zoning Bd. of Appeals, 2015-Ohio-5317, ¶¶ 2–6, No. 14CA010677, 2015 WL 9273813, at *1–2 (Ohio Ct. App. Dec. 21, 2015) (evaluating zoning board denial of plaintiff's request for variance from city's riparian setback ordinance).

317. OHIO REV. CODE § 713.15 (West 2010) ("Retroactive zoning ordinances [are] prohibited."); *see also id.* § 1.48 (West 2004) ("A statute is presumed to be prospective in its operation unless expressly made retrospective.").

318. Valley Auto Lease of Chagrin Falls, Inc. v. Auburn Twp. Bd. of Zoning Appeals, 527 N.E.2d 825, 828 (Ohio 1988).

319. *Id.* at 827.

320. 527 N.E.2d 825 (Ohio 1988).

321. *Id.* at 826 n.1, 827.

322. Valley Auto Lease of Chagrin Falls, Inc. v. Auburn Twp. Bd. of Twp. Trs., No. 1323, 1987 WL 15442, at *4 (Ohio Ct. App. Aug. 7, 1987), *rev'd sub nom. Valley Auto*, 527 N.E.2d 825.

Township Zoning Resolution.[323] In addition, because the list of conditional uses requiring a zoning certificate and 500-foot setback were all "more intensive businesses and would have a greater impact on the surrounding residential or PUD area," the Supreme Court of Ohio held that the setback was "reasonably justified by the nature of the conditional uses themselves."[324] Thus, the setback requirement "d[id] not deny [Valley Auto] a reasonable use of its land."[325]

Similar to a setback, the edge-of-field buffer statute establishes a specific distance from waterways, based on a determination by the Ohio EPA, within which a landowner could not engage in farming operations. A court could decide that the nature of the land use makes the buffer statute reasonable because it separates a high-impact land use—a farming operation where a landowner applies fertilizer to crops—from the surrounding area (waterways). The traditional and foundational purpose for zoning in general is to separate incompatible land uses,[326] so a court could extend that rationale here. Further, a court is not likely to find that the buffer statute is "confiscatory" because landowners could still use their land for farming. The statute will not make landowners' ability to farm impossible but would reasonably limit the space available to engage in the practice, similar to the 500-foot setback in *Valley Auto*. Additionally, a court would probably find that the buffer statute is within the state's police power because the statute's purpose is to reduce nutrient runoff, which relates to the public's health and general welfare.[327]

Many municipal zoning codes also require landowners to construct specific things on their property, such as parking lot islands.[328] A court could analogize this affirmative requirement to the affirmative requirement that landowners engaged in agriculture construct edge-of-field buffers. Ultimately, even if a court analogizes the buffer statute to a zoning ordinance, that court must also find that the buffer is not a taking.

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323. *Valley Auto*, 527 N.E.2d at 828.

324. *Id.* at 827.

325. *Id.*

326. Christopher Serkin, *A Case for Zoning*, 96 NOTRE DAME L. REV. 749, 749 (2020).

327. *See supra* note 26 and accompanying text.

328. *E.g.*, 1476 Davenport Ltd. P'ship v. City of Cleveland, Bd. of Zoning Appeals, 2005-Ohio-3731, ¶ 14, No. 85872, 2005 WL 1707008, at *2 (Ohio Ct. App. July 21, 2005) ("Cleveland Cod. Ord. § 352.10(e) requires island strips for open off-street parking where there are over 100 spaces."); Krumm v. Upper Arlington City Council, 2006-Ohio-2829, ¶ 5, No. 05AP-802, 2006 WL 1530156, at *1 (Ohio Ct. App. June 6, 2006) ("Requested variance number eight ('V8') involves a reduction in the number of required parking lot islands from 26 to 11.").

b. Building Code

A court might also analogize the buffer statute to a building code. A state's power to create building codes and to delegate power to local governments to enact their own building codes comes from the state's inherent police powers.[329] A state action is valid under the state's inherent police powers when the action "bear[s] a real and substantial relation to the object sought to be obtained, namely, the health, safety, morals or general welfare of the public, and [is] not arbitrary, discriminatory, capricious or unreasonable."[330] The Ohio legislature permits both state and local building codes, but the local building codes may not conflict with state-prescribed building codes.[331] Building codes regulate all aspects of buildings, including safety requirements,[332] building materials,[333] restrictions based on use and occupancy of a building,[334] and protective measures during construction and demolition of buildings.[335] Specifically, during construction and demolition of buildings, workers must "control water runoff and erosion" to protect adjoining property.[336] When building code regulations change, owners only need to stay in compliance with the code rules that existed at the time of construction, unless code officials determine that a condition is "dangerous to life, health, or safety,"[337] meaning revisions to building codes typically apply prospectively, not retrospectively.

