TESTIMONY OF SUSAN PARKER BODINE
PARTNER
BARNES & THORNBURG
BEFORE THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER AND WILDLIFE
"NUTRIENT TRADING AND WATER QUALITY"
WEDNESDAY, MAY 22, 2013

Chairman Cardin, Ranking Member Boozman, members of the subcommittee, thank you for the invitation to appear today to testify on "Nutrient Trading and Water Quality." I am currently a partner in the law firm of Barnes & Thornburg. I have previously worked both as an assistant administrator for the Office of Solid Waste and Emergency Response at the U.S. Environmental Protection Agency and as a staff director of the Water Resources and Environment Subcommittee of the U.S. House of Representatives. Except during the term of my appointment at EPA, I have working on Clean Water Act policy issues for my entire career.

I would like to make three points in my testimony today:

- First, nutrient trading[1] is an available tool under the Clean Water Act for improving water quality.
- Second, without trading, in many cases meeting nutrient water quality standards will be neither affordable nor attainable.
- Third, trading will not happen if EPA or states impose too many barriers up front, before providing an opportunity to demonstrate the efficacy of trading.

I. Nutrient trading is an available tool under the Clean Water Act.

Trading and offsets are available tools for achieving water quality standards under the Clean Water Act.

The Clean Water Act requires point sources to meet technology based effluent limitations established under section 301(b)(1)(A). These effluent limitations establish a "floor" that must be met by each point source discharger and, in general, are based on best practicable control

[1] In this testimony, I refer to "trading" and "offsets" interchangeably.

technology currently available. Technology based effluent limits (TBELs) do not specify what technology must be used to achieve the limit. In some cases, trading or offsets are built into the TBEL itself.[2]

Unlike TBELs, water quality based effluent limitations (WQBELs) under section 301(b)(1)(C) apply to point source discharges as "*necessary to meet water quality standards*" in the receiving water. Thus, the focus of WQBELs is ambient water quality. If pollutants in receiving waters are reduced through other means, such as through reductions by other point or non-point sources, then a WQBEL that is *necessary to meet water quality standards* in the receiving water is different from the WQBEL that would be necessary absent the offsetting reduction from other sources. An offset or reduction achieved through trading would be incorporated into a permit writer's evaluation of whether a discharge has the "reasonable potential to cause or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." 40 C.F.R. 122.444(d)(1)(i). As stated in EPA's permit writers manual: "a reasonable potential analysis is used to determine whether a discharge, alone or in combination with other sources of pollutants to a waterbody and under a set of conditions arrived at by making a series of reasonable assumptions, could lead to an excursion above an applicable water quality standard."[3] The reasonable assumptions that are included in a permit writer's analysis may include assumptions of other reductions in pollutant discharges achieved through trading and offsets.

Unlike technology-based standards, WQBELs are not uniform and involve the professional judgment of a permit writer. Entities that argue that trading and offsets are not available tools for meeting water quality standards fail to understand the how effluent limitations are applied.[4]

---

[2] *See, e.g.,* 40 C.F.R. Part 420 (Effluent Limitation Guidelines for the Iron and Steel Manufacturing Point Source Category). Pretreatment requirements under section 307 of the Clean Water Act also may be met through trading and offsets. *See* EPA, Office of Water, Water Quality Trading Policy, Jan. 13, 2013, at 6 (available as Appendix B of EPA's Water Quality Trading Toolkit for Permit Writers, EPA-833-R-07-004 (Aug. 2007, updated June 2009), http://water.epa.gov/type/watersheds/trading/WQTToolkit.cfm

[3] NPDES Permit Writers' Manual, at 6-23 (Sept. 2010).

[4] *See* Amended Complaint, *Food and Water Watch, et al., v. EPA*, Case No. 1:12-cv-01639-RC (D.D.C. Feb. 20, 2013). Food and Water Watch also alleges that trading is an impermissible adjustment to load and wasteload allocations of a total maximum daily load (TMDL) adopted under section 303(d) of the Clean Water Act. In making this claim, the plaintiffs fail to understand the legal nature of a TMDL. A TMDL is the total amount of a pollutant

