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Comments

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I. Introduction

The Chesapeake Bay is one of the most cherished natural resources on the eastern seaboard. It has great economical significance to the states that surround it; particularly for the fishing and boating industries.[1] A major concern has been the point source discharge of excess nitrogen and phosphorus into the Chesapeake Bay. In 2005, Virginia took a new approach to regulating nutrient discharge by implementing the Chesapeake Bay Watershed Nutrient Credit Exchange Program.[2] This

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1. Chesapeake Bay Program, Bay FAQ (2003), http://www.chesapeakebay.net/about.htm (follow "Bay FAQ" hyperlink).

2. VA. CODE ANN. § 62.1-44.19:14 (Supp. 2005).

law requires all facilities that make point source discharges of nitrogen and phosphorus into the Chesapeake Bay to obtain a permit by January 2006.[3] In addition, Virginia incorporated the "cap and trade" system from the Clean Air Act into its National Pollution Discharge Elimination System (NPDES) permit program. The inclusion of the "cap and trade" allows for credit trading between companies that have nutrient discharge permits. Maryland does not have such a credit trading system incorporated into its NPDES permit program.[4]

This comment examines the different approaches taken by Virginia and Maryland in confronting the nutrient problem plaguing the Chesapeake Bay. It will give background information on the Chesapeake Bay and also on nutrient credit trading. The Virginia approach is examined through statutory and case law analysis. The Virginia approach is then analyzed through recommended guidelines for nutrient credit trading. Maryland's approach is reviewed through statutory and case law analysis. Finally, based on the analysis of Virginia's nutrient credit trading program and Maryland's current approach to the nutrient problem in the Chesapeake Bay, the potential for Maryland to implement a nutrient trading program of its own is discussed.

II. Background of the Chesapeake Bay

The Chesapeake Bay (hereinafter the Bay) is the largest estuary[5] in the United States and is also a vast watershed.[6] The Bay was a site of settlement in 1607 and was subsequently explored by Captain John Smith.[7] The Bay is home to almost 300 different species of marine animals;[8] the most well-known and profitable of which is the blueshell crab.[9] Another of its popular inhabitants is the oyster.[10] In the peak of

3. VA. CODE ANN. § 62.1-44.19:14 (Supp. 2005).

4. MD. CODE ANN., ENVIR. § 9-302 (1999).

5. Chesapeake Bay Program, *supra* note 2. Estuary is defined as "body of water, open at one end to the ocean, in which salt water from the ocean mixes with freshwater draining from surrounding land."

6. *Id.* Watershed is defined as "an area of land that is crisscrossed by smaller waterways that drain into a larger body of water."

7. Chesapeake Bay Program, About the Bay, (2003), http://www.chesapeakebay.net/about.htm (follow "About the Bay" hyperlink).

8. Chesapeake Bay Program, Fish, (2005), http://www.chesapeakebay.net/fish1.htm. The bay contains both catadromous and anadromous fish. Catadromous fish swim from freshwater to ocean water to breed; anadromous fish go from high salinity water such as the ocean to freshwater to breed.

9. Chesapeake Bay Program, Crabs and Shellfish (2005), http://www.chesapeakebay.net/american_oyster.htm. It is estimated that commercial harvests of crabs in the Bay can yield 100 million pounds.

10. *Id.*

its existence, the oyster yielded millions of bushels from the Bay.[11] Today, however, the yield is typically counted in the thousands of bushels per year.[12] The effects of the decline in the oyster population extend beyond the commercial context.[13] The causes of the decline include over-harvesting and environmental pollutants.[14]

Nitrogen and phosphorus have been identified as the most threatening environmental pollutants[15]. In normal concentrations these nutrients are not harmful, but when they are found in high concentrations, they become a hazard to the ecosystem.[16] In high concentrations, nitrogen and phosphorus form blooms, which are so dense that sunlight cannot penetrate to provide the submerged aquatic vegetation the necessary impetus for photosynthesis.[17] The result is that the vegetation at the bottom of the Bay dies and cannot provide the oxygen that fish depend on to survive.[18] High concentrations of nitrogen and phosphorus can be traced to both point and non-point sources. A major point-source discharger of nutrients into the Bay is water treatment plants.[19]

As a result of the declining health of the Bay, in 1983 the Chesapeake Bay Program was formed.[20] In recognition of the complexity of the pollution problems facing the Bay, the members of the Chesapeake Bay Program, in an example of cooperative federalism, agreed to the Chesapeake Bay Agreement (hereinafter the Agreement).[21] The 1987 Agreement established the delegation of power between state governments, the District of Columbia, and the EPA.[22]

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11. Chesapeake Bay Program, American Oyster (2005), http://www.chesapeakebay.net/american_oyster.htm.

12. *Id.*

13. *Id.* Besides generating business, oysters have an important place in the ecosystem. They provide a source of food for Bay creatures and also, through their reefs, provide a source of shelter. In addition, the oysters act as a water filter and remove some of the excess nutrients that cause pollution in the Bay.

14. *Id.*

15. *Id.*

16. Chesapeake Bay Program, Nutrient Pollution (2005), http://www.chesapeakebay.net/nutr1.htm.

17. *Id.*

18. *Id.*

19. *Id.*

20. Chesapeake Bay Program, *supra* note 2. The Chesapeake Bay Program is comprised of Virginia, Pennsylvania, Maryland, the District of Columbia, the United States Environmental Protection Agency and the Chesapeake Bay Commission.