The buffer statute would require landowners to comply in similar ways as they would with a building code. Landowners would have to construct edge-of-field buffers in accordance with the statute, like installing safety equipment in a building. And the statute imposes restrictions based on a landowner's use of her land, similarly to how building codes categorize restrictions based on specific uses. A court might view building safety requirements as comparable to the buffer statute because the statute places mandatory requirements on how a landowner can use her land to protect other property. The key

329. Bogen v. Clemmer, 180 N.E. 710, 711 (Ohio 1932).

330. State v. Thompkins, 664 N.E.2d 926, 928 (Ohio 1996).

331. City of Eastlake v. Ohio Bd. of Bldg. Standards (*In re* Decertification of Eastlake), 422 N.E.2d 598, 599–600 (Ohio 1981).

332. OHIO REV. CODE ANN. § 3781.103 (West 2018) (requiring deadbolt locks in apartment buildings); *id.* § 3781.104 (requiring smoke detection systems in specific apartments and condominiums); *id.* §§ 3781.107–108 (requiring fire protection and suppression systems in certain buildings).

333. *E.g.*, OHIO ADMIN. CODE §§ 1901–1908 (2018) (regulating how builders may construct buildings with concrete).

334. *E.g.*, *id.* §§ 401–426.

335. *Id.* §§ 3301–3313.

336. *Id.* § 3307.1.

337. *Id.* § 3401.2; § 3401.3.1.

differences might be that a building code requiring workers to prevent runoff from a construction site is (1) to protect *adjacent* property and (2) only a temporary measure. The buffer statute may result in protecting adjacent properties from the adverse effects of nutrient pollution, but it is largely aimed at preventing HABs in Lake Erie and waterbodies generally. The buffers are also permanent structures that farmers would have to construct on their land rather than temporary preventive measures.

Additionally, the Ohio legislature explicitly states that buildings should be "so constructed, erected, equipped, and maintained that they shall be safe and sanitary for their intended use and occupancy."[338] In opposition to the proposed buffer statute, a court might find that farms as they exist now are safe for their intended use because the nutrient runoff that this buffer statute seeks to reduce does not create any danger on the property itself. Alternatively, section 3781.06(C)(6) includes concern for public safety within the definition of "safe,"[339] and nutrient runoff clearly contributes to HABs, which harm the public.[340] It is possible a court could construe the statute broadly to include safety to the public generally and find that edge-of-field buffers are similar to a building ordinance and a reasonable exercise of the state's police powers.

III. ALTERNATIVES

Unless a court decides that edge-of-field buffers amount to a physical invasion of property, whether the proposed statute is a taking turns on the size of the affected farm, the size of the required edge-of-field buffer, and the court's desire to adhere to the status quo. The federal government has not established meaningful land use restrictions to combat nonpoint source pollution, and some believe this is because "of the federal government's deference to the traditional state police power to regulate private land use to promote public[] health, safety, and welfare."[341] A potential state-level alternative to the proposed buffer statute that may escape a takings holding could be a statewide shoreline setback act that bans fertilizer application within a certain setback distance and does not exempt agricultural land uses from compliance. A statewide shoreline setback act would remove the affirmative requirement of the buffer statute while still preventing

338. OHIO REV. CODE ANN. § 3781.06(A)(1) (West Supp. 2020).

339. *Id.* § 3781.06(C)(7) ("'Safe,' with respect to a building, means it is free from danger or hazard to the life, safety, health, or welfare of persons occupying or frequenting it, *or of the public* . . . ." (emphasis added)).

340. *See supra* notes 24–26 and accompanying text.

