WHERE IS THE POINT? WATER QUALITY TRADING'S INABILITY TO DEAL WITH NONPOINT SOURCE AGRICULTURAL POLLUTION

*Corey Longhurst**

I. INTRODUCTION

Farmers grow crops on more than 440 million acres in the United States and ranchers use another 587 million acres in pasture and range for livestock production.[1] From this, agriculturalists produce a plentiful supply of relatively

* J.D., Drake University Law School, 2012; B.S., Agricultural Business, Colorado State University, 2009.

1. Ruben N. Lubowski et al., Econ. Research Serv., *Major Uses of Land in the United States, 2002*, 14 ECON. INFO. BULLETIN 2 (2006), http://www.ers.usda.gov/publications/EIB14/eib14.pdf.

inexpensive food to feed people in the United States and abroad. Despite the significance of agriculture to the American way of life, it is important to recognize that some agricultural practices have significant consequences on the environment and, in particular, waters of the United States.

Agricultural pesticides, fertilizers, and manure are the largest contributors to water pollution in the United States.[2] Farmers and ranchers, however, have little incentive to improve water quality because agricultural pollution is virtually unregulated under the Clean Water Act (CWA).[3] To the contrary, agriculturalists are incentivized to ensure the largest yields possible, notwithstanding the environmental consequences of agricultural runoff.[4]

While agriculture remains largely unregulated, municipal and industrial point source polluters have significantly reduced the amount of pollution they add to the nation's water.[5] Images of "sewer pipes disgorging viscous, green ooze seaward" are in our more primitive past.[6] Despite this, the United States is a long way from achieving the CWA's goal "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[7] Only 12.7% of river and stream miles and 14% of lake, reservoir, and pond acres have actually been proven to attain water quality standards.[8]

Water quality trading is seen as a way to improve water quality by creating a market that provides incentives for agricultural producers to decrease their contributions to water pollution while giving traditional point source polluters more flexibility in meeting their effluent limitations.[9] In January of 2003, the

---

2. James Boyd, *The New Face of the Clean Water Act: A Critical Review of the EPA's New TMDL Rules*, 11 DUKE ENVTL. L. & POL'Y F. 39, 45 (2000).

3. Marc O. Ribaudo & Jessica Gottlieb, *Point-Nonpoint Trading—Can It Work?*, 47 J. AM. WATER RESOURCES ASS'N 5, 5 (2011).

4. Boyd, *supra* note 2, at 45.

5. PAUL FAETH, WORLD RES. INST., FERTILE GROUND: NUTRIENT TRADING'S POTENTIAL TO COST-EFFECTIVELY IMPROVE WATER QUALITY 1 (Robert Livernash ed., 2000), *available at* http://pdf.wri.org/fertile_ground.pdf.

6. William K. Reilly, *The Issues and the Policy: View From EPA*, EPA J., Nov.—Dec. 1991, at 20, 21.

7. 33 U.S.C. § 1251(a) (2006).

8. There are 3,533,205 miles of rivers and streams, but only 449,972 miles have been assessed as good waters out of the 971,156 tested. Only 27.5% of rivers and streams have been assessed at all. There are 41,666,049 acres of lake, reservoirs, and ponds, but only 5,868,017 acres that have been assessed as good out of the 18,944,731 tested. Only 45.5% of lakes, reservoirs, and ponds have been assessed. ENVTL. PROT. AGENCY, *National Summary of State Information*, http://ofmpub.epa.gov/tmdl_waters10/attains_nation_cy.contral (last updated June 10, 2012).

9. *E.g.*, OFFICE OF WATER U.S. ENVTL. PROT. AGENCY, WATER QUALITY TRADING POLICY (2003), *available at* http://water.epa.gov/type/watersheds/trading/upload/2008_09_12_watershed_trading_finalpolicy2003.pdf.

Environmental Protection Agency (EPA) issued its water quality trading policy, providing guidance and support to states and local watersheds seeking to implement a trading program.[10]

This Note provides a critical analysis of water quality trading's ability to improve the quality of the Nation's waters. First, Part II will provide a background of the CWA. Next, Part III will discuss the problem of largely unregulated agricultural water pollution. Part IV will analyze how recent judicial developments may pressure states to take nonpoint source pollution more seriously. Part V will describe the idea of using water quality trading to address agricultural water pollution. Part VI will discuss the Nation's broader experience with using market-based mechanisms to address environmental concerns. Given this experience, Part VII will then address the unique difficulties that agricultural water pollution poses to water quality trading and the potential and legality of using trading to address its associated water quality concerns. After this analysis, Part VIII will provide conclusions and recommendations relating to addressing agricultural water pollution.

II. BACKGROUND OF THE CLEAN WATER ACT

In 1948, the Water Pollution Act created a federal role for addressing water pollution.[11] This Act was significantly expanded and reorganized in 1972 into what is now known as the CWA.[12] The Act addresses water pollution through a hybrid water quality, technology-based approach. The technology based approach set specific limits on the discharge of a pollutant from specific point sources based on available technology.[13] Additionally, the Act requires states to develop water quality standards to identify waters that did not meet those standards even with the existing technology based limitations.[14] For waters that do not meet water quality standards, states must establish the total maximum daily load necessary to meet water quality standards and allocate the load among

---

10. *Id.*

11. Water Pollution Control Act, Pub. L. No. 80-845, 62 Stat. 1155 (1948) (providing the federal government should assist states with water clean-up through financial aid and technical assistance).

12. SUMMARY OF THE CLEAN WATER ACT, ENVTL. PROT. AGENCY (last updated Feb. 24, 2011), http://www.epa.gov/lawsregs/laws/cwa.html; *see* Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816.

13. Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, § 304(b)(1)(A), 86 Stat. 816, 851.

14. *Id.* § 303(d)(1)(A), 86 Stat. at 848.

existing point source polluters.[15] This technology-based, water quality hybrid remains the CWA's approach to regulating water pollution.

A. *Technology Based Effluent Limitations*

To begin with, the CWA regulates point source discharges through the National Pollutant Discharge Elimination System (NPDES) permit program.[16] A point source is defined as "any discernible, confined and discrete conveyance."[17] Through this system, polluters must meet technology-based limitations set by the EPA in order to receive a NPDES permit.[18] The EPA may issue these permits or can approve a state's permitting program.[19] The CWA prohibits point source polluters from discharging pollutants into navigable waters of the United States without a permit.[20]

B. *Water Quality Back-Up*

The CWA's primary tool to reduce pollution is through the NPDES permit, the end-of-the-pipe approach described above used to control point source pollution. Congress also enacted section 303: Water Quality Standards and Implementation Plans, as a water quality back up to effluent limitations.[21] Under this section, states are required to establish designated uses of its water bodies and promulgate water quality criteria necessary to protect those uses.[22] States must identify waters that do not meet the water quality criteria and that will not even if technology-based limitations are fully implemented.[23] These waters must be listed on the section 303(d) impaired waters list.[24] States must prioritize those waters depending on the severity of the impairment and use of the water.[25]

In order for the water quality standards to be effective, there has to be a mechanism to translate them into discharge limitations.[26] The Total Maximum

---

15. *Id.* § 303(d)(1)(A)(C), 86 Stat. at 848.
16. 33 U.S.C. § 1342(a) (2006).
17. *Id.* § 1362(14).
18. *Id.*§§ 1311(b)(2)(A), 1342(a)(1).
19. *Id.* 33 U.S.C. § 1342(a)(1), (b).
20. *Id.* § 1311(a).
21. *See* Federal Water Pollution Control Act Amendments of 1972 Pub. L. No. 92-500, 86 Stat. 846 (codified as amended at 33 U.S.C. § 1313 (2006)).
22. 33 U.S.C. § 1313(a)(3), (d)(1)(A).
23. *Id.* § 1313(d)(1)(A).
24. *Id.* § 1313(d).
25. *Id.* § 1313(d)(1)(A) (2006).
26. HOLLY DOREMUS ET AL., ENVIRONMENTAL POLICY LAW 806 (5th ed. 2008).

Daily Load (TMDL) program is supposed to be that mechanism.[27] With the priority schedule in place, states must establish TMDLs for each pollutant impairing each water according to the schedule.[28]

TMDLs establish the "maximum amount of a pollutant which can be discharged or 'loaded' into the waters at issue from all combined sources."[29] "The TMDL process includes identification of existing sources of pollution that have caused or contributed to the degraded water quality."[30] These sources include point source, nonpoint source, and natural background pollution.[31] Once the sources are identified, the TMDL is a plan to ratchet down pollution through "wasteload allocations" for point sources and "load allocations" for nonpoint sources.[32] States largely ignored section 303 provisions (requiring states to list impaired waters, prioritize waters, and establish TMDLs) during the first decades of CWA enforcement.[33] When the TMDLs first came due on June 26, 1979, most states did not submit a single TMDL.[34] Despite this, the EPA did not exercise its authority to force states to do so.[35] Section IV will discuss more recent developments in the once latent section 303 requirements.

C. *Progress of the Clean Water Act*

Through its focus on point source pollution, the CWA helped to drive substantial improvements in our nation's water. Within ten years from when it was enacted, the CWA led to widespread reductions in lead, fecal bacteria, and biological oxygen demand loads.[36] Around this same period, the percentage of people being served by wastewater treatment plants increased from forty-two to seventy-four percent.[37] Likewise, the regulatory scheme aimed at industrial point source polluters has significantly reduced toxic and conventional pollutant discharges. The EPA estimates that the program reduces conventional pollution discharges by 108 million pounds and toxic discharges by 24 million pounds annually.[38]

---

27. *Id.*
28. 33 U.S.C. § 1313(d)(1)(C) (2006).
29. Dioxin/Organochlorine Ctr. v. Clarke, 57 F.3d 1517, 1520 (9th Cir. 1995).
30. Roger Flynn, *New Life for Impaired Waters: Realizing the Goal to "Restore" the Nation's Waters Under the Clean Water Act*, 10 WYO. L. REV. 35, 44 (2010).
31. *Id.* at 45.
32. *Id.* at 44–45.
33. Boyd, *supra* note 2, at 47.
34. DOREMUS ET AL., *supra* note 26, at 807.
35. *Id.*
36. Boyd, *supra* note 2, at 42.
37. *Id.*
38. *Id.* at 43.