21. CHESAPEAKE BAY PROGRAM, 1983 CHESAPEAKE BAY AGREEMENT 1 (1983), http://www.chesapeakebay.net/pubs/1983ChesapeakeBayAgreement.pdf.

22. *Id.* The Agreement created the Chesapeake Executive Council. The Council was to meet at least twice a year and supervise the plans for improvement of the water quality of the Bay. Power was given to the Council to establish an implementation committee.

The Agreement also set forth an ambitious goal of reducing the amount of nitrogen and phosphorus in the Bay by forty percent by the year 2000.[23] The 1987 Agreement was codified into the Clean Water Act.[24] In November of 2000, the 1987 Agreement was amended to provide for a Bay study program.[25] Maryland explicitly acknowledged the importance of the reduction goals of the Agreement when it adopted its statutory scheme to regulate its waters.[26] In 2003, the Chesapeake Bay Program set forth aggressive reduction goals in an attempt to control the amount of nitrogen and phosphorus discharged into the Bay.[27]

III. Nutrient Credit Trading Background

Credit trading originated in the Clean Air Act.[28] In the Clean Air Act, credit trading is used in non-attainment areas[29] to prevent the quality of air in the region from worsening.[30] When used to regulate bodies of water, it is best for a trading program to focus on point sources.[31] In the past, non-point sources[32] have proven more difficult to regulate than point sources.[33] Point sources are easier to regulate because they emit pollution through a fixed location, and thus can be monitored and

23. CHESAPEAKE BAY PROGRAM, 1987 CHESAPEAKE BAY AGREEMENT 1 (1987), http://www.chesapeakebay.net/pubs/1987ChesapeakeBayAgreement.pdf. The base level for the reductions was the point source loads for 1985 and non-point source loads for an average year.

24. Clean Water Act § 117, 33 U.S.C. § 1267 (2000).

25. Clean Water Act § 117(h).

26. MD. CODE ANN., ENVIR. § 9-302(b)(5) (1999).

27. Chesapeake Bay Program, Reducing Nutrient Pollution (2004), http://www.chesapeakebay.net/nutr2.htm. The Program announced its goal of reducing the annual nitrogen load by 110 million pounds and reducing the annual phosphorus load by 6.3 million pounds.

28. Clean Air Act § 173(c)(1), 42 U.S.C. §7503(c)(1) (2000).

29. Clean Air Act § 171(2). Non-attainment area is defined as "The term nonattainment area means, for any air pollutant, an area which is designated nonattainment with respect to that pollutant within the meaning of §107(d) of this title."

30. Clean Air Act § 173(a)(1).

31. Clean Water Act § 502(14), 33 U.S.C. § 1362(14) (2000). A point source is defined as "any discernible confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture."

32. Clean Water Act § 502(14). Nonpoint source is any source of discharge other than a point source.

33. Andrew M. Wolman, *Effluent Trading in the United States and Australia*, 8 GREAT PLAINS NAT. RESOURCES J. 1, 1(2003). Nonpoint sources are harder to regulate since they usually do not have to apply for a discharge permit. Concentrated animal feeding operations do have to apply for permits. Attempting to regulate nonpoint sources also brings up Constitutional issues of the power of the state to regulate private land use.

regulated.[34]

Certain benefits come with the implementation of a credit trading program for water. These benefits take the form of economic benefits to those trading credits, as well as a concentration on the environment.[35] Credit trading programs are not without their drawbacks. As one author points out, if the circumstances surrounding the market are not conducive to optimum execution, the credit trading program will not fulfill its purpose.[36] It must be remembered that applying a credit trading program to water is attempting to control nature, which often does not turn out as hoped.[37] Tributaries from many states empty into the Chesapeake Bay, thus waters not under Virginia's regulatory control have the potential to derail the nutrient credit exchange program that Virginia has enacted.

IV. Virginia's Approach

A. Statutory Scheme

Pursuant to the Clean Water Act, to establish a NPDES permit program, Virginia needed EPA approval.[38] Virginia's plan for a permit program was approved by the EPA in 1975.[39] The permit program is controlled by the State Water Control Board.[40] All operators of sewage systems and treatment plants must apply for a discharge permit.[41] In order to monitor the quality of the water, Virginia included a detailed reporting requirement.[42]

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34. *See* John P. Almeida, *Nonpoint Source Pollution and Chesapeake Bay Pfiesteria Blooms: the Chickens Come Home to Roost,* 32 GA. L. REV. 1195, 1199 (1998) (discussing the lack of legislation controlling nonpoint sources).

35. SANDRA ROUSSEAU, CTR. FOR ECON. STUDIES, EFFLUENT TRADING TO IMPROVE WATER QUALITY: WHAT DO WE KNOW TODAY 6 (2005), http://users.pandora.be/ronald.rousseau/ROUSS05ET.pdf. The benefits are "... cost saving, (b) incentives to reduce pollution beyond current limits, (c) incentives for technological innovation, (d) an emphasis on water quality rather than the installation of a particular abatement technology, and (e) the possibility for independent groups to participate."

36. *Id.*

37. *Id.*

38. Clean Water Act § 402(b), 33 U.S.C. § 1342(b) (2000).

39. 40 Fed.Reg. 20, 219 (May 8, 1975).