341. Alan W. Flenner, Comment, *Municipal Riparian Buffer Regulations in Pennsylvania—Confronting the Regulatory Takings Doctrine*, 7 DICK. J. ENV'T L. & POL'Y 207, 212–13 (1998).

fertilizer application within a dangerous distance of waterways. This could encourage landowners to enroll in voluntary edge-of-field buffer funding programs[342] to fill in the land on which they can no longer apply fertilizer. This also removes the opportunity for a court to apply *Loretto* and find a physical per se taking of property because no physical taking would occur. Although this Note does not discuss the issue, a statewide shoreline zoning act may prevent successful due process claims from landowners because it applies to all property owners with land abutting waterways, not only farmers.

Maine has a similar law: the Mandatory Shoreland Zoning Act.[343] This act requires all municipalities develop zoning ordinances with "minimum guidelines" to protect specific river segments and specified bodies of saltwater, wetlands, and streams.[344] The alternative this Note proposes would act as an expansion of this type of statute and could also include a similar provision for municipalities to specifically implement zoning. Although counties and townships may not zone to restrict agricultural uses in Ohio, this restriction does not apply to municipalities.[345] Depending on how different state regulatory takings doctrines function, this setback act alternative may still amount to a taking. If that is the case, then state governments could consider exercising eminent domain.

In Ohio specifically, the Ohio EPA and Department of Agriculture could encourage participants in the H2Ohio voluntary program[346] to construct edge-of-field buffers and could provide funds and training for construction and upkeep. This resolution would not solve Ohio's lack of enforceable requirements, but it might encourage farmers who already participate in the program to consider constructing these buffers. Ohio could also adopt a statewide shoreline setback act along with adding edge-of-field buffers to H2Ohio. This option, again, removes affirmative requirements on farmers but still imposes a mandatory requirement on landowners to reduce nutrient runoff. It also leaves the decision about how to use the land within that setback area up to the landowner. This combination of voluntary and mandatory land use tools creates a middle ground for courts that are wary about deviating from the status quo but aware of Ohio's desperate need to reduce the severity of HABs.

342. *See supra* Part I.B.2.

343. ME. REV. STAT ANN. tit. 38, § 438-A (West 2022).

344. *Id.* § 438-A ("These minimum guidelines must include provisions governing building and structure size, setback and location and establishment of resource protection, general development, limited residential, commercial fisheries and maritime activity zones and other zones."); *id.* § 435.

345. *See* OHIO REV. CODE ANN. §§ 303.21 (West 2019), 519.21 (West Supp. 2020).

346. *See supra* Part I.B.2.

Finally, an option that the U.S. EPA could explore at the federal level is prioritizing giving CWA section 319[347] grant funding to states whose nonpoint source pollution programs include a state-level enforceable edge-of-field buffer requirement. Section 319 gives the EPA Administrator authority to make grants "subject to such terms and conditions as the Administrator considers appropriate."[348] Specifically, the EPA may "give priority in making grants . . . to States which have implemented or are proposing to implement management programs which will . . . control particularly difficult or serious nonpoint source pollution problems."[349] A potential issue with this alternative is that, as explained above, the federal government usually does not get involved with state-level land use planning. Current EPA guidance for what is required for states to obtain section 319 grant funding is broad and leaves the details of the nonpoint source pollution programs up to the states.[350]

Recently, the EPA Office of Water released a memorandum encouraging state nonpoint source pollution program managers to focus on section 319 projects that align with the U.S. EPA's environmental justice goals.[351] The EPA does not require states to prioritize environmental justice projects for section 319 applications, but the memorandum makes clear that the EPA prefers section 319 grant projects that at least take environmental justice concerns into consideration.[352] Although prioritizing edge-of-field buffers in state nonpoint source pollution programs would not be an EPA-wide policy or program like environmental justice, the EPA could still issue a similar memorandum explaining why states should adopt enforceable edge-of-field buffer statutes, or something similar. This approach could

347. 33 U.S.C. § 1329(h)(1).

348. *Id.*

349. *Id.* § 1329(h)(5).

350. *See generally* ENV'T PROT. AGENCY, NONPOINT SOURCE PROGRAM AND GRANTS GUIDELINES FOR STATES AND TERRITORIES (2013), https://www.epa.gov/sites/default/files/2015-09/documents/319-guidelines-fy14.pdf [https://perma.cc/KW8X-N8RY].

351. LYNDA HALL, ENV'T PROT. AGENCY, NEAR-TERM ACTIONS TO SUPPORT ENVIRONMENTAL JUSTICE IN THE NONPOINT SOURCE PROGRAM (2021), https://www.epa.gov/system/files/documents/2021-10/equity-in-the-nps-program-section-319-policy-memo-signed.pdf [https://perma.cc/F23J-UGPS].