Despite this success, less than thirteen percent of the miles of rivers and streams have proven to have actually attained water quality standards.[39] In fact, fifty percent of the river miles surveyed are impaired by pollution.[40] Of the rivers and streams that are assessed and classified as impaired, only approximately three percent are impaired by industrial point sources.[41] Only ten percent are impaired because of municipal discharges.[42] This means that point sources that are subject to NPDES requirements only make up an estimated thirteen percent of the current problem in water quality.

This information indicates that control on point source pollution alone will be unable to clean up the nation's water. Nonpoint source pollution needs to be addressed in order to make further gains toward achieving water quality goals. Nonpoint source pollution "comes from farms, cities, forests, mining operations, and construction sites."[43] When it rains or when the snow melts, the runoff picks up soil, animal wastes, fertilizers, pesticides, used oil, and street debris.[44] This runoff eventually reaches and pollutes surface or underground waterways.[45]

III. UNCONTROLLED AGRICULTURAL POLLUTION

While there are a number of sources of nonpoint source pollution, agriculture is the leading contributor.[46] Agricultural runoff may contain a variety of pollutants such as sediment, pathogens, pesticides and pharmaceuticals, but the most widespread and problematic are the "nutrients" nitrogen and phosphorus, which in excess supply from fertilizer and manure runoff become pollutants.[47]

---

39. There are 3,533,205 miles of rivers and streams, but only 449,617 miles have been assessed as good waters. *National Summary of State Information*, *supra* note 8. Only 27.5% of rivers and streams have been assessed at all. *Id.*

40. Of the 970,781 miles or rivers and streams assessed, only 449,617 are assessed as good waters. *National Summary of State Information*, *supra* note 8.

41. Of the 514,795 miles of impaired rivers and streams assessed, 14,179 are impaired by industrial sources. *Id.*

42. Of the 514,795 miles of impaired rivers and streams assessed, 50,762 are impaired by municipal discharges. *Id.*

43. Reilly, *supra* note 6, at 21.

44. *Id.*

45. *Id.*

46. *National Summary of State Information*, *supra* note 8.

47. OFFICE OF RESEARCH & DEV. U.S. ENVTL. PROT. AGENCY, OFFICE OF WATER, WADEABLE STREAMS ASSESSMENT: A COLLABORATIVE SURVEY OF THE NATION'S STREAMS 47 (2007), *available at* http://www.epa.gov/owow/streamsurvey/pdf/WSA_Assessment_May20007.pdf.

Excessive algae growth is caused by high levels of nitrogen and phosphorus entering surface waters.[48] These algae use dissolved oxygen and create hypoxic areas that are unable to support aquatic ecosystems.[49] The 20,000 square kilometer "dead zone" in the Gulf of Mexico is a result of nitrogen and phosphorus pollution from the Mississippi and Atchafalaya River Basins.[50] Nutrient pollution from agriculture also negatively affects drinking water and recreation. High concentrations of nutrients can be directly toxic to humans who drink the water.[51] Moreover, nutrients also stimulate the growth of pathogenic and toxin-producing microorganisms like cyanobacteria.[52]

Crop production relies heavily on nitrogen and phosphorus fertilizer, and its use has grown dramatically since the 1960s.[53] In 2010, farmers applied approximately 12.3 million tons of nitrogen fertilizer to their fields, nearly four and a half times the amount used in 1960.[54] Farmers used an additional 4.1 million tons of phosphorous fertilizer, nearly double the amount used in 1960.[55] Only a fraction of this fertilizer is actually used by plants; the remaining portion becomes waste and some runs off the land and degrades water quality downstream.[56]

Aside from chemical fertilizers used in crop production, manure from livestock production also contributes to nutrient pollution. Livestock production in the United States generates a billion tons of manure annually, which is over

---

48. SHARON BUCK ET AL., U.S. ENTL. PROT. AGENCY, OFFICE OF WATER, OFFICE OF SCI. & TECH., EPA-B22-B-00-002, NUTRIENT CRITERIA TECHNICAL GUIDANCE MANUAL: RIVERS AND STREAMS 4 (2000), *available at* http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/2009_4_22_criteria_nutrient_guidance_rivers_rivers_streams-full.pdf.

49. LA Univ. Marine Consortium, *What is Hypoxia?*, GULFHYPOXIA.NET, http://www.gulfhypoxia.net/overview/ (last visited Apr. 20, 2012).

50. HYPOXIA IN THE NORTHERN GULF OF MEXICO: AN UPDATE BY THE EPA SCIENCE BOARD ADVISORY, ENVTL. PROT. AGENCY, 10 (2007), http://yosemite.epa.gov/sab/sabproduct.nsf/0/6F6464D773A6CE85257081003B0EFE?OpenDocument (follow "Final Reports" hyperlink; then follow "Hypoxia in the Northern Gulf of Mexico" hyperlink).

51. *Nutrient Criteria Technical Guidance Manual*, *supra* note 48.

52. *Id.*

53. *See, e.g.*, *Table 1—U.S. Consumption of Nitrogen, Phosphate, and Potash, 1960–2010*, USDA, ECON. RESEARCH SERV. http://www.ers.usda.gov/data/fertilizeruse/ (last updated Jan. 5, 2012) (follow "Table 1" hyperlink under "Fertilizer Consumption and use—By Year").

54. *Id.*

55. *Id.*

56. James N. Galloway et al., *The Nitrogen Cascade*, 53 BIOSCIENCE 341, 343 (2003).

fifty times the amount of sewage that is treated each year.[57] Much of this ends up in the nation's waters. While the CWA purports to regulate discharges from confined animal feeding operations in its definition of a point source,[58] the practical effect of the EPA's CAFO rules leaves discharges largely unregulated. This is because if CAFOs do not *propose* to discharge, they are not required to have a NPDES permit.[59] Instead, manure is usually applied to the land, where storm water runoff is exempt from the regulation if the manure is applied in accordance with site specific nutrient management practices.[60]

Controlling runoff from chemical fertilizer and the land application of manure is difficult because it is so widespread and variable.[61] It depends on the weather, the characteristics of the natural environment like the soil type or the slope of the land, and farm management practices that may not be readily observable.[62] Its cumulative effects can be observed in the ambient water quality but it is difficult to trace the pollution back to specific farms.[63] Because of the difficulties in regulating agricultural runoff and the burden regulations would place on farmers, the CWA does not comprehensively address nonpoint source agricultural pollution. "Instead, it has been treated as something of an afterthought, a troublesome area to be primarily left in the hands of state and local government. As a consequence, [it] has evolved into the largest single obstacle to improving water quality."[64]

Because nonpoint source pollution is not covered under the NPDES permit requirement,[65] agricultural pollution is largely unregulated under the CWA. In fact, point sources are defined to explicitly exclude "agricultural stormwater discharges and return flows from irrigated agriculture."[66] The CWA merely ad-

---

57. STATE-EPA NUTRIENT INNOVATIONS TASK GROUP, AN URGENT CALL TO ACTION 17 (2009) (citing R. A. Freitas, Jr., *Nanomedicine, Volume I: Basic Capabilities*, LANDES BIOSCIENCE (1999)).

58. 33 U.S.C. § 1362(14) (2006) (defining a point source to include discharges from concentrated animal feeding operations).

59. JESSICA DEXTER, ENVTL. LAW & POLICY CTR., CULTIVATING CLEAN WATER 2 (2010); *see* 40 C.F.R. § 122.21(a) (2010).

60. DEXTER, *supra* note 59, at 2; *see* 40 C.F.R. § 122.23(e) (2010).

61. Charles Abdalla et al., *Water Quality Credit Trading and Agriculture: Recognizing the Challenges and Policy Issues Ahead*, 22(2) CHOICES 117, 117 (2007).

62. *Id.*

63. *Id.* at 117–18.

64. William L. Andreen, *Water Quality Today: Has the Clean Water Act Been a Success?*, 55 ALA. L. REV. 537, 593 (2004).

65. *See* 33 U.S.C. § 1311 (2006) (requiring a permit for any discharge of a pollutant); *Id.* § 1362(12)(A) (2006) (defining discharge of a pollutant as "any addition of any pollutant to navigable waters from any point source").

66. *Id.* § 1362(14) (2006).

monishes states to identify areas afflicted by nonpoint sources and to develop plans to remedy such problems, but has few teeth to actually force states to implement these plans.[67] Section 319 requires states to list waters impaired by nonpoint sources and to develop plans to redress the pollution.[68] Section 319 includes a general requirement that states develop new programs on a watershed-specific basis "to the maximum extent practicable."[69] In spite of this admonition for states, section 319 "contains no express authority for EPA to prepare or implement a nonpoint source pollution control program if a state's program is nonexistent or inadequate."[70]

Instead of being directly regulated under the CWA, federal efforts to control agricultural runoff are voluntary incentive programs designed to encourage farmers to implement better management practices.[71] The largest program to help farmers reduce runoff is through the USDA's Environmental Quality Incentive Program (EQIP) that provides farmers assistance to put in place management practices to protect water quality.[72] EQIP has had an annual budget of around $1.3 billion, and thirty-seven percent of funding between 1997 and 2004 was spent on water quality and conservation practices.[73] This approach has not reversed the tide of the United States' water quality problems. Constrained budgets may prevent the amount of expansion necessary to reach water quality goals and some commentators question whether or not existing programs are cost effective.[74]

Some states have taken it upon themselves to control nonpoint source pollution. Under California law, all dischargers are covered under the Peter-

---

67. *See generally id.* § 1329 (2006) (containing no enforcement mechanisms or penalties for failing to comply).

68. Federal Water Pollution Control Act, Pub. L. No. 107-303, 319 (2002) (codified at 33 § U.S.C. 1329(a)–(b) (2006)).

69. 33 U.S.C. § 1329(b)(4) (2006).

70. Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons from the Clean Air Act*, 23 HARV. ENVTL. L. REV. 203, 228 (1999); *see* 33 U.S.C. § 1329 (2006).

71. Abdalla et al., *supra* note 61, at 118; *see also* NAT. RES. CONSERVATION SERV., http://www.nrcs.gov/programs/ (last visited Apr. 20, 2012).

72. Marc O. Ribaudo, *Nonpoint Pollution Regulation Approaches in the U.S.*, *in* THE MANAGEMENT OF WATER QUALITY AND IRRIGATION TECHNOLOGIES 83, 89 (Jose Albiac & Ariel Dinar eds., 2009).

73. *Id.*

74. Bruce A. Babcock et al., *Renewing CRP: Results from a Study of Alternative Targeting Criteria*, IASTATE.EDU, http://www.card.iastate.edu/publications/ (search "renewing CRP"; then follow "*Renewing CRP: Results from a Study of Alternative Targeting Criteria*" hyperlink) (last visited Apr. 20, 2012).