40. VA. CODE ANN. § 62.1-44.19:3 (2001).

41. VA. CODE ANN. § 62.1-44.19:5 (2001).

42. VA. CODE ANN. § 62.1-44.19:5(C)(1) (2001). The 303(d) report shall:

> 1. In addition to such other categories as the Board deems necessary or appropriate, identify geographically defined water segments as impaired if monitoring or other evidence shows: (i) violations of ambient water quality standards or human health standards; (ii) fishing restrictions or advisories; (iii) shellfish significant declines in aquatic life biodiversity or populations; or (vi) contamination of sediment at levels which violate water quality standards

The latest addition to the Virginia statutory scheme is a permit program for point source discharge of nitrogen and phosphorus, known as the Watershed General Virginia Pollutant Discharge Elimination System Permit.[43] The statutory scheme is specifically geared toward the Bay and its tributaries.[44] What makes the scheme unique is that it incorporates a credit trading system which allows permittees to exchange nutrient credits with each other.[45] Under the program, both nitrogen[46] and phosphorus[47] credits are allowed to be traded.

An interesting aspect of the program is that the credit exchange is controlled by the permittees.[48] The permittees are allowed to set up a non-stock corporation, known as the Virginia Nutrient Credit Exchange Association (hereinafter the Association), to oversee the trading of nutrient credits.[49] The Association not only has the power to oversee the credit exchange program, but also to submit the compliance reports on behalf of member corporations.[50] The purpose behind the Association was to make compliance with nutrient load allocations in the Bay easier by allowing the permittees themselves to oversee the process and arrange for trading partners.[51] The decision to form the Association is left up to the permit-carrying members, as is the decision by each company to join the Association.[52]

All facilities that obtain a permit must comply with their original waste load allocation for both nitrogen and phosphorus.[53] Each facility can reach compliance either through emitting fewer nutrients than their waste load allocation allows or by acquiring sufficient credits.[54] Since Virginia gave statutory authorization for the permit-carrying companies to create their own trade association, Virginia prefers that the companies

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or threaten aquatic life or human health.

43. VA. CODE ANN. § 62.1-44.19:14(A) (Supp. 2005).
44. VA. CODE ANN. § 62.1-44.19:14(A) (Supp. 2005).
45. VA. CODE ANN. § 62.1-44.19:14(A) (Supp. 2005).
46. VA. CODE ANN. § 62.1-44.19:13 (Supp. 2005).

> Point source nitrogen credit means the difference between (i) the waste load allocation for a permitted facility specified as an annual mass load of nitrogen, and (ii) the monitored annual mass load of total nitrogen discharged by that facility where clause (ii) is less than clause (i), and where the difference is adjusted by the applicable delivery factor and expressed as pounds per year of delivered total nitrogen load.

47. VA. CODE ANN. § 62.1-44.19:13 (Supp. 2005). (calculated the same way that a point source nitrogen credit is calculated).
48. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).
49. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).
50. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).
51. H.B. 2862, (Va. 2005).
52. *Id.*
53. VA. CODE ANN. § 62.1-44.19:18(A) (Supp. 2005).
54. VA. CODE ANN. § 62.1-44.19:18(A) (Supp. 2005).

go through the Association to acquire the necessary credits. The program is structured so that permittees are to use the Department of Environmental Quality as a last resort for acquiring credits.[55]

Virginia's market-based approach does not contain a significant state enforcement mechanism. For the program to succeed, governmental interference must be minimal.[56] While the permittees must still be in compliance with the applicable regulations and standards set forth by the State Water Control Board, the permittees are left to their own bargaining skills to acquire sufficient credits to meet compliance standards.

To initiate the program, Virginia must be ready to intercede and assist the marketplace.[57] Virginia does this by allowing permittees who cannot successfully arrange to acquire credits from other permittees to purchase the credits from the state.[58] This approach seems to go against a market-based approach because it allows a company who cannot survive to continue "limping on" in its existence. What must be considered, however, is the ultimate goal: reduction of nutrient emissions into the Bay. Achievement of this goal must be carefully balanced against the economic benefits that the permittees provide. Forcing an already existing company to close because of a permitting requirement would not be in the best interests of Virginia's economy. In addition to the economic interest, a health interest must also be factored into the balancing test. Forcing sewage facilities to close could severely impact the health of the citizenry. By not including a harsh penalty for non-compliance, and also by assisting in acquiring nutrient credits, Virginia protects its economic and health interests.

However, a potential problem with this type of program is that it allows waste polluters to "buy" the ability to pollute. The ability to purchase additional credits through the Department lends support to this concern. In theory, a very wealthy permittee could buy enough credits to pollute without restriction. Virginia minimized this concern by requiring a permittee who needs to purchase more credits than are available make a showing of necessity.[59] The size of this potential pitfall depends on how stringent the governing body is in enforcing the requirement. As in any other context, a weak enforcement of this policy will make it merely a

55. VA. CODE ANN. § 62.1-44.19:18(A)(2) (Supp. 2005). To acquire more credits through the Department the permittee must submit a report showing diligence in attempting to acquire sufficient credits from other facilities but has failed to acquire the necessary credits.

56. *See* Rousseau, *supra* note 36.

57. *Id.*

58. VA. CODE ANN. § 62.1-44.19:18(A)(2) (Supp. 2005).

59. VA. CODE ANN. § 62.1-44.19:18(A)(2) (Supp. 2005).

rubber-stamping process.

The problem is also neutralized by a company which operates its plant with the opposite intention. If a company lowers its own emissions and has excess credits remaining, it could sell the extra credits for profit to other companies.[60] The permittee who operates with this intention will neutralize the effect of the permittee who operates with the intention of buying as many credits as possible.