Interstate trading also is permissible under the Clean Water Act. EPA has identified three separate authorities for interstate trading. First, section 103(a) of the CWA directs EPA to "encourage cooperative activities by the states for the prevention, reduction, and elimination of pollution, [and] encourage the enactment of improved and, so far as practicable, uniform state laws relating to the prevention, reduction, and elimination of pollution." In its Water Quality Trading Toolkit for Permit Writers EPA states that: "EPA believes that encouraging states to engage in cooperative, interstate activities like establishing multijurisdictional water quality trading programs designed to prevent, reduce, and eliminate pollution is consistent with the directives in section 103(a)." Water Quality Trading Toolkit, at 14. EPA also believes that congressional authorization under section 103(b) of an interstate compact[5] for "cooperative effort and mutual assistance for the prevention and control of pollution" also authorizes trading among members of the compact. *Id.* at 13-14. Finally, EPA believes that section 117(g) of the Clean Water Act authorizes interstate trading in the Chesapeake Bay Watershed. *Id.* at 13,

EPA has provided a number of examples of trading that have already taken place between point sources and between point and non-point sources.[6] Interstate trading also is taking place.[7] According to a U.S. Department of Agriculture-sponsored study, as of 2011 there were 24 active point-nonpoint trading programs in16 states.[8] A map and list of these programs from this study are reproduced at the end of this testimony, as well as a map from EPA's website of all active water quality trading programs.

---

that a water body may receive and still meet water quality standards. The allocation of that load is left to the discretion of states that are implementing the TMDL.

[5] The Ohio River Valley Water Sanitation Commission (ORSANCO) is one such interstate compact.

[6] *See* Appendix A to EPA's Water Quality Trading Toolkit for Permit Writers.

[7] EPRI, Pilot Trading Plan 1.0, Ohio River Basin Interstate Water Quality Trading Project (within the basin subject to the jurisdiction of ORSANCO), Aug. 2012.

[8] In it Together, A How-To Reference for Building Point-Nonpoint Water Quality Trading Programs, Willamette Partnership (July 2012).

This testimony focuses on point source-nonpoint source trading. However, point source – point source trading also is successful and provides significant benefits.[9]

II. Without trading, nutrient water quality standards may not be affordable or attainable.

EPA has been pushing states to adopt nutrient water quality criteria and nutrient water quality based effluent limitations. However, EPA's recommended criteria developed under section 304(a) of the Clean Water Act and some state standards are based on the level of nutrients found in pristine waters and those levels in many cases are not attainable.[10] Even state standards that are not based on reference waters can be unachievable.[11]

The required reductions in nutrient and sediment loadings under the EPA established Chesapeake Bay TMDL provide an example. While the total cost of achieving the reductions in the TMDL has not been quantified, based on estimates provided by Virginia and Maryland, researchers from the Maryland School of Public Policy expect the total cost to exceed $50 billion.[12] A study commissioned by the Chesapeake Bay Commission further concludes that allowing trading could reduce those implementation costs by 36%.[13]

---

[9] For example, to help achieve nutrient reductions in Long Island Sound, from 2002 to 2009 the total value of credits bought and sold among point sources through the Connecticut nitrogen trading program was $45.9 million, representing 15.5 million nitrogen credits exchanged. *See* http://www.ct.gov/deep/cwp/view.asp?A=2719&Q=325572

[10] *See, e.g.,* Jan 3, 2012 letter from EPA Region 8 to Montana Department of Environmental Quality, agreeing that attaining Montana's draft nutrient criteria would result in widespread economic and social impact and use of a technology that has not been demonstrated as practical, justifying a variance from those criteria.

[11] *See* Maryland Department of the Environment, Use Attainability Analysis for the Federal Navigation Channels Located in Tidal Portions of the Patapsco River (2004); Maryland Department of the Environment, Use Attainability Analysis for Tidal Waters of the Chesapeake Bay Mainstem and its Tributaries located in the State of Maryland (2004);

[12] Saving the Chesapeake Bay TMDL: The Critical Role of Nutrient Offsets, School of Public Policy, University of Maryland, Oct. 2012, at xv and Chapter 2, "Unaffordable TMDL Costs" (hereinafter The Critical Role of Nutrient Offsets).

[13] Nutrient Credit Trading for the Chesapeake Bay, an Economic Study, May 2012, at 54.

Other entities that have evaluated or are evaluating cost savings associated with nutrient trading include the World Resources Institute,[14] Electric Power Research Institute,[15] and Water Environment Research Federation.[16]

All conclude that trading and offsets can reduce costs of achieving water quality improvements. However, those cost reductions, will not be available unless trading and offsets are available. In fact, given the high costs of reducing nutrient loadings, it is likely that without trading nutrient standards will be unachievable and will need to be revised based on use attainability analyses. Thus, restricting trading could lead to lowering water quality goals.