Cologne Act, including both point and nonpoint source dischargers.[75] Nonpoint dischargers are required to file a report of waste discharge to the Regional Water Quality Control Boards.[76] The board can either issue a waste discharge requirement that may include effluent limitations or best management practices designed to implement applicable water quality control plans or waive the requirement.[77] Delaware, Kentucky, and Maryland require farmers to implement nutrient management or water quality plans that require best management practices.[78] The Oregon Department of Agriculture has the authority to promulgate water quality management plans with which landowners must comply.[79] Wisconsin requires cropland and livestock facilities to meet a set of performance standards by implementing statutorily defined best management practices.[80] The state shares the cost of implementation on existing cropland; but absent a cost sharing agreement, the farmer is exempt from the requirement.[81]

Aside from these overarching regulatory schemes, some states have in place individual management requirements. Practices that a state might specifically require are: a vegetative buffer between a field and a stream,[82] a land application set back from surface water,[83] winter manure application prohibitions,[84]

---

75. CAL. WATER CODE § 13260 (West 2009); STATE WATER RES. CONTROL BD., CAL. ENVTL. PROT. AGENCY, POLICY FOR IMPLEMENTATION AND ENFORCEMENT OF THE NONPOINT SOURCE POLLUTION CONTROL PROGRAM 1, 3 (2004).

76. STATE WATER RES. CONTROL BD., *supra* note 75, at 3–4.

77. *Id.*

78. DEL. CODE ANN. tit. 3, § 2247(a) (2001); KY. REV. STAT. ANN. § 224.71-120 (LexisNexis 2007); MD. CODE ANN., AGRIC. § 8-803.1(e)–(f) (LexisNexis 2007).

79. OR. REV. STAT. ANN. § 568.909 (West 2003).

80. WIS. ADMIN. CODE NR § 151.01, 151.09(3)(b)–(d) (2010).

81. WIS. ADMIN. CODE NR § 151.09(4)(d) (2010).

82. MINN. R. 6120.3300 Subpt. 7(A)–(B) (2011);15A N.C. ADMIN. CODE 02B .0233(3) (2011).

83. ALA. ADMIN. CODE r. 335-6-7-.26(2)(c) (2000); 014 04 ARK. CODE R. 5.406(D) (LexisNexis 2012); COLO. CODE REGS. § 1002-81.6(2)(D) (2007); GA. COMP. R. & REGS. 40-13-8-.06(4) (2011); 510 ILL. COMP. STAT. ANN. 77 / 20(f)(6) (2011); IOWA CODE § 459.314 (2011); 01-001-565 ME. CODE. R. § 6(1)(B)(3) (LexisNexis 2011); MINN. R. 7020.2225 (2011); N.J. ADMIN. CODE § 2:76-2A.3(d)(2) (2011); 3 PA. STAT. ANN. § 507 (West 2008); 020-080-020 WYO. CODE R. § 36(b)(c) (LexisNexis 2011).

84. COLO. CODE OF REGS. § 1002-81.6(2)(b)(i)(C) (2011); 3-1200-1201 DEL. CODE REGS. § 6.2.2–6.2.3 (2011); 510 ILL. COMP. STAT. ANN. 77 / 20(f)(9) (2011); 327 IND. ADMIN. CODE 16-10-3(f) (2011); IOWA CODE § 459.313A (2011); KAN. STAT. ANN. § 65-1, 182(f)(3)(C) (2011); ME. REV. STAT. tit. 7, § 4207 (2011); MINN. R. 7020.2225 Subpt. 6(A) (2011); TENN. COMP. R & REGS. 1200-04-05-.14(14)(b), app. A(I) (2011); 20-010-008 VT. CODE R. § 4.03(c) (2012); 020-080-020 WYO. CODE R. § 37(e)(ii) (LexisNexis 2012); Md. Dep't of Agric., *Timing of Nutrient Application*, http://www.mda.state.md.us/resource_conservation/nutrient_management/manual/timing_of_nutrient_application.php [hereinafter *Timing of Nutrient Application*] (last visited Apr. 20, 2012).

prohibition on livestock from having contact with surface water,[85] and restrictions on fall fertilizer application.[86]

While a number of states have either adopted regulations to require comprehensive pollution management or a particular management practice, all states fall short when it comes to enforcement and monitoring.[87] State systems are currently "fragmented and poorly implemented" due to a lack of resources or political will.[88] Therefore, water quality gains from state led agricultural pollution control programs have been tempered.

Given that agricultural pollution remains unregulated under the CWA, that voluntary programs have been ineffective, and that state programs are limited by enforcement and monitoring challenges, the current approach to nonpoint source pollution will not succeed in controlling nitrogen and phosphorus pollution.

IV. JUDICIAL DEVELOPMENTS MAY PRESSURE AGRICULTURAL POLLUTION

What happens when water pollution controls are unable to reach water quality goals because the main source of pollution is largely unregulated? As discussed in Part II, section 303: Water Quality Standards and Implementation Plans is supposed to be the water quality backup for exactly those situations.

For the first few decades of the CWA, these provisions were largely ignored. But a series of lawsuits filed by environmental groups in the 1980s and 1990s contended that the EPA had a duty to prepare TMDLs, because the TMDLs prepared by states were either inadequate or constructively inadequate because of the failure of a state to create a TMDL in the first place.[89] By 2002,

---

85. COLO. CODE OF REGS. § 1002-81.6(2)(f) (2011); N.J. ADMIN. CODE § 2:91-3.1(a) (2011); WIS. ADMIN. CODE NR § 151.08(5) (2011); UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, THE KENTUCKY AGRICULTURE WATER QUALITY PLAN 154–55, *available at* http://www.bae.uky.edu/awqpt/PDFs/STATEPLAN.pdf; MINN. R. 7020.2015 (2011).

86. W. VA. CODE R. § 61-22B-4.2 (2011); WIS. ADMIN. CODE ATCP § 50 app. D(V)(B)(1)(a) (2011); Md. Dep't of Agric., *Timing of Nutrient Application*, *supra* note 84; MINN. DEPARTMENT OF AGRIC., *Nitrogen Fertilizer Task Force Recommendations*, *Chapter 4*, *Best Management Practices*, http://www.mda.state.mn.us/chemicals/fertilizers/nitrogen-task-force-recommend/chapter-4-best-mgmt-practices.aspx (last visited Apr. 20, 2012) (setting forth such restrictions under sections 4.5.1, 4.6.2, 4.7.3, and 4.9.2); *see* Lower Platte North Natural Resources District, *Groundwater Quality Rules & Regulations*, http://www.lpnnrd.org/projects/water/gwma/gw_quality.html (last visited Apr. 20, 2012).

87. DEXTER, *supra* note 59, at 4.

88. *Id.*

89. Flynn, *supra* note 30, at 46–47 (citing Diane K. Conway, *TMDL Litigation: So Now What?* 17 VA. ENVTL. L.J. 83, 93–103 (1997); Kelly Seaburg, *Murky Waters: Courts Should Hold that the 'Any-Progress-Is Sufficient Progress' Approach to TMDL Development Under section 303(d) of the Clean Water Act Is Arbitrary and Capricious*, 82 WASH. L. REV. 767 (2007)).

the EPA was subject to court orders or consent decrees in twenty-two states—directing the EPA to set schedules for TMDL production.[90] The heightened scrutiny brought increased pressure on states to develop TMDLs. To date, there have been 46,735 TMDLs prepared for impaired water bodies across the country.[91]

Even though agricultural pollution might be exempt from NPDES permitting requirements, water that does not meet water quality standards, regardless of the source of the pollution, is not exempt from the requirements under section 303. In 2002, the Ninth Circuit held in *Pronsolino v. Nastri* that section 303 is best read to require listing and TMDLs for impaired waters that are entirely impaired by nonpoint source pollution.[92]

Prior to this case, the EPA disapproved California's impaired water list because it omitted a number of water segments impaired entirely by nonpoint source pollution.[93] California, however, did not establish TMDLs for the segments.[94] Environmental and fishermen's groups then sued the EPA to establish a TMDL and the EPA consented to do so.[95]

The EPA created the Garcia River TMDL, which identified maximum load allocations from broad categories of nonpoint sources, but left implementation and monitoring to the state.[96] Pursuant to achieving the TMDL load allocation, the Regional Water Quality Control Board prohibited Betty and Guido Pronsolino from harvesting trees from mid-October to May.[97] This restriction was estimated to cost the Pronsolinos $750,000.[98]

The Pronsolinos—along with the Mendocino County Farm Bureau, the California Farm Bureau Federation, and the American Farm Bureau Federation—brought an action against the EPA and two EPA administrators in the United States District Court for the Northern District of California, arguing that the EPA lacked authority to "impose TMDLs on rivers polluted only by nonpoint sources of pollution . . . ."[99] The EPA argued that, regardless of whether a water is polluted by point or nonpoint sources, "if the use of effluent limitations will not implement applicable water quality standards," the water must be listed and a TMDL must be calculated.[100]

---

90. DOREMUS ET AL., *supra* note 26, at 808.
91. *National Summary of State Information, supra* note 8.
92. Pronsolino v. Nastri, 291 F.3d 1123, 1140–41 (9th Cir. 2002).
93. *Id.* at 1129.
94. *Id.*
95. *Id.*
96. *Id.*
97. *Id.* at 1129–30.
98. *Id.* at 1130.
99. *Id.*
100. *Id.* at 1135.