A high price for the nutrient credit will set this process into motion.[61] By setting a high price, companies that can reduce their emissions rate enough to have credits to sell will make efforts to reduce their emissions as much as possible. A high credit price will encourage companies seeking to buy credits to alternatively lower their own emissions rate to avoid dependence on the purchase of credits. Thus, there is an incentive for the larger emitters to reduce their emissions as well. At some point, the market will even out when the sellers of nutrient credits cannot stockpile any more credits and the larger emitters reduce their emissions sufficiently enough that they do not have to continue to purchase credits. In this scenario, the emissions reduction goals will be met.[62]

B. Case Law

On occasion, Virginia has been lax in forcing corporations to comply with permit requirements. The clearest example of this was in the series of *Smithfield* cases.[63] These cases all involve Smithfield's noncompliance with nutrient discharge limitations set forth in the discharge permits it was granted by Virginia.[64] Smithfield was given numerous extensions to meet compliance requirements with the tighter effluent limitations for nitrogen and phosphorus, but failed to do so.[65]

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60. Ann Powers, *The Current Controversy Regarding TMDLS: Contemporary Perspectives "TMDLS and Pollutant Trading"*, 4 VT. J. ENV'T 2, 13 (2003).

61. *See* Rousseau, *supra* note 36, at 4.

62. *See* Rousseau, *supra* note 36, at 3-6. The scenario set forth does not take into account more facilities obtaining permits, which would keep the program going by increasing the demand for nutrient credits. Tighter emissions limitations will keep the system going by reducing the demand. Eventually there will be a "zero point" because emissions can only be lowered to a certain point.

63. *See* United States v. Smithfield Foods, Inc., 191 F.3d 516 (4th Cir. 1999); Treacy v. Smithfield Foods, Inc., 500 S.E.2d 503 (Va. 1998); State Water Control Bd. v. Smithfield Foods, Inc., 542 S.E.2d 766 (Va. 2001). These cases all originate from the same operative core of facts.

64. *Treacy*, 500 S.E.2d at 504.

65. *Smithfield Foods*, 191 F.3d at 520-522. The Board of Water Control issued the new regulations in 1988. Smithfield filed suit, which resulted in a settlement that forced Smithfield to conduct a study into its wastewater management techniques. Smithfield was granted an extension in May of 1991 and again in January of 1992, which pushed the

Because of the long period of non-compliance, the situation came under the watchful eye of the EPA.[66] Eventually the EPA intervened and filed suit against Smithfield.[67] The EPA invited the State Water Control Board to join the enforcement action, but the Board declined and commenced its own enforcement action.[68] The EPA's suit[69] was found to block the Board's enforcement action.[70]

It should be noted that, at the time the events that gave rise to the litigation occurred, administrative penalties could not be imposed on a violator of the permit limitations unless that violator gave permission to have sanctions imposed on it.[71] Prior to the EPA's suit against Smithfield, Virginia changed this statute so that permission of the violator was no longer necessary for sanctions to be applied.[72] While this change came before the EPA commenced its suit, the two seem to be related. The EPA was able to institute its suit because Virginia had not "diligently prosecuted" the violations under state law.[73] The change strengthened Virginia's enforcement plan for violations of its effluent water standards. The monetary penalty that was imposed against Smithfield also provided an incentive for Virginia lawmakers to make sure that it diligently and aggressively prosecuted violations or face the prospect of being usurped by the EPA.[74]

C. Institutional Analysis

To successfully apply the "cap and trade" program from the Clean Air Act through the Clean Water Act, the institutional structure must be conducive to trading.[75] While this is still a relatively new field, eight guidelines have been established.[76] If Virginia's permit program is to

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date of compliance back to May 13, 1994.

66. *Id.* at 523. Eventually Smithfield made the EPA's Quarterly Noncompliance Report (QNCR), at which time the EPA began to contemplate initiating legal action against Smithfield.

67. *Id.* There was some delay because of a criminal investigation of the chief operator of Smithfield's wastewater treatment for falsifying documents and later destroying the evidence.

68. *Smithfield*, 542 S.E.2d at 768 (holding suit by the Board barred by res judicata).

69. Clean Water Act § 309(g)(6)(A)(ii), 33 U.S.C. § 1319(g)(6)(A)(ii) (2000). This section bars federal action in the situation where a state is "diligently prosecuting" an enforcement action under state law.

70. *Smithfield Foods*, 191 F.3d. at 525.

71. *Id.* at 525 n.2.

72. *Id.*

73. *Id.*

74. *Smithfield*, 191 F.3d at 523. Smithfield was fined $12.6 million for 6,982 days of violations.

75. *See* Rousseau, *supra* note 36, at 3-6.

76. James T.B. Tripp and Daniel J. Dudek, *Institutional Guidelines for Designing Successful Transferable Rights Programs*, 6 YALE J. ON REG. 369, 375 (1989).

succeed, it must meet each of these guidelines.

The first guideline is that the controlling body of the permit program "must have clear legal authority to generate the transferable rights and to implement and enforce the program."[77] Virginia meets this guideline because of the enabling statute for the point source discharge permit program[78] through the Association.[79] The Association is given specifically enumerated powers and broad, discertionary power by the Virginia Legislature.[80] The authority is given to the Virginia Department of the Environment, which has the power to regulate the program, since it oversees the NPDES permit program for Virginia. By establishing the Association through statute, Virginia avoided a potential pitfall that could undermine the whole program.[81]

The agency must also be able to design and implement the program.[82] Under Virginia's statutory scheme, the Association is able to use its own resources to ensure that the program is running efficiently. The Association is also able to conduct studies and assist members in reaching compliance with the applicable water quality standards.[83] By delegating this authority to the Association, the Virginia government eased the burden on its own resources. Granted, there will still be some strain on Virginia's resources by creating and overseeing the program. However, the Association will perform the logistics, and therefore Virginia's burden will be minimal in comparison to what it would be without the Association.