III. Trading will not occur if EPA or states impose too many barriers, without providing an opportunity to demonstrate the efficacy of trading

There are a number of issues that must be addressed when using trading as a tool to improve water quality. How these issues are addressed will determine whether trading is available. These issues include establishing a baseline, geographic scope, providing a legal framework, and accounting for uncertainty in nonpoint source reductions.

A. Baseline

There is some dispute over what is an appropriate baseline of reductions in nutrient loadings that must be met before a nonpoint source can generate credits available to offset point source discharges. Achieving early reductions in pollutant loadings is an objective of EPA's Water Quality Trading Policy. That objective suggests that flexibility is appropriate when establishing baselines.

EPA's trading policy supports establishing a nonpoint source baseline based on either regulatory requirements or load allocations under a TMDL. That position is not universally accepted. The

[14] *See, e.g.,* Nutrient Trading in the MRB, A Feasibility Study for Using Large-Scale Interstate Nutrient Trading in the Mississippi River to Help Address Hypoxia in the Gulf of Mexico, World Resources Institute (Apr. 17, 2013).

[15] EPRI, Pilot Trading Plan 1.0, Ohio River Basin Interstate Water Quality Trading Project (within the basin subject to the jurisdiction of ORSANCO), Aug. 2012.

[16] WERF factsheets on implementing watershed-based trading programs are available at http://ww2.werf.org/am/template.cfm?section=Search&template=/cm/ContentDisplay.dfm&ContentID=6843 See also WEF workshop on water quality trading at www.wef.org/WaterQualityTrading/

University Of Maryland School Of Public Policy suggests that current level of nutrient loadings is an appropriate baseline, which would allow credit for coming into compliance with regulatory requirements:

> One option to consider thus is whether agricultural baselines should be set at less than the full legal requirements for agriculture, acknowledging the uncertainty of immediate legal compliance, and thus potentially accelerating the improvement of farmer nutrient management practices (a particularly important goal given the large share of total Bay nutrient loads that originate in agriculture and the low cost of many potential agricultural nutrient reductions). The Critical Role of Nutrient Offsets, at xxiii.

Many states have trading programs that establish a nonpoint source baseline that relies on the state regulatory requirements for nonpoint sources, if any. State regulatory requirements were the basis for the Pennsylvania trading program that this subcommittee heard about from Red Barn Trading Company in a November 9, 2009 hearing on the Chesapeake Bay TMDL. In 2010, Pennsylvania modified its trading program. In addition to meeting baseline requirements, nonpoint sources must also meet a threshold before generating credits. This requirement is defined as either a 100-foot manure set back, a 35-foot vegetative buffer or a 20% adjustment made to the overall reduction. 25 PA.CODE CH. 96. However, EPA has disagreed with Pennsylvania about its program and its applicability to trades to achieve the Chesapeake Bay TMDL.[17]

The issue of defining a nonpoint source baseline has come up in other parts of the country as well. Comments on Wisconsin's trading policies support adoption of a nonpoint source baseline based on the regulatory requirements applicable to nonpoint sources. In Wisconsin, only cost-shared practices are mandatory. Despite this, Wisconsin's draft trading policy proposed to adopt a Phosphorus Index of 6 as a baseline for all nonpoint sources, in addition to all load allocations identified in a TMDL. Absent cost-sharing, Wisconsin does not impose mandatory requirements on nonpoint sources, whether or not there is a TMDL, thus commentors argue that a Phosphorus Index of 6 is not always the appropriate baseline and adopting such a baseline will reduce or

---

[17] *See* EPA, Pennsylvania Trading and Offset Program Review Observations, Feb. 17, 2012, available at http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/EnsuringResults.html?tab2=1&tab1=2

eliminate the availability of credits. *See* letter dated April 26, 2013 from Madison Metropolitan Sewerage District, to Wisconsin Department of Natural Resources.

In response to comments from EPA on its trading policy, Montana Department of Environmental Quality (MT DEQ) takes a position that is similar to MMSD. MT DEQ's draft trading policy defines baseline in a manner that allows a nonpoint source to generate credits as soon as it begins to reduce its nutrient load without first meeting the load allocation assigned to the nonpoint source.