The case boiled down to statutory interpretation.[101] "Section 303(d)(1)(A) requires listing and calculation of TMDLs for 'those waters . . . which the effluent limitations . . . *are not stringent enough to implement any water quality standard* applicable to such waters.'"[102] The Pronsolinos argued that because only point source polluters are subject to effluent limitations, waters polluted entirely by nonpoint source pollution are not subject to TMDL requirements.[103] The EPA interpreted the statute more broadly in finding that "not stringent enough" meant that the effluent limitations are "not sufficient" to meet the water quality standard.[104]

The court easily sided with the EPA in its interpretation of the section 303(d) requirements, deeming their interpretation "considerably more convincing."[105] It found that the term "not stringent enough" should look toward the "broad goal to be attained, not backwards at the inadequate effluent limitations."[106] Thus, the court held that the EPA did not exceed its authority in listing Garcia River and establishing a TMDL for a water entirely polluted by nonpoint source pollutants because effluent limitations were "not stringent enough" to meet water quality standards.[107]

Environmental groups have been successful in compelling the EPA and the states to develop TMDLs. The events leading up to *Pronsolini* and the decision itself indicate that states need to develop TMDLs on nonpoint source polluted waters. Otherwise, the EPA may be compelled to calculate a TMDL itself.[108] The creation of the TMDL, however, does not by itself require states or the EPA to implement the TMDL's loading restrictions.[109] Rather, the TMDLs are merely supposed to be an "informational tool" for the creation of the state's continuing planning process.[110] "States must implement TMDLs only to the extent that they seek to avoid losing federal grant money; there is no pertinent statutory provision otherwise requiring implementation of section 303 plans or providing for their enforcement."[111]

---

101. *Id.*
102. *Id.* (quoting 33 U.S.C. § 303(d)(1)(A) (2006) (emphasis added)).
103. *Id.*
104. *Id.*
105. *Id.* at 1139.
106. *Id.* at 1135.
107. *Id.* at 1141.
108. *Id.* at 1129.
109. *See* Sierra Club v. Meiburg, 296 F.3d 1021, 1034 (11th Cir. 2002); Flynn, *supra* note 30, at 47.
110. *Pronsolino*, 291 F.3d at 1140.
111. *Id.*

While in isolation TMDLs are not self-implementing, in conjunction with the NPDES permitting program, the load reductions may have more force in restricting or preventing new discharges into impaired waters.[112] EPA regulations provide that no permit may be issued "[t]o a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards."[113] If a new source desires to discharge, the owner must meet the heavy burden of demonstrating: "[t]here are sufficient remaining pollutant load allocations to allow for the discharge; and [t]he existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards."[114]

In 2007, the Ninth Circuit interpreted the above exception to mean:

> If point sources, other than the permitted source, are necessary to be scheduled to achieve the water quality standard, then the EPA must locate any such point sources and establish compliance schedules to meet the water quality standard before issuing a permit. If there are not adequate point sources to do so, then a permit cannot be issued unless the state or [the permit applicant] agrees to establish a schedule to limit pollution from a nonpoint source or sources sufficient to achieve water quality standards.[115]

Thus, in order for new permits to be issued on impaired waters, the EPA either must crank down effluent allocations on point sources or nonpoint source pollution must be subject to compliance schedules.

Although nonpoint source pollution is not directly regulated under the CWA, judicial developments in the once latent area of TMDL requirements may pressure states to take nonpoint source pollution more seriously. It is apparent that states will be pressured by the EPA and environmental groups to create TMDLs for waters impaired by nonpoint source pollution. Moreover, new point sources are essentially prohibited from getting permits from the EPA on impaired waterways. Under this limitation, states will struggle to meet growth and development goals without additional permits for wastewater treatment plants or industrial discharge. The EPA or a state cannot issue such new permits on impaired water without more stringent limitations on point sources or state controls on nonpoint sources of pollution.

---

112. Flynn, *supra* note 30, at 47; 40 C.F.R. § 122.4(i) (2010).
113. 40 C.F.R. § 122.4(i) (2010).
114. *Id.* § 122.4(i)(1)–(2) (2010).
115. Friends of Pinto Creek v. U.S. Envtl. Prot. Agency, 504 F.3d 1007, 1014 (9th Cir. 2007).

V. THE EPA'S TRADING POLICY TO ADDRESS AGRICULTURAL POLLUTION

Water quality trading is seen as a way to continue to allow various parties to contribute pollution to a water body, while using trading to offset their pollution. If states put more stringent limitations on existing point sources, trading would allow those sources to meet the limitations by working with farmers to implement management practices to reduce their pollution load. Trading would also allow new sources to contribute pollution to the impaired water body if owners offset their pollution through discharge reductions from another source.

The theory behind water quality trading is to allow trading between different sources where the cost of reducing pollution varies.[116] Because point sources are already highly regulated, additional reductions through equipment upgrades will be expensive. On the other hand, because agriculture is unregulated, there are opportunities for farmers to make low cost reductions. Thus, owners of point sources that will incur high costs to make additional pollution reductions can offset a portion of their pollution by purchasing credits from those who can reduce their pollution at a lower cost.[117] In theory, this market-based mechanism will reduce the total cost of pollution reduction while achieving water quality standards.[118]

Beginning in the early 1980s, local watersheds began experimenting with water quality trading as a way to control water pollution.[119] Colorado, Idaho, Michigan, Ohio, Oregon, Pennsylvania, and Vermont have statewide trading frameworks in place, while Florida, Maryland, Minnesota, and West Virginia have programs under development.[120] Early water quality trading programs, however, have been limited in application and success.[121]

Still, in 2003, the EPA announced its new water quality trading policy in recognition of the promise of trading and to encourage the implementation of environmentally sound trading programs.[122] The EPA believes that water quality trading will be better able to achieve water quality standards than traditional command-and-control approaches at a lower cost.[123] In its 2003 policy statement, the EPA states "market-based approaches such as water quality trading provide

---

116. James S. Shortle & Richard D. Horan, *Water Quality Trading*, 14 PENN ST. ENVTL. L. REV. 231, 234 (2006).

117. *Id.*

118. WATER QUALITY TRADING POLICY, *supra* note 9, at 1–2.

119. Shortle & Horan, *supra* note 116, at 234.

120. *State and Individual Trading Programs,* EPA.GOV, http://water.epa.gov/type/watersheds/trading/tradingmap.cfm (last updated Mar. 6, 2012).

121. Shortle & Horan, *supra* note 116, at 236.

122. WATER QUALITY TRADING POLICY, *supra* note 9.

123. WATER QUALITY TRADING POLICY, *supra* note 9, at 1–2.

greater flexibility and have potential to achieve water quality and environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches."[124] The EPA estimates that water quality trading could save $900 million dollars annually in control costs.[125]

VI. LESSONS FROM EXPERIENCE WITH POLLUTION CONTROL TRADING

The idea of using a market-based mechanism to control pollution was first advocated for in the late 1960s by Thomas D. Croker and J. H. Dales.[126] After significant research extolled the potential that pollution trading had the potential to reduce the cost of achieving environmental goals, the United States implemented a number of air quality trading programs beginning in the mid-1970s.[127]

The United States' poster child of this market based pollution control mechanism is the Acid Rain Trading Program under the Clean Air Act Amendments of 1990. In the 1970s, the effects of acid rain on vegetation, aquatic ecosystems, paints, and buildings became apparent in the northeast.[128] The source of the problem was not local, but from midwestern utilities that burned high sulfur coal to generate electricity.[129] For over a decade, policymakers were in stalemate over this politically difficult issue to resolve: acid rain was causing vast environmental damages in the northeast but the cost of upgrading power plants to fix the problem would cost billions to the utilities industry.[130] In 1990, the Clean Air Act Amendments, which established the acid rain emissions trading program, broke the stalemate in the legislature.[131] Under this program, industry perceived that it could lower compliance costs and the Democratic Congress—even with the opposition of some environmental groups—perceived that it would reduce sulfur dioxide emissions.[132]

---

124. WATER QUALITY TRADING POLICY, *supra* note 9, at 1.

125. WATER QUALITY TRADING POLICY, *supra* note 9, at 2.

126. Shortle & Horan, *supra* note 116, at 232 (citing Thomas D. Crocker, *The Structuring of Atmospheric Pollution Control Systems: The Economics of Air Pollution* 61–86 (H. Wolozin ed., 1966); J. H. Dales, *Land, Water, and Ownership*, 1 CAN. J. ECON. 791, 791–804 (1968)).

127. *Id.*

128. DOREMUS ET AL., *supra* note 26, at 711.

129. *Id.*

130. Rena Steinzor, *Great Potential, But Huge Problems*, 20 THE ENVTL. F. 69 (2003); Zachary Coile, *'Cap-and-trade' Model Eyed for Cutting Greenhouse Gases*, S. F. CHRON., Dec. 3, 2007, http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/12/02/MNMMTJUS1.DTL&ao=all.

131. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2584 (codified as amended in scattered sections of 42 U.S.C.).

132. Coile, s*upra* note 130.

In Title IV of the 1990 Clean Air Act Amendments, Congress set a nationwide cap on sulfur dioxide emissions from utilities plants, enforced through a system of tradable emission allowances.[133] These allowances were originally distributed based on past fuel consumption.[134] Thereafter, they were freely tradeable,[135] and the EPA auctioned off some allowances through the Chicago Board of Trade.[136]

The program is touted as having reduced the emissions of sulfur dioxide faster and more cost effectively than expected.[137] Since 1990, the program has reduced annual sulfur dioxide emissions by sixty-four percent.[138] Initially, the EPA estimated that abatement costs would be in the range of $750–$1000 per ton.[139] But in 2009, the sulfur dioxide allowance cost fell to sixty-one dollars per ton.[140]

The context and design of the program was conducive to its success. To begin with, the trading program targeted only the utilities industries.[141] This industry was already extensively regulated under the Clean Air Act and already had in place a fairly extensive system of monitors for sulfur dioxide emissions.[142] Because of the few actors and existing systems in place, monitoring and enforcement was relatively simple.[143] Moreover, in the context of acid rain, the pollution problem arises because of the total level of pollution as opposed to the location of the pollution.[144] Therefore, trading could occur on a wide scale because the same emissions have the same effect regardless of where it is emitted throughout the trading area.

---

133. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, tit. IV, 104 Stat. 2584 (codified as amended in scattered sections of 42 U.S.C.); DOREMUS ET AL., *supra* note 26, at 711.

134. 42 U.S.C. § 7651a(4) (2006); DOREMUS ET AL., *supra* note 26, at 711.

135. 42 U.S.C. § 7651b(b) (2006); DOREMUS, *supra* note 26, at 711.

136. DOREMUS ET AL., *supra* note 26, at 711.

137. *Id.*

138. *Emission and Compliance Data*, ENVTL. PROT. AGENCY, http://www.epa.gov/airmarkt/progress/ARP09_1.html (last updated Dec. 20, 2010).

139. FAETH, *supra* note 5, at 14; U.S., *Acid Rain Allowance Trading*, ENVTL. PROT. AGENCY, http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/SavingsFromEconomicIncentivesTOC.html (follow "3.2.3 Acid Rain Allowance Trading" hyperlink) (last updated Apr. 9, 2012).

140. U.S. Envtl. Prot. Agency, *2009 Emissions Compliance and Market Analyses*, ENVTL. PROT. AGENCY, http://www.epa.gov/airmarkets/progress/ARP09_2.html (last updated Sept. 20, 2011).