The third institutional guideline poses a potential problem for Virginia.[84] The potential problem is created by the provision that allows a company who cannot acquire enough credits through the Association to attempt to purchase credits from the state.[85] As mentioned previously in this comment, this is a necessary provision to ensure stability for Virginia's economy and the health and safety of its citizens. This is the

77. *Id.*

78. VA. CODE ANN. § 62.1-44.19:14 (Supp. 2005).

79. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).

80. VA. CODE ANN. § 62.1-44.19:17(vi) (Supp. 2005). ". . . perform such other duties and functions as may be necessary to the effective and efficient implementation of the credit exchange program."

81. *See* Tripp, *supra* note 77. Tripp and Dudek point out that ambiguous legal authority for a trade program can lead to delay by litigation and hesitancy by agencies to act. However, the article mentions nothing about agency delegation of authority to a non-government actor. It is unclear if this would affect the analysis of the article.

82. *Id.*

83. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).

84. *See* Tripp, *supra* note 77, at 376. The program must not have an "easy out" of compliance.

85. VA. CODE ANN. § 62.1-44.19:18(A)(2) (Supp. 2005).

loophole feared by the authors of the guidelines.[86]

However, this loophole is necessary for the permit program because of the delegation of power to a non-government actor. Virginia cannot vest all of the power for water quality control in the Association. To do so would be to allow corporations to perform governmental functions. This creates a serious problem because there is no effective way to make the corporate officers who comprise the Association, and who are not elected officials or even executive appointees, accountable to the voting public.

Since the guideline does not mention non-governmental actors having any control, it appears that the main concern is government agencies having a "turf" war over control of the program. The Virginia State Water Control Board is a government agency, and as such, it has the power to overrule the Association. In addition, Virginia can pass legislation that abolishes the Association. Hence the agency "turf" war could not occur because the two agencies involved do not possess equal power.

Virginia's credit trading program has a clearly specified objective.[87] The objective was clearly set forth in the Chesapeake Bay Agreement to reduce nitrogen and phosphorus in the Bay by forty percent by 2000[88] and to restrict any further increases in nitrogen and phosphorus discharge thereafter.[89] By clearly setting forth the objective of the program, it is easier for the agency and the citizenry to remain focused on achieving that objective. It is easier to garner support to achieve a clear objective as opposed to a more ambiguous or broad goal.[90]

The nutrient credit exchange program must be applied to a significant regional problem.[91] Similar to the guideline regarding setting forth a clear objective, this guideline is easily met. The regional problem is excessive discharge of nitrogen and phosphorus, which threatens the health and the economic welfare of the Bay. The involvement of other states besides Virginia in the Bay complicates this situation somewhat because there are other states involved that do not have a nutrient credit trading program.[92] Without such a program, these other states might not have water quality standards as stringent as Virginia has. As a result,

86. *See* Tripp, *supra* note 77, at 375. In the example given, the authors refer to land use variances. However, the main premise is that the power of the program should be centralized in one agency and not split between two of them.

87. *Id.*

88. Chesapeake Bay Program, Nutrient Trading (2001), *available at* http://www.chesapeakebay.net/trading.htm.

89. *Id.*

90. *Id.*

91. *See* Tripp, *supra* note 77, at 376.

92. *See* Rousseau, *supra* note 36, at 8.

water from these other states, which flows into the Bay, could raise the level of nitrogen and phosphorus above the level permitted by the Virginia discharge permit. Virginia is following the path recommended by Tripp and Deduk[93] because of its goal of regional reduction for the whole Bay, as opposed to just a single tributary or body of water.

The sixth guideline requires that the rights have an economic value placed on them so that there is incentive to engage in trading the rights.[94] The Virginia program meets this guideline by requiring companies to still meet the applicable water quality standards and waste load allocations.[95] This is, in effect, the "cap" of the "cap and trade" system. If all that a company had to do was purchase the necessary nutrient credits without regard to the total waste load allocations or other applicable water quality standards, then the trading program would be rendered completely useless. There would be no reason to trade, since a company only had to purchase the requisite credits from the state. Without a cap there would be no incentive for companies to reduce their emissions, because any credits that they were able to harvest would not have any value on the open market. By forcing companies to comply with waste load allocations and other forms of control, Virginia is creating the marketplace and providing the necessary incentive to companies to trade their credits.

The permit program meets the seventh recommended guideline for success in a nutrient credit trading program.[96] The credits are issued by the state for trading, and the Association oversees the allocation of credits between the companies.[97] This process is made simple, as is recommended by the guideline, by the delegation of power from the Virginia legislature to the Association. This is exactly the type of administrative simplicity recommended in the guideline because rather than Virginia having to use its own resources to oversee the allocation of credits, Virginia requires the companies oversee it.

Lastly, a nutrient credit trading program must have minimal transaction costs to be successful.[98] Based on the statutory language used to create the Association it appears that Virginia has kept the transactional costs to a minimum.[99] If there is a high transaction cost,

93. *See* Tripp, *supra* note 77, at 376.
94. *Id.*
95. VA. CODE ANN. § 62.1-44.19:14 (Supp. 2005).
96. *See* Tripp, *supra* note 77, at 376. There must be a simple method for trading the rights.
97. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).
98. *See* Tripp, *supra* note 77, at 377.
99. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005). The statute mentions that the Association, if established, shall be a nonstock corporation.

trading will be inhibited.[100] The transaction cost is kept low because the permittees can deal through the Association, as opposed to having to apply for a permit or go through a government agency.