352. *Id.* ("It is a priority of the U.S. Environmental Protection Agency (EPA) to integrate environmental justice considerations into EPA programs, plans, and actions and to ensure equitable and fair access to the benefits from environmental programs for all individuals. . . . Consistent with the Justice40 initiative, EPA is committed to ensuring that the benefits of cleaner water provided by the Section (§) 319 program reach disadvantaged communities.").

strongly encourage states to include these buffers in their nonpoint source pollution management plans.

One key policy argument against states or the federal government imposing any level of edge-of-field buffer requirement is that farmers are already losing their land to urban sprawl[353] and climate change,[354] so they cannot afford to lose more. According to John Piotti of the American Farm Trust, the United States loses 1.5 million acres of farmland per year, in large part due to urban sprawl.[355] Scientists predict increased wildfires in the West and flooding in the East as climate change worsens, which will take more farmland out of production.[356] Farms in the Midwest will continue to experience increasingly extreme weather events, such as "longer and hotter summers, [and] heavier rains and droughts that collectively are predicted to significantly reduce U.S. agricultural production."[357]

Are edge-of-field buffers worth it? This contrast between farmers being victims of climate change while also contributing significantly to HABs demonstrates a clear tension between achieving water quality goals and protecting those who experience the impacts of climate change firsthand. Edge-of-field buffers are also only one tool in the land use toolbox,[358] and alone will not solve the HAB problem, so farmers could argue the loss of their land harms them more than it helps improve water quality. Perhaps Ohio's H2Ohio program will meaningfully reduce nutrient runoff so that these buffers are not required, and other states can follow Ohio's lead.

From a cost-benefit analysis perspective,[359] reducing HABs in Lake Erie specifically and throughout the country is certainly worth it. From

353. *See generally* Angus TV, *Losing Ground*, YOUTUBE (May 27, 2019), https://www.youtube.com/watch?v=UAEKCtl2eis [https://perma.cc/HZ69-ZZMA].

354. *Agriculture and Climate*, ENV'T PROT. AGENCY, https://www.epa.gov/agriculture/agriculture-and-climate [https://perma.cc/74GD-6CR7] (Jan. 19, 2022) ("Changes in ozone, greenhouse gases and climate change affect agricultural producers greatly because agriculture and fisheries depend on specific climate conditions. Temperature changes can cause habitat ranges and crop planting dates to shift and droughts and floods due to climate change may hinder farming practices.").

355. Angus TV, *supra* note 353, at 2:20–57.

356. Chris McGreal, *As Climate Change Bites in America's Midwest, Farmers Are Desperate to Ring the Alarm*, GUARDIAN (Dec. 12, 2018, 6:00 AM), https://www.theguardian.com/us-news/2018/dec/12/as-climate-change-bites-in-americas-midwest-farmers-are-desperate-to-ring-the-alarm [https://perma.cc/Y797-HUB6].

357. *Id.*

358. *See* Kilbert et al., *supra* note 29, at 114 (listing mandatory agricultural buffer strips as one of many land use tools to combat HABs).

359. *See generally* Smith et al., *supra* note 279.

a policy perspective, improving water quality also makes removing some farmland from production worth it. The edge-of-field buffers this Note proposes will not take up much land currently used for farming and are not comparable to urban sprawl, which takes large volumes of farmland out of production.[360] Ultimately, mandatory runoff-prevention techniques at the state or federal level are necessary to achieve improved water quality and prevent more HABs like the bloom in 2014.[361]

CONCLUSION

To implement the mandatory edge-of-buffer statute, the key hurdle governments must clear is the takings analysis. Based on existing case law, the buffer statute will probably not amount to a taking. But because the future of the regulatory takings doctrine is not clear after *Cedar Point*,[362] perhaps courts moving forward will take a more narrow approach to interpreting regulatory takings claims. HABs pose a clear threat to water quality and economic security, especially in the western Lake Erie basin, so lawmakers should consider adopting a mandatory edge-of-field buffer requirement. If not the statute proposed in this Note, lawmakers should at least consider adopting a fertilizer setback requirement and pairing it with a voluntary but robust nonpoint source pollution reduction program.

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360. *See supra* notes 353–54 and accompanying text.

361. *See supra* Introduction.

362. *See supra* Part II.A.1.

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