141. Envtl. Law Inst., *Emissions Trading Moves To Water, But It's Not as Simple*, 20 THE ENVTL. F. 62 (2003).

142. GARY C. BRYNER, NEW TOOLS FOR IMPROVING GOVERNMENT REGULATION: AN ASSESSMENT OF EMISSIONS TRADING AND OTHER MARKET-BASED REGULATORY TOOLS 21 (1999).

143. *Id.* at 22.

144. *Id.* at 21.

Not all trading programs, however, have been met with the success of the Acid Trading Program. In the world's first urban smog trading program, California's Regional Clean Air Incentives Market (RECLAIM), a declining cap was set on industry emission of sulfur and nitrogen oxides.[145] Industry could meet the cap by "purchasing emission reduction credits or by reducing their own pollution."[146] "Licensed car scrappers," who purchase and destroy old cars, could generate emission reduction credits that industry could purchase.[147] While the program may have saved industry money, it created other environmental problems and fell short of the reductions regulations may have achieved.[148]

The program was undermined by phantom reductions. Under this program, emissions reductions claims were based on estimates, rather than on actual measurements.[149] These estimates were highly uncertain (having a fifty to one hundred percent margin of error) and could be easily manipulated to make it appear as if industry was reducing emissions.[150] As it turns out, oil companies did actually measure their emissions and their sham estimates underreported their emissions by 10 to 1000 times.[151] Credit generators (car scrappers) also contributed to the problem of phantom emissions. While dealers took old cars off the road to generate credits, they did not actually reduce pollution because they switched the polluting engines to different auto bodies, putting the same polluting engines back onto the road.[152]

Prior experience with air quality trading demonstrates real success can be achieved from pollution trading mechanisms, but that success is not guaranteed. The programs are politically feasible because they are perceived to reduce the cost of pollution reduction.[153] Whether or not they actually translate to an environmental gain, however, is dependent on a number of different factors. Emissions need to be easy to measure and there should be sufficient resources to ensure that they are accurately monitored.[154] The same emissions should have the same effect regardless of where the emission occurs throughout the trading

---

145. Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231, 247 (1999).

146. *Id.* at 247–48.

147. South Coast Air Quality Management District, Regulation XVI–Mobile Source Offset Programs, r. 1610(a), (b)(15) (2008), Drury et al., *supra* note 145, at 247-48.

148. Drury et al., *supra* note 143, at 251.

149. *Id.* at 259.

150. *Id.* at 259–60.

151. *Id.* at 260.

152. *Id.* at 260–61.

153. BRYNER, *supra* note 142, at 21.

154. *Id.* at 22.

area.[155] Finally, there should be a limited number of major sources in order to reduce transaction costs.[156]

VII. THE DIFFICULTY WITH AGRICULTURAL POLLUTION TRADING

Experience and economic theory demonstrates that there is a lot of promise for market-based programs to achieve environmental goals. From this, commentators and the EPA are confident that water quality trading between point and nonpoint sources has potential to help achieve water quality goals—more effectively and more efficiently.[157] Point to nonpoint water quality trading, however, has not yet gained much popularity in practice. Over the past three decades, only fifteen trading programs have been piloted, and only four of those programs have actually generated trades.[158]

One possible reason for this is that many states lack numeric nutrient criteria to serve as a basis for more stringent effluent limitations for NPDES permits.[159] Without this, there is unlikely to be a TMDL in place to call for nutrient reductions.[160] Absent a regulatory driver, there is no need for point sources to seek out offsets.[161] As stated above, because pressure from environmental groups has sparked judicial developments in the once latent section 303 requirements of the CWA, more and more states are promulgating numeric water quality standards for nitrogen and phosphorus and developing TMDLs.[162] This development may spark demand for trading as a more efficient way for point sources to meet stricter nutrient limitations.[163]

The lack of a regulatory driver is and has not been the only barrier to the success of point to nonpoint water quality trading. As opposed to the federal acid rain emissions trading program, there are substantial barriers that stand in the way for point to nonpoint water quality trading. Point to nonpoint water quality trading is faced with complexity in establishing and verifying credits, high transaction costs, a confined geographic area, and difficulties that arise from regulated buyers trading with unregulated sellers. Moreover, as opposed to the CAA, trad-

---

155. *Id.*
156. *Id.*
157. *Water Quality Trading Policy*, *supra* note 9; FAETH, *supra* note 5, at 39.
158. Ribaudo & Gottlieb, *supra* note 3, at 5–6.
159. Lynda Hall & Eric Raffini, *Water Quality Trading: Where Do We Go from Here?*, 20 NAT. RES. & ENV'T 38, 39 (2005).
160. *Id.*
161. *Id.*
162. Diane K. Conway, *TMDL Litigation: So Now What?* 17 VA. ENVTL. L.J. 83, 84 (1997).
163. Hall & Raffini, *supra* note 159, at 39.

ing under the CWA is not provided for by statute and there remain significant questions to the extent of its legality.[164]

A. *Complexity in Establishing and Verifying Credits*

Under the federal acid rain emissions trading program, trading occurs between fossil fuel power plants. These facilities are required to install, calibrate and operate a continuous emission monitoring system for measuring sulfur dioxide concentrations.[165] This end of pipe monitoring system means that credits are easily established and verified. A power plant selling a pollution credit of one ton of sulfur dioxide could easily verify its reduction by records generated by its monitoring system.

On the other hand, it is difficult to predict and monitor water pollution reductions that come from agricultural sources.[166] Agricultural pollution does not come from a single smokestack or effluent pipe, but from a farmer's field. Because agricultural runoff is so widespread, it is not possible to implement an end of pipe monitoring system, at least not at a reasonable cost given current technology.[167] Thus, scientific models are used to estimate load reductions that come from observable management changes.[168]

Calculating the effect of a farmer's best management practice is complicated. Variables in soil, topography, distance from a water source, and climate have an impact on how much a practice actually reduces nonpoint emissions.[169] Thus, reductions that accrue because of a best management practice vary widely from day-to-day and farm-to-farm. Moreover, there is a lot of uncertainty and variability in agricultural pollution because it is tied to weather events. Runoff is highest during rainy seasons and years, and lowest at other times. Given this, estimates derived from scientific models are imperfect representations of actual pollution reductions.

Some are skeptical of monitoring, claiming "it is possible to 'model anything, any time, any place, for anyone.'"[170] Skeptics worry that "modeling is sub-

---

164. *Compare* 42 U.S.C. § 7651b (2006) (providing for air emission trading), *with* 33 U.S.C. § 1251 (2006) (omitting any water pollution trading program).

165. 40 C.F.R. § 60.46c(a) (2010).

166. Shortle & Horan, *supra* note 116, at 240.

167. *Id.*

168. *Id.*

169. Hall & Raffini, *supra* note 159, at 41.

170. Charles D. Case, *Problems in Judicial Review Arising from the Use of Computer Models and Other Quantitative Methodologies in Environmental Decisionmaking*, 10 ENVTL. AFF. L. REV., 279 n.150 (1982) (citing Michael S. Baram, *Technology Assessment and Social Control*, 17 JURIMETRICS 79, 347 (1973)).

ject to 'gaming,'" where a modeler can substantially change the outcome of the model with minor changes in the model's assumptions.[171]

Given that modeling is subject to inherent variability, or even gaming as some critics say, predictions in pollution reduction may not necessarily lead to improvements in water quality.[172] While a farmer's best management practice itself could be observed and verified, it is difficult to say with certainty that the practice actually reduces pollution by a certain amount. Without reliable data, on-site inspections to observe visible land use changes, and water quality monitoring to ensure that the trades are actually improving ambient conditions, transactions will result in nothing more than a paper trade.[173]

Some water quality trading programs attempt to overcome uncertainty through an uncertainty ratio.[174] This ratio requires more than one unit of reduction from a nonpoint source to offset one unit of pollution from a point source.[175] Typically the uncertainty ratio ranges from 2:1 to 5:1.[176] This larger ratio acts as a margin of safety to cover the inherent risk that nonpoint sources will not reduce pollution to the extent predicted.[177] A high trading ratio, however, discourages point to nonpoint trading because it increases the price of a nonpoint credits and decreases their demand.[178]

A better way to reduce uncertainty, without altering nonpoint credit price, is through more public sector research and modeling into the performance of practices under different conditions.[179] This information should be incorporated into simulation tools. To help improve the amount of site-specific modeling data available, the EPA is partnering with the states and the USDA's Natural Resources Conservation Service to develop a database of practices, their costs, and effectiveness in reducing pollution at various sites.[180] The EPA and the USDA are currently developing an online Nitrogen Trading Tool (NTT) that allows a farmer to enter in information on geography, farming techniques, and land use to estimate the farm's current nitrogen loading.[181] With this, a farmer could see how changes in management or land use could generate credits. Cur-

171. *Id.*
172. *Id.* at 14.
173. Steinzor, *supra* note 130, at 69.
174. Ribaudo & Gottlieb, *supra* note 3, at 9.
175. *Id.*
176. *Id.*
177. Shortle & Horan, *supra* note 116, at 243.
178. *Id.*
179. Ribaudo & Gottlieb, *supra* note 3, at 9.
180. Hall & Raffini, *supra* note 159, at 41.
181. Ribaudo & Gottlieb, *supra* note 3, at 9.

rently, the NTT prototype is "being tested in Ohio, Maryland, and Colorado."[182] The EPA is looking to expand this partnership to develop similar tools for the measurement of phosphorous and sediment.[183]

B. *Transaction Costs*

The federal acid rain emissions trading program took place between relatively limited numbers of power plants, whereas water quality trading with nonpoint sources would necessarily take place among many actors. Nonpoint sources "are widely distributed across a watershed each source can generate only small numbers of credits in comparison with the larger demand" from point sources that wish to purchase credits.[184]

Not only would a point source need to enter into agreements with multiple landowners in order to generate enough credits to satisfy its demand, it may be difficult to find such landowners as nonpoint and point dischargers do not have a history of collaboration.[185] Farmers may be reluctant to enter into an agreement because it may be an implicit admission that nonpoint pollution can be measured and controlled and regulated.[186]

Moreover, even if a point source actually finds enough landowners to satisfy its offset need, the point source then must enter into a complex agreement with the multiple landowners. As mentioned above, calculating and tracking trades can be complex, and these complexities come at a cost.[187] Given the large number of nonpoint sources necessary to address, the potential difficulty in locating such sources, and the complexity in calculating credits necessary for an agreement, transaction costs could be significant. Some trading programs have suffered difficulty because of these administrative and transaction costs.[188] Accordingly, gains in efficiency that come from trading may be eaten up by the significant transaction costs.