V. Maryland's Approach

A. Statutory Scheme

Maryland applies a traditional approach to its discharge permit program. Like all states that have a NPDES permit program, Maryland had to submit a plan meeting certain minimum requirements to the EPA for approval.[101] All discharge permits are issued directly through the Maryland Department of the Environment.[102] Maryland establishes the criteria for the permit, the grounds for refusal, the renewal process, reporting requirements, and a right of entry.[103] These are the basic, garden variety elements that a state NPDES permitting program must have in order to be approved by the EPA.[104]

Maryland enacted another type of permit program, separate and distinct from the NPDES program. This new program was implemented after the massive fish kills of the summer of 1997 forced Maryland to take a more active role in controlling the discharge of nutrients into its waters.[105] The fish kill was found to be caused by pfiesteria.[106] Pfiesteria is a dinoflagellate microorganism found in water[107] that produces a toxin when found in blooms.[108] In addition to causing a massive fish kill, pfiesteria was also linked to human health problems.[109] Pfiesteria has been found to form "blooms" around large amounts of nutrients.[110] A significant source of the nutrients in Maryland's waters is farms.[111] Farms are a source of nutrients because rain causes fertilizer

100. *Id.*
101. Clean Water Act § 402(b), 33 U.S.C. § 1342(b) (2000).
102. MD.CODE ANN., ENVIR. § 9-324 (1999).
103. MD.CODE ANN., ENVIR. § 9-325 to -329 (1999).
104. Clean Water Act, § 402(b).
105. William R. Reid, *Pfiesteria and Maryland's Water Quality Improvement Act of 1998,* 7 U. BALT. J. ENVTL. L. 18, at 19. (1999).
106. MARYLAND DEP'T OF THE ENV'T, PFIESTERIA FACT SHEET 1 (1997), http://www.mde.state.md.us/assets/document/factsheets/pfiesteria.pdf. The fish kill resulted in the temporary closing of the Pocomoke River, the Chicamacomico River, and King's Creek.
107. *Id.* Dinoflagellate means "free swimming."
108. *Id.*
109. *Id.* The human symptoms included skin irritation, respiratory irritation and possible short-term memory loss.
110. *Id.*
111. MARYLAND DEP'T OF THE ENV'T, YOUR BAY, YOUR WATERSHED 1 (2000), http://www.mde.state.md.us/assets/document/factsheets/path_bay.pdf. Maryland has

and manure run-off to enter nearby bodies of water, which flow into other bodies of water and deposit nutrients.[112]

The pfiesteria-linked fish kills posed a serious threat to the economic interests of Maryland, as well as to the health of Maryland inhabitants.[113] The response to this threat was the passage of the Water Quality Improvement Act (hereinafter WQIA).[114] The WQIA requires farmers to submit a nutrient management plan[115] to the Maryland Department of Agriculture.[116] The WQIA includes a mild enforcement provision to facilitate compliance.[117] The most intriguing aspect of the WQIA is the education requirement that accompanies a nutrient management plan.[118] The overall goal of the WQIA is the better management of farmland,[119] specifically the use of fertilizer containing nitrogen and phosphorus,[120] thereby reducing the nutrient run-off that caused the fish kills.

In addition to the WQIA, Maryland enacted legislation that required large poultry producers to assist smaller farmers in getting rid of the waste from the chicken farms.[121] While this may seem like a simple task, the amount of chicken manure produced by chicken farms in Maryland is immense.[122] This legislation sparked strong protest from the poultry

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more than 2.7 million acres of farmland. The run-off from these farms is a significant source of nutrients, which can cause the blooms that attract pfiesteria.

112. *Id.*

113. *See* Tanya Jones, *Some Tourists Changing Course over Water Woes*, BALT. SUN., Aug. 4, 1997, at 1B (discussing the drop-off in tourism as well as the decline in the fishing industry.).

114. MD. CODE ANN., AGRIC. § 8-801 to -807 (1999).

115. MD. CODE ANN., AGRIC. § 8-801(c). A nutrient management plan is defined as a "plan prepared . . . to manage the amount, placement, timing, and application of animal waste, commercial fertilizer, sludge, or other plant nutrients to prevent pollution by transport of bioavailable nutrients and to maintain productivity."

116. MD. CODE ANN., AGRIC. § 8-801.1.

117. MD. CODE ANN., AGRIC. § 8-803.1(j). The penalty for a first violation is a warning, and the penalty for a second violation is a possible administrative fine after a hearing. The administrative penalty is limited to a fine, which cannot exceed $2,000 per farmer per year.

118. MD. CODE ANN., AGRIC. § 8-803.3(b). An applicant must complete an education program in nutrient application every 3 years.

119. MD. CODE ANN., AGRIC. § 8-802(a). All nutrient management plans must be prepared by someone who is certified by the Maryland Department of Agriculture to prepare such plans. *Supra.* By having someone who is certified create the plan, Maryland is assured that the resources are in fact being better managed than they would be by the ordinary, uniformed farmer.

120. MD. CODE ANN., AGRIC. § 8-801.1(a). Nitrogen and phosphorus are the only nutrients that are listed under the management plan requirements.

121. Tim Craig, *Farmers are left to Dispose of Waste; Maryland Reverses Policy Forcing Poultry Processors to Help,* BALT. SUN., June 15, 2003, at 1B.

122. Peter S. Goodman, *The Cost to the Bay; Who Pays for What is Thrown Away? Impact of New Pollution Controls May Hinge on Liability for Manure,* WASH. POST, Aug.

industry, which threatened to move its operations out of Maryland.[123]

B. Case Law

In dealing with issues that arise from discharge permits, the Maryland judiciary has shown a strong deference to agency determinations and procedures.[124] Agency deferral is natural because agencies are often in a better position than the judiciary to make decisions about issues that fall within the ambient of their jurisdiction.[125] The pattern of deference to agency decisions has continued.[126] Maryland's close proximity to the Bay requires it to carefully regulate the discharge of nutrients into its waters. One of the areas that Maryland specifically targeted for enforcement was the Patuxent River.[127] The EPA and the Maryland Department of the Environment conducted a study of the effects of nitrogen and phosphorus into the Patuxent.[128] The Department determined that the regulations in place for nutrient discharge were sufficient.[129]

An administrative hearing has provided the most recent, significant case law development for Maryland's discharge permit program.[130] Maryland tried to extend the scope of the discharge permit by regulating the off-site use of animal waste.[131] The new requirement attempted to force farmers to alter their techniques of disposing of chicken waste in an effort to reduce nutrient run-off.[132] In reaching her decision that the discharge permit program could not be used to regulate run-off, Administrative Law Judge Friedman pointed to the fact that the power to control run-off lay not in the hands of the Maryland Department of the Environment, but with the Maryland Department of Agriculture.[133]

3, 1999, at A01. The estimated amount of chicken manure in Maryland for 1999 was approximately 750,000 tons.

123. *Id.*

124.

125. Citizens for Rewastico Creek v. Comissioners of Hebron, 508 A.2d 493, 495 (Md. Ct. Spec. App. 1986). "A reviewing court is not allowed to substitute its judgment for that of the agency."

126. *Id.*

127. Northwest Land Corp., v. Maryland Dep't of the Env't, 656 A.2d 804, 812 (Md. Ct. Spec. App. 1995). (citing *Citizens for Rewastico Creek*).

128. Howard County v. Davidsonville, 527 A.2d 772, 776 (Md. Ct. Spec. App. 1987).

129. *Id.*

130. *Id.* (reversing the lower court's overturning of an agency's decision that permitted the sewage treatment facility had met all applicable water standards).

131. Paul L. Sorisio, *Poultry, Waste, and Pollution" The Lack of Enforcement of Maryland's Water Quality Improvement Act,* 62 MD. L. REV. 1054, at 1056, (discussing *In re Tyson Foods*).

132. *Id.* at 1067.

133. *Id.*

134. *Id.*

C. *Institutional Analysis*

Overall, Maryland's recent approach towards the nutrient problem confronting the Chesapeake Bay has been inadequate.[134] Maryland is attempting to solve the nutrient problem by regulating non-point sources.[135] In light of the recent administrative judgment, this may be the only way to restrict nutrient discharge.

The WQIA is not strong enough to accomplish the goal of reducing nutrient run-off from farms. The sanctions involved for non-compliance are not conducive to achieving compliance.[136] At the same time, it must be remembered that the goal of this statute is not to put non-conforming farmers out of business by imposing heavy fines, but to reduce nutrient run-off.[137] This is shown by the scope of coverage of the statute.[138] Hence, any type of Draconian sanction would be contrary to the purpose of the statute.

Maryland's expansion of the scope of the discharge permit to cover non-permit usage ultimately backfired. The deference granted to agency actions in regards to discharge permits reached its outer limit. The first problem with the attempted expansion was that the power for the WQIA was given to the Maryland Department of Agriculture and not the Department of the Environment.[139] This decentralization of power would inevitably lead to quarrelling between the agencies, with an administrative law judge being the referee.[140] The second problem was that Maryland was placing too heavy a burden on one of its most important economic resources.[141] Holding major corporations responsible for the disposal of waste of their contract farmers will result in a heavy burden on those corporations to find a means of disposal.[142]

Maryland could meet with success if it implemented a nutrient credit trading program similar to Virginia's. Unlike Virginia, Maryland

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135. *Id.*

136. *See* Almeida, *supra* note 35.

137. MD. CODE ANN., AGRIC. § 8-803.1(j) (1999). The fines and cap on accumulation of fines are inadequate to force compliance.

138. MD. CODE ANN., AGRIC. § 8-803.1(j). If the Maryland legislature had felt this was a serious enough problem, they could have imposed criminal sanctions for violation of the statute.

139. MD. CODE ANN., AGRIC. § 8-803.1(b)(1). The nutrient management plan requirement applies to agricultural operations with more than $2,500. Naturally, this covers small farms as well as the larger, industrial farms.

140. *See* Sorisio, *supra* note 131, at 1066-67 (discussing *In re Tyson*).

141. *Id.*

142. Ted Shelsby, *State is Challenging Ruling on Chicken Growers' Waste; MDE Wants to Hold Companies Accountable*, BALT. SUN, Sept. 21, 2002, at 1C. Poultry accounts for roughly one-third produce in Maryland.