Because of the substantial costs associated with connecting numerous nonpoint sources, some programs are using a third party credit broker to help connect point sources to nonpoint sources.[189] Essentially, a broker would identify

---

182. U.S. ENVTL. PROT. AGENCY, WATER QUALITY TRADING EVALUATION 1-7 (2008).
183. *Id.* at 4–6.
184. Abdalla et al., *supra* note 61, at 120.
185. Hall & Raffini, *supra* note 159, at 41.
186. *See* Dennis M. King, *Crunch Time for Water Quality Trading*, 20 CHOICES 71, 74 (2005).
187. Anne Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollution Trading?* 23 COLUM. J. ENVTL. L. 137, 211–212, 215 (1998).
188. FAETH, *supra* note 5, at 16.
189. Hall & Raffini, *supra* note 159, at 41.

farmers and work with them to implement and monitor pollution reduction practices to generate credits to sell to point sources.[190] Because the point source would only work with the broker, then this sort of system would overcome the need to negotiate and secure credits with each and every farmer necessary to generate enough credits to satisfy the point source's demand.[191] As a bonus, brokers would be in a better position to secure additional credits to cover situations where credits do not materialize because of the uncertainty discussed above.[192]

These brokers can take different forms: watershed organizations, farmer's cooperatives, or even private organizations organized by the point source.[193] In Ontario, Canada, South Nation Conservation issued grants to rural landowners for nonpoint source control projects and sold credits generated to new point sources that would otherwise be bared from discharging phosphorous.[194] In Minnesota, the Rahr Malting Company established the Minnesota River Corporate Sponsorship Program to negotiate and oversee upstream agricultural practice improvements to reduce runoff.[195] This program allowed the malting company to offset effluent limitations necessary to expand its operations.[196]

C. *Confined Trading Areas*

Another barrier to trading is that unlike air emissions trading, which operated under a national scale, water quality trading must be done watershed-by-watershed.[197] In the acid rain trading emissions program, "[t]he total level of [sulfur dioxide] emissions, rather than the location of sources, is critical."[198] This is because a reduction in sulfur dioxide emissions has a beneficial environmental impact to a large geographic area and its effect is largely unconstrained by physical barriers.[199] In other words, a reduction of emissions from power plants in the Midwest would reduce acid rain in the Northeast.

In the case of water pollution, a reduction in nutrient emissions may have a beneficial impact to that watershed, but not on an adjacent river basin.[200] There

---

190. *Id.*
191. *Id.*
192. *Id.*
193. *Id.*
194. *Id.* at 41–42.
195. *Id.* at 42.
196. *Id.*
197. *Id.* at 39.
198. BRYNER, *supra* note 142, at 21.
199. *See* Hall & Raffini, *supra* note 159, at 39.
200. *Id.*

are numerous physical boundaries and watershed characteristics that determine how pollution moves and behaves.[201] Two EPA officials wrote, "Diversions, impoundments, and other physical features unique to each watershed have a large impact on pollutant transport and the potential for localized effects. Also at work are hydrologic processes and the chemical and biological interaction of the pollutant with its environment."[202] These factors mean that pollution has a very localized effect, thus, water quality trading should be made watershed-by-watershed.[203] For this reason, the EPA's water quality trading policy states, "[a]ll water quality trading should occur within a watershed or a defined area for which a TMDL has been approved."[204]

Because trading would happen within a watershed or TMDL boundary, there is a limited area from which sellers and buyers could generate and purchase credits. This limited flexibility means that there are fewer opportunities to finding trading partners.[205] Moreover, it means that there is less competition and more room for market participants to exploit market power or distort trading.[206]

Not only do small trading areas limit flexibility and competition, they also mean that an implementation of a trading program in one watershed could lead to a countervailing leakage into another watershed.[207] A hog farmer may transport manure to another location to generate credits, only to have the same manure pollute another watershed.[208] A corn farmer may leave a buffer to generate credits, but expand production elsewhere to make up for lost acreage.[209]

D. *Regulated Buyers and Unregulated Sellers*

Under the acid rain emissions trading program, allowances were allocated to existing sources based on past emissions.[210] These allowances can be used, bought and sold, or banked.[211] Regardless, it is unlawful for any power

---

201. *Id.*
202. *Id.*
203. *Id.*
204. WATER QUALITY TRADING POLICY, *supra* note 9, at 4.
205. Abdalla et al., *supra* note 61, at 121.
206. *Id.*
207. *Id.*
208. *Id.*
209. *Id.* (citing Shabman K. Stephenson, *Taxonomy of Trading Programs: Concepts and Applications to TMDLs*, *in* TOTAL MAXIMUM DAILY LOADS: APPROACHES AND CHALLENGES, 253–285 (Tamim Younas ed., 2005).
210. 42 U.S.C. § 7651b(a) (2006).
211. 42 U.S.C § 7651b(b) (2006); Susan R. Martin, *Water Quality Credit Trading: A Regulator's Perspective*, 81 FLA. B.J. 56, 57 (2007).

plant to emit sulfur dioxide in excess of the allowances that it holds.[212] Therefore, this system represents a fully capped trading system where each market participant is subject to the Act's regulations and each participant is liable to sanctions if it exceeds its own allowance.

Water quality trading between point and nonpoint sources is markedly different because credit purchasers are required to meet TMDL regulations as point source polluters under the CWA[213] and credit suppliers, farmers with agricultural water pollution, do not face similar regulations and requirements.[214] This creates a number of difficulties. For one, because nonpoint sources are unregulated, liability for their failure to generate credits falls on the buyer and not the seller. Second, it creates an equity concern because point sources that face mandatory restrictions would buy credits from a nonpoint source that has avoided pollution restrictions. Related is the issue of what threshold or baseline, if any, a seller must meet before it is able to generate credits.

Under the EPA's current water quality trading policy, a buyer cannot transfer its permit responsibilities to the seller—it is required to have a NPDES permit.[215] If a nonpoint source is unable to generate credits, then the point source would still be liable and would have to find additional credits elsewhere or face penalties.[216] A trade agreement would presumably include a contract between the point source and nonpoint source. A nonpoint source's failure to generate credits would constitute a breach that would entitle the point source to damages. Requiring a private cause of action to impose liability on a party would increase transactions costs. Moreover, credit buyers may face the risk of incurring a shortfall penalty for extreme weather events or other circumstances beyond the farmer's control that decrease the quantity of credits available.[217]

Aside from the problem of liability that arises because nonpoint sources are unregulated under the CWA, equity concerns arise out of this disparate treatment. Point sources are required to internalize their water pollution costs while unregulated nonpoint source polluters are allowed to externalize those costs. This concern may make point sources unwilling to enter into a trade with a nonpoint source—they may wonder why they should pay a farmer who has avoided

---

212. 42 U.S.C. § 7651b(g) (2006).
213. 33 U.S.C. § 1311 (2006).
214. *Id.* § 1362(12), (14) (2006).
215. WATER QUALITY TRADING POLICY, *supra* note 9, at 6.
216. Hall & Raffini, *supra* note 159, at 41.
217. Bruce A. McCarl, Presentation at the Envtl. Trading Network Workshop on Environmental Credits Generated through Land-Use Changes: Challenges and Approaches: Measurement & Quantity Uncertainty (Mar. 8, 2006).

regulation when they have already made significant reductions in their discharges.[218]

Related to this concern is that farmers who already implement conservation practices would have less opportunities to reduce their emissions than their agricultural counterparts who have not. Thus, allowing farmers to generate credits regardless of their conservation habits rewards farmers who pollute the most and punishes stewardship-minded agriculturalists.[219]

One way to overcome this equity concern is by requiring farmers to meet a minimum threshold of agricultural practices before they would be allowed to generate credits.[220] Farmers practicing environmentally unsound practices could not merely abandon those practices and expect to generate credits.[221] But farmers who already meet the threshold could do more and sell credits to recover costs.[222] Requiring a minimal threshold of Best Management Practices, however, would also take in much of the low hanging fruit that would have made trading attractive in the first place. The easiest and cheapest reductions by nonpoint sources come precisely because these sources are unregulated in the first place.

E. *Legality*

As opposed to the CAA, trading under the CWA is not provided for by statute and there remain significant questions as to in which situations it would be legal.[223] While the EPA has strongly promoted the use of water quality trading and has provided for it through its water quality trading policy statement, there still remain significant questions as to its legality. A policy statement is not law and the courts will not treat it as such. Accordingly, water quality trading cannot violate the CWA itself or EPA's own regulations.

While water quality trading is not specifically provided for under the CWA, the "EPA believes the CWA provides authority for EPA, states and tribes to develop a variety of programs and activities to control pollution, including

---

218. Hall & Raffini, *supra* note 159, at 41.

219. Thomas K. Ruppert, *Water Quality Trading and Agricultural Nonpoint Source Pollution: An Analysis of the Effectiveness and Fairness of EPA's Policy on Water Quality Trading,* 15 VILL. ENVTL. L. J. 28 (2004).