143. *See* Goodman, *supra* note 123. Perdue Farms built a factory for turning chicken manure into fertilizer pellets.

has a strong background in enforcement on its side. Thus, Maryland does not have to worry about the EPA supplanting it in the enforcement of the regulatory scheme. Unlike with the "co-permitting" requirement, control over the nutrient credit trading program would be vested in a single agency.[143] Thus, there would be clear legal authority within one agency, there would not be an agency "turf war" for control over the nutrient credit trading program, and the first guideline would be met.[144]

In meeting the second guideline[145] Maryland can choose to either vest the power to design the program in the Department of the Environment or it can leave the design of the program up to a non-governmental actor, as Virginia has done.[146] Delegating the design to a non-governmental actor is best, because it lightens the burden on the state's resources and also allows the corporations to have some input and a sense of control over the program.

A point that strengthens Maryland's case for having a successful nutrient credit trading program is that it is not afraid to regulate industry. By implementing the extra permitting requirement, Maryland specifically targeted its biggest industry on the Bay. This type of aggressiveness signals that Maryland can meet the third guideline for success in a nutrient credit trading program.[147]

Maryland's clearly specified objective[148] is similar to Virginia's objective on a general level: reduction of nutrient discharge into the Bay. This objective could run into a problem if it focuses on controlling contract farmers, as the "co-permitting" requirement did. One way to avoid this problem would be to focus on the discharge permits of the individual farmers.[149] Farmers that operate farms that house a certain number of animals or produce a specified amount of waste must apply for a point source discharge permit.[150] However, a farming operation only needs a discharge permit if it disposes of its waste directly into the water.[151] Thus, as long as farmers dispose of their chicken waste in solid form, the discharge permit cannot be used as a means of further reducing

144. Since Maryland's point source permitting program has already been approved by the EPA, and nutrient credit trading is merely an extension of point source regulation, it is likely that the program would continue to be under the control of the Maryland Department of the Environment.

145. *See* Tripp, *supra* note 77, at 375.

146. *Id.*

147. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).

148. *See* Tripp, *supra* note 77, at 375.

149. *Id.*

150. *See generally* Reid, *supra* note 106, at 31-35.

151. *Id.*

152. USEPA, GUIDE MANUAL ON NPDES REGULATIONS FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (1995), http://www.epa.gov/npdes/pubs/owm0266.pdf.

nutrient run-off from farms.[152]

A potential problem with this scenario is the reaction of farmers. The response to the "co-permitting" requirement by Maryland farmers was not a warm one.[153] This alone is not likely to deter Maryland from implementing a nutrient credit trading program. Maryland's aggressiveness in pursuing nutrient reduction into the Bay will overcome any protest from farmers. In addition, another massive fish kill, which could happen if another large nutrient discharge were to occur, could be just as politically damning as further permit regulation.

The requirement that there be a specific regional problem[154] is met by Maryland. This problem is shown with more dramatic evidence than Virginia: the massive fish kills of the summer of 1997.[155] Maryland should not have trouble meeting the requirement that the rights have economic value in order to be tradable.[156] The plethora of chicken farms should provide enough trading partners to keep the value of the credits high enough so that there will be an incentive to trade. The number of chicken farms also guarantees that nutrient discharge will be continuous. Thus, there will always be incentive for farmers to improve their methods of discharging so that they will be able to trade their credits.

For a simple method of trading[157] and a way to keep transactional costs on trading low[158] Maryland can create a non-governmental actor through which trades can be brokered as Virginia created.[159]

VI. Conclusion

To make the market-based approach work, Virginia must be willing and able to enforce the program. It must be willing to strictly hold the permittees to the applicable nutrient load set forth by the water quality standards. The ability of a corporation to purchase more credits from the State Water Control Board leaves open the possibility to undo the entire program if this is viewed more as a "rubber stamp" than an exception to the rule. In order to ensure that the program keeps pushing for lower emissions of excess nutrients, the Board must keep setting lower effluent limitations; thus perpetuating the cycle of supply and demand by shortening the supply.

In light of the decisions in the *Smithfield* cases, Virginia knows that

153. *See* Reid, *supra* note 106, at 31.
154. *See* Goodman, *supra* note 123.
155. *See* Tripp, *supra* note 77, at 376.
156. *See* Goodman, *supra* note 123.
157. *See* Tripp, *supra* note 77, at 376.
158. *Id.*
159. *See* Tripp, *supra* note 77, at 377.
160. VA. CODE ANN. § 62.1-44.19:17 (Supp. 2005).

the EPA will be more than willing to intervene if Virginia fails to properly regulate and keep its permit program in order. By changing its procedure for enforcing administrative orders, Virginia showed that it was cognizant of the EPA's presence and was willing to enforce the policy of the Clean Water Act. Virginia's incentive to police its program will ensure that Virginia takes the type of pro-active approach that is necessary to make its cutting-edge program work. In addition to the strong enforcement after the *Smithfield* cases, Virginia has structured its credit trading program so that it will meet with success. Virginia made the wise move of delegating some of the power and responsibility to the Association. By doing this, Virginia lessened the burden on its resources and created an independent marketplace.

Eventually, Maryland will have to face the challenge of reducing its effluent limitations of nutrients into the Chesapeake Bay as Virginia has. Although Maryland's recent effort at controlling discharge through tighter permit controls failed, Maryland could still implement a market-based approach. Maryland's aggressive approach towards nutrient reduction will have to be the driving force behind a nutrient credit trading program. Because of its strong enforcement policy, Maryland should not have a problem with implementing a cutting-edge program of its own. Maryland has the necessary infrastructure; it just needs to be utilized. Ultimately, the market-based approach could meet with success in achieving the goal that initially brought the signatories together for the Chesapeake Bay Agreement of 1983: a better Bay.