220. FAETH, *supra* note 5, at 40.

221. *Id.*

222. *Id.*

223. *Compare* 42 U.S.C. § 7651(b) (2006) (creating a Sulfur Dioxide trading program), *with* 33 U.S.C. § 1251 (2006) (omitting water trading program), and *Water Quality Trading Policy*, *supra* note 9 (encouraging development of water quality trading programs despite lack of explicit statutory authority).

trading programs."[224] The EPA's Water Quality Trading Policy does not undermine the existing permitting requirements of the Clean Water Act because point sources participating in a trading program still have to obtain a NPDES permit.[225] The CWA provides that "[t]he Administrator shall prescribe conditions for such permits to assure compliance with the [permitting] requirements . . . and such other requirements as he deems appropriate."[226] Given that Congress has given the EPA "broad discretion to establish conditions for NPDES permits,"[227] it seems that the CWA itself does not ban water quality trading. Furthermore, while the Act does contain provisions directing compliance with water quality standards, it does not mandate a complete ban on discharges into a waterway that is in violation of those standards.[228] Rather, "the Clean Water Act vests in the EPA and the States broad authority to develop long-range, area-wide programs to alleviate and eliminate existing pollution."[229]

There is more uncertainty as to whether or not a point source can offset its discharge into impaired water under the regulations promulgated by the EPA though. 40 C.F.R. section 122.4(i) prohibits a permit from being issued "[t]o a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards."[230] "EPA interprets 40 CFR section 122.4(i) to allow for a new source or a new discharger to compensate for its entire increased load through trading."[231] Neither the CWA nor the regulations, however, specifically allow for this exception. Instead, the regulations only explicitly permit a new source to discharge into an impaired water if it demonstrates: (1) "[t]here are sufficient remaining pollutant load allocations . . .;" and (2) the existing dischargers "are subject to compliance schedules designed to bring the segment into compliance."[232]

The interpretation of these two sentences (the prohibition and the explicit exception) has serious implications on water quality trading. If an offset would only be permissible where there is a plan in place to reduce the pollutant loading from *all* water pollution discharges into that impaired water segment, there would be a significant barrier to trading. Under this interpretation, if a watershed was

---

224. WATER QUALITY TRADING POLICY, *supra* note 9, at 8.
225. *Id.* at 6.
226. 33 U.S.C. § 1342(a)(2) (2006).
227. Arkansas v. Oklahoma, 503 U.S. 91, 105 (1992).
228. 33 U.S.C. § 1311(a) (2006).
229. *Arkansas*, 503 U.S. at 108.
230. 40 C.F.R. § 122.4(i) (2011).
231. WATER PERMITS DIV. OFFICE OF WASTEWATER MGMT., U.S. ENVTL. PROT. AGENCY, EPA 833-R-07-004 WATER QUALITY TRADING TOOLKIT FOR PERMIT WRITERS 24 (2009), *available at* http://www.epa.gov/npdes/pubs/wqtradingtoolkit_fundamentals.pdf.
232. 40 C.F.R. § 122.4(i)(1)–(2) (2011).

impaired (essentially including all waters prone to trading), then in order for a offset to be approved, the permitting authority would need to schedule point sources to meet water quality standards, and if that were not enough, the state or a buyer would have to establish a schedule to limit sufficient non-point pollution to bring the water into attainment. On the other hand, if a court broadly interprets 40 C.F.R. section 122.4(i), then a new source would not cause or contribute to the violation of water quality standards as long as an offset could reduce enough pollutant loadings from other sources to allow for its discharge.

In 2007, the Ninth Circuit's decision in *Friends of Pinto Creek v. EPA* adopted the former interpretation.[233] In this case, even though Pinto Creek was listed on Arizona's list of impaired waters under section 303(d) of the CWA for its non-attainment of water quality standard for dissolved copper, the EPA granted Carlota Copper Company a NPDES permit to discharge copper into Pinto Creek.[234] Carlota's plan was to build seven retention ponds to capture storm water and sediment runoff from the slopes of waste rock dumps.[235] During large precipitation events, these outlets could discharge into Pinto Creek; this potential to discharge is enough to trigger the NPDES permit requirement.[236] Carlota agreed to offset its new copper loading by cleaning up the Gibson Mine, an inactive copper mine five miles upstream.[237]

Friends of Pinto Creek contended that the EPA improperly issued a permit that allowed copper to be discharged into a segment of water that was already impaired by dissolved copper.[238] The EPA argued that the new discharges were offset by the Gibson Mine remediation.[239] The Environmental Appeals Board agreed with the EPA, stating, "The Board [found] no clear error in the Region's determination that Carlota's discharges will not 'cause or contribute' to a violation of water quality standards, but rather, Carlota will improve existing conditions because the reductions that will result from its activities are greater than the projected discharges."[240]

The Ninth Circuit, though, read 40 C.F.R. section 122.4(i) more narrowly. The court stated that "there is nothing in the Clean Water Act or the regulation that provides an exception for an offset when the waters remain impaired

---

233. Friends of Pinto Creek v. U.S. Environmental Protection Agency, 504 F.3d 1007, 1012 (9th Cir. 2007) (stating "there is nothing in the Clean Water Act or the regulation that provides an exception for an offset . . . .").

234. *Id.* at 1009.

235. *In re* Carlota Copper Co., 11 E.A.D. 692, 704 (EAB 2004).

236. *Id.*

237. *Friends of Pinto Creek*, 504 F.3d at 1012; Flynn, *supra* note 30, at 55.

238. *Friends of Pinto Creek*, 504 F.3d at 1011.

239. *Id.* at 1012.

240. *Carlota Copper Co.*, 11 E.A.D. at 695.

and the new source is discharging pollution into that impaired water."[241] The court recognized there is not an absolute bar to new discharges into impaired waters.[242] If, before the close of the comment period, Carlota had demonstrated that there were sufficient remaining load allocations and that existing dischargers were subject to compliance schedules to bring the segment into compliance, then it would be appropriate for the issuance of the permit.[243]

The EPA argued that there were sufficient allocations remaining because the TMDL could be modified to allow for the copper discharge.[244] Planned paper reductions, though, are not enough. The Ninth Circuit found that "[t]he TMDL merely provides for the manner in which Pinto Creek *could* meet the water quality standards if all of the load allocations in the TMDL were met, not that there are sufficient remaining pollutant load allocations under existing circumstances."[245]

As for the second condition, the Ninth Circuit found there were "no plans or compliance schedules to bring the Pinto Creek segment 'into compliance with applicable water quality standards . . . .'"[246] While EPA's TMDL found that there were copper loadings from other active copper mines, inactive mines, and abandoned mines into Pinto Creek that needed to reduce their copper discharges to bring the segment into compliance, "[t]he only step the EPA or Carlota has taken to meet the requirements of section 122.4(i)(2) is the partial remediation of the Gibson Mine discharge."[247] It is not enough to show that pollution will be reduced; Carlota has "to show how the water quality standards will be met if Carlota is allowed to discharge pollutants into the impaired waters."[248] For a permit to be issued, EPA would need to schedule point sources to meet water quality standard, and if that were not enough, the state or Carlota would have to establish a schedule to limit nonpoint pollution.[249]

Thus, the Ninth Circuit vacated Carlota's permit, even though copper pollution may have been reduced through the offset.[250] The court held if a water body is not in attainment for a pollutant, a permit could not be issued to a new

---

241. *Friends of Pinto Creek*, 504 F.3d at 1012.
242. *Id.* at 1013.
243. *Id.* at 1012 (citing 40 C.F.R. § 122.4 (i)(1)–(2) (2000)).
244. *Id.*
245. *Id.* (emphasis in original).
246. *Id.* at 1014.
247. *Id.* at 1014 n.2.
248. *Id.* at 1014.
249. *Id.*
250. *Id.* at 1017.

source unless there were sufficient allocations available under existing circumstances and a schedule to bring the water into compliance.[251]

During the Pinto Creek litigation, the Minnesota Supreme Court adopted the broader interpretation in a similar situation in *In re The Cities of Annandale and Maple Lake NPDES/SDS Permit Issuance for Discharge of Treated Wastewater*.[252] In Minnesota, the Minnesota Pollution Control Agency (MPCA) has permitting authority, and "is charged by state and federal laws with the day-to-day responsibility for enforcing and administering 40 C.F.R. section 122.4(i) in Minnesota."[253] Therefore, even though this case was brought in state court, the court was interpreting the federal statute because the MPCA was delegated authority to administer the program. The court reinstated a NPDES permit that a lower court vacated, holding that a phosphorous discharge into an impaired water would not cause or contribute to the violation of water quality standards because an offset would reduce pollutant loadings from other sources.[254] Despite this apparent conflict, the Ninth Circuit did not even discuss *Annandale,* even though the EPA argued that *Annandale* supported its offset defense.[255]

Carlota petitioned for certiorari, arguing that the Ninth Circuit's decision conflicted with the Minnesota Supreme Court's decision in *Annandale*.[256] The EPA switched course, and actively opposed certiorari. In its response brief in opposition to certiorari, the EPA argued that there was no conflict between *Pinto Creek* and *Annandale.*[257] The EPA downplayed the Ninth Circuit's statement that "'nothing in the [CWA] or the regulation' provides an 'exception for an offset' when" the waters remain impaired and the new source is discharging pollution into that impaired water.[258] It contended this statement was merely passing dictum because the Ninth Circuit's decision turned on the second sentence of 40 C.F.R. section 122.4(i), not the first.[259] The EPA argued that the second sentence

---

251. *Id.* at 1014.

252. *See In re* The Cities of Annandale & Maple Lake, 731 N.W.2d 502, 524 (Minn. 2007).

253. *Id.* at 516.

254. *Id.* at 522–26.

255. *See* Friends of Pinto Creek v. U.S. Envtl. Prot. Agency, 504 F.3d. 1007 (9th Cir. 2007); Flynn, *supra* note 30, at 59.

256. Petition for Writ of Certiorari, Carlota Copper Co. v. Friends of Pinto Creek, 129 S. Ct. 896 (2008) (No. 07-1524), 2008 WL 2355791, at *16–20.

257. Brief for the Federal Respondent in Opposition, Carlota Copper Co. v. Friends of Pinto Creek, 129 S.Ct. 896 (2008) (No. 07-1524), 2008 WL 4155605, at *12—15.

258. *Id.* at 14 (quoting Friends of Pinto Creek v. U.S. Envtl. Prot. Agency, 504 F.3d 1007, 1012 (9th Cir. 2007)).

259. *Id.* at 14–15.

was not relevant in *Annandale* because there was not a TMDL in that case.[260] Rather, *Annandale* relied on an interpretation of the first sentence.[261]

The EPA's narrow interpretation of the Ninth Circuit's decision is problematic. Contrary to the EPA's argument, the Ninth Circuit relied on both the first and second sentences of the regulation at issue in making its decision that the permit for Carlotta was not permissible.[262] First, the Ninth Circuit found that in spite of the offset, "[t]he plain language of the first sentence of the regulation is very clear that no permit may be issued" when the waters remain impaired and the new source is discharging pollution into that impaired water.[263] Then, the Ninth Circuit recognized that "[t]he regulation does provide for an *exception*" to the general rule of the first sentence.[264] This exception provides that a permit could be issued if (1) "[t]here [were] sufficient remaining pollutant load allocations" and (2) that "existing dischargers . . . are subject to compliance schedules designed to bring the segment into compliance," then it would be appropriate for the issuance of the permit.[265]

If the second sentence is an exception to the general prohibition of the first, then the exception would only be relevant if the Ninth Circuit held, not merely stated in dictum, that the permit was prohibited under the first sentence. Thus, the Ninth Circuit necessarily ruled that the offset could not circumvent the general prohibition on causing or contributing to existing water quality standards. Given this, it seems that there is a square conflict between *Annandale* and *Pinto Creek*. *Annandale* found that the first sentence does not prohibit offset considerations while *Pinto Creek* held that "there is nothing in the Clean Water Act or the regulation that provides an exception for an offset when the waters remain impaired . . . ."[266]

The EPA's narrow interpretation of the Ninth Circuit's decision was likely an attempt to keep its water quality trading policy alive under its existing regulations.[267] But the Ninth Circuit flatly rejected the argument that because of the offset from the Gibson mine, Carlotta did not cause or contribute to a violation of water quality standards.[268] Because the Supreme Court did not grant certiorari, it let stand the Ninth Circuit's decision that an offset is only permissible

---

260. *Id.* at 14.
261. *Id.* at 13.
262. *See Friends of Pinto Creek*, 504 F.3d at 1012–13.
263. *Id.* at 1012.
264. *Id.* (emphasis added).
265. *Id.* (citing 40 C.F.R. § 122.4(i) (2000)).
266. *Compare In re* The Cities of Annandale & Maple Lake, 731 N.W.2d 502, 524 (finding offsets okay), *with* Friends of Pinto Creek, 504 F.3d at 1012 (disallowing offsets).
267. Flynn, *supra* note 30, at 70.
268. Friends of Pinto Creek, 504 F.3d at 1012.

where there is a plan in place to reduce the pollutant loading from all water pollution discharges into that impaired water segment.[269] The conflict between the Ninth Circuit and the Minnesota Supreme Court, which the EPA declined to acknowledge, leaves the legality of the EPA's water quality trading program in a state of uncertainty.

To clarify the legality of the program, the EPA argues it could amend its regulation to overturn the Ninth Circuit's decision.[270] As discussed above, given the broad permitting authority granted to the EPA, the EPA is likely correct in this assertion. Although an agency can amend a regulation to overturn a judicial decision, just as how Congress can amend a statute for the same reason, the process to amend a regulation is not simple. EPA must go through the extensive notice and comment rulemaking process. In 1999, EPA proposed the use of offsets to meet water quality standards,[271] but after four years of congressional and administrative disputes over the rule, the EPA revoked its proposal.[272] The EPA position that the Ninth Circuit's decision does not affect its water quality trading program and the EPA's reluctance to amend its regulation suggest the EPA is not ready to address this challenge. Given the barriers to water quality trading—the complexity of establishing and monitoring credits, high transaction costs, the confined trading area, and the concerns associated with having regulated buyers and unregulated sellers—it is understandable that the EPA does not want to put the effort into amending its regulations to specifically allow for it.

VIII. CONCLUSION AND RECOMMENDATIONS

While our current command and control approach to regulating point source pollution has significantly reduced water pollution, there is still much to be done to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[273] It is clear that pushing point source pollution reductions alone will be expensive and will be unlikely to amount in a significant water quality gain. On the other hand, agriculture is the most significant cause of impairment in our Nation's waters and is ripe with opportunities to reduce pollution relatively inexpensively. Economic theory suggests that trading between

---

269. Carlota Copper Co. v. Friends of Pinto Creek, 129 S. Ct. 896 (2009) (cert. denied).

270. Brief for the Federal Respondent in Opposition, *supra* note 257, at 20.

271. Revisions to the National Pollutant Discharge Elimination System Program and Federal Antidegradation Policy in Support of Revisions to the Water Quality Planning and Management Regulation, 64 Fed. Reg. 46,058 (Aug. 23, 1999).

272. Withdrawal of Revisions to the Water Quality Planning and Mgmt. Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Mgmt. Regulation, 68 Fed. Reg. 13,608 (Mar. 19, 2003).

273. 33 U.S.C. § 1251(a) (2006).

sources where cost of pollution reduction varies facilitates more efficient reduction in pollution. Thus, water quality trading is seen as a way to actually meet water quality goals at a lower cost than traditional command and control mechanisms.

Policy makers are increasingly excited about the potential for market-based mechanisms to reach environmental goals. The unprecedented reduction in sulfur dioxide pollution through the CAA's acid rain emissions trading program is a poster child for trading's potential. Point to nonpoint source water quality trading, however, differs substantially from the acid rain trading program. As opposed to the clear statutory authority given under the CAA, neither the CWA nor the EPA's regulations specifically allow for water quality trading. The recent Ninth Circuit decision calls into question the legality of water quality trading in circumstances where trading would be most promising—for new point sources on an impaired water. While the EPA could amend its regulations to specifically allow for it, it is questionable whether that would be good policy. Agricultural pollution cannot be monitored, calculating credits is complex and uncertain, generating sufficient credits results in to high transactions costs, flexibility is limited by confined trading areas, and because agriculture is unregulated, liability falls on point sources in addition to other fundamental questions of equity.

There have been significant innovations to improve the potential for water quality trading. Credit brokers can help to reduce transaction costs and create a buffer of credits to offset uncertainty and liability concerns. The EPA's partnership with NRCS can generate more accurate information on pollution loading and reduction from different management techniques.

If modeling information can develop to the extent that pollution loadings can actually be understood and reductions can be verified, then why would it be necessary for agricultural pollution to be unregulated in the first place? One must keep in mind that agricultural pollution is unregulated because it is difficult to monitor and enforce. It is an anomaly that the difficulties for regulating agricultural pollution dictate that it should not be regulated under the CWA but are not insurmountable in creating a water trading system.

Moreover, central to the promise of water quality trading is that it could overcome market inefficiencies to reach environmental goals. The very reason those market inefficiencies exist is because of the differential treatment of point source and nonpoint source polluters under the CWA. Point sources long ago made the inexpensive reductions to pollution, and more stringent regulations means further reductions are expensive and inefficient. Nonpoint sources' low-cost-pollution-reduction-potential comes because of the very fact that they are unregulated. Contrary to the efficiency argument, water quality trading perpetuates the inefficiency of the CWA because it fails to address the disparate treat-

ment entrenched in the CWA. While doing so, it also adds transaction costs that would be largely unnecessary if agriculture were subject to similar requirements under the CWA.

A logical outgrowth of this argument is that agricultural runoff should be regulated under the CWA. The CWA requires point sources to meet performance-based standards by adopting best available technology. Similarly, nonpoint sources can meet performance-based standards by adopting Best Management Practices. The EPA, the USDA, and state programs can continue to work together to develop modeling data to estimate pollution loads. Then, once the standards are set, farmers can adopt a combination of Best Management Practices in order to be in compliance.

There is no doubt that agriculture will resist internalizing its pollution costs. Farmers may fear that the costs would make them less competitive on the international market or force some out of business. If it is decided that the costs for implementation are too high for the farmers to bear, subsidies could be available for farmers to cover the cost of implementation. Under such a system, the farmer would maintain the freedom to choose management practices that are best for the farmer's operation, while furthering the public's interest in cleaner water.

Another option is for Congress to link farm income subsidy programs to conservation programs. The billions of dollars spent on farm support could be linked to a farmer's adoption of a minimum threshold of Best Management Practices to reduce the farmer's pollution load.[274] In 2003, the European Common Agricultural Policy decoupled agricultural subsidies from crop production to a single farm payment.[275] These payments are subject to "cross-compliance" conditions relating to good practice standards for the environment, food safety, and animal welfare.[276] A similar program in the United States that conditions subsidies on meeting baseline Best Management Practices would target tax dollars to improving environmental conditions, while still supporting the important work that farmers do.

---

274. *Farm Income and Costs: Farms Receiving Government Payments*, USDA: ECON. RESEARCH SERV., http://www.ers.usda.gov/briefing/farmincome/govtpaybyfarmtype.htm (last visited Apr. 20, 2012) (depicting that in 2009, the U.S. government paid over $12 billion in income support subsidies, one quarter of which were conservation subsidies, suggesting that linking the other three quarters could have a significant conservation impact).

275. Jean-Jacques Jaffrelot, Directorate-General for Agriculture and Rural Development, *Cap Reform: Implementing Cross Compliance*, EUROPEAN CONSERVATION AGRIC. FED'N, http://www.ecaf.org/docs/ecaf/cap.pdf (last visited Apr. 20, 2012); David Kelch & Mary Anne Normile, *European Union Adopts Significant Farm Reform*, AMBER WAVES, Sept. 2004, http://www.ers.usda.gov/AmberWaves/September04/Features/europeanunion.htm.

276. Jaffrelot, *supra* note 275; Kelch & Normi,, *supra* note 275.

If federal leadership does not materialize to address nonpoint source pollution, states could consider adopting more stringent regulations toward agricultural pollution. As states continue to put in place water quality criteria for Nitrogen and Phosphorous and develop TMDLs, their focus will necessarily shift to nonpoint source pollution. TMDLs provide policy makers and the public with more information on how to reduce water pollution. More importantly, the Ninth Circuit's decision that the EPA and states cannot issue new permits without sufficient allocations and a plan in place to bring the impaired water back to health means that new development will be practically halted until the source of water pollution is addressed—and, for most waters, this means nonpoint source pollution. The combination of more available information on water quality, more stringent restrictions on existing permit holders, and a practical stalemate on new permits being issued on impaired waters may well be enough to propel states to directly address nonpoint source pollution.

To meet these challenges, states can adopt a variety of approaches to control agricultural pollution. Following California, states could adopt regulations that require nonpoint sources to have a permit.[277] Alternatively, states could require agricultural producers to have a nutrient reduction plan and implement best practices to meet their plan. States could also require specific practices like a vegetative buffer or a setback near sensitive waters. Regardless of the method that states employ, an effective regulatory scheme will require monitoring and enforcement—and funding to do so.[278]

Agriculturalists serve an important role in our society—to provide a safe, reliable, and relatively inexpensive supply of food, clothing, shelter, and even fuel. Now, it is time that we ask our agriculturalists to play a role in improving the quality of the Nation's waters, a role that the United States has long exempted agriculture from fulfilling. An emphasis on using trading to address agricultural runoff will be unlikely to overcome significant barriers to improve water quality. Rather, agricultural pollution needs to be regulated more directly through the CWA, cross-compliance conditions for farm subsidies, or regulations at the state level. Without this, our rivers, streams, and lakes will remain polluted.

---

277. CAL. WATER CODE § 13260 (West 2009).

278. 33 U.S.C. § 1329(h)(5) (2006); The Clean Water Act does provide grants to support state's nonpoint control program through grants that don't exceed sixty percent of the program's total cost. *Id.*