> One of the reasons for allowing a nonpoint source to generate credits as soon as it begins to reduce its nutrient load is that the load allocation in a TMDL is typically aggregated for all similar nonpoint sources through out an entire watershed. Defining "baseline" so that all nonpoint source contributors need to achieve (collectively) the watershed load allocation before a credit may be generated would eliminate the majority of trading opportunities and greatly reduce the effectiveness of this policy.[18]

One way to identify a nonpoint source baseline in a way that is consistent with EPA's Water Quality Trading Policy would be to allow nonpoint sources to achieve credit for the percentage of nonpoint source load reductions that is not assumed by a TMDL implementation plan. For example, in the Chesapeake Bay TMDL most of the best management practices (BMPs) identified in the state implementation plans are not assumed to be applied on 100 percent of available land. If state assumed a BMP would be applied on 75 percent of available acres, then under this approach it could approve credits for BMPs on 25 percent of available acres, even if the BMPs had not yet been installed on the remaining 75 percent of acres. This approach would be consistent with EPA's goal of using trading to achieve early reductions.

Using the Chesapeake Bay watershed as an example again, it is important to note that each state defines its baseline for trading credits generated by nonpoint sources differently, and given the different regulatory requirements in each state, a uniform baseline policy would not be appropriate.

[18] MT DEQ Draft Trading Policy Response to Comments, Oct. 28, 2011, at 1. MT DEQ also points out that the nonpoint source reductions are voluntary.

B. Geographic Scope

Under EPA's Water Quality Trading Policy, a trading area must be either within a watershed or within an area for which a TMDL has been approved. There can be dispute over what size watershed is used for generating tradable credits. There also can be dispute over what delivery factor is used if trades take place from within a large watershed.

The geographic scope of a trade and whether a delivery ratio is appropriate is a case and water body specific issue that should be left to the implementing state.

There are some who argue that no trades should be allowed, or should be allowed only within a very small geographic area, to alleviate concerns over "hot spots." "Hot spots" are generally a concern when dealing with toxic pollutants. Water body responses to nutrients are so highly variable and so highly dependent on site-specific factors such as flow, shade, and hydrologic modification that it is very unlikely that a trade would be the cause of a localized algal bloom or other adverse impact. Nutrient loadings high enough to cause a local impact can be prevented by state regulatory agencies on a case-by-case basis.

Where trading takes place under a TMDL, hot spots are unlikely due to the margin of safety required in a TMDL. Hot spots also are highly unlikely to take place as a result of trading to implement the Chesapeake Bay TMDL because over 50 million pounds of nitrogen reduction were added to the TMDL to achieve dissolved oxygen water quality standards in four deep bay segments. Water quality standards in the remaining 88 segments of the Bay would be achieved with far fewer nitrogen reductions.[19]

Refusing to allow trading other than in local areas to alleviate concerns over hot spots would limit the utility of trading as a water quality improvement and cost reduction tool. The

[19] "The basinwide allowable nitrogen and phosphorus loads were determined on the basis of achieving a select set of deep-water and deep-channel DO standards in the mainstem Bay and adjoining embayments …. The Bay TMDL calls for nitrogen load reductions upwards of 50 million pounds greater than that necessary to achieve the applicable DO WQS in those four Bay segments compared with many of the remaining 88 Bay segments." EPA, Chesapeake Bay TMDL, Dec. 2010, at 6-14.

importance of allowing a broad geographic scope for trading is noted by the University Of Maryland School Of Public Policy:

> Expanding the scope of the allowable offset area has a large impact on the potential Baywide cost savings achievable. As compared with offsets limited to the same river basin and state as the WWTP, expanding the eligible area for offsets to the whole state generated an estimated 31 percent cost savings. Some basins such as the Potomac encompass multiple states. Allowing eligible offsets anywhere in the same river basin (potentially across state boundaries) increased the cost savings to 43 percent. Most impressive of all, allowing offsets to be obtained anywhere in the Chesapeake Bay watershed generated potential costs savings for the Bay cleanup of 87 percent. As these figures suggest, there are large economic advantages from a Baywide perspective to providing a maximum of flexibility in the geographic locations at which offsets can be obtained.[20]

C. Legal Framework

As noted by EPA in its Water Quality Trading Policy, there are a large variety of ways to structure a legal framework for water quality trading. These include legislation, rule making, NPDES permits, TMDLs, watershed plans, private contracts, and third party contracts.[21] The type of legal framework should be left to the state and the trading partner.

Trading with nonpoint sources may be the most successful where conservation partners, such as state Farm Bureaus and soil and water conservation districts function as aggregators for programs. Private entities also may serve this function, as you heard in testimony from Red Barn Trading Company during your November 2009 Chesapeake Bay TMDL hearing. Credit aggregators can provide the oversight functions that might otherwise be left to a regulatory agency. An agricultural producer may be more likely to agree to generate credits if the producer does not need to give federal or state regulatory officials access to their property.

D. Addressing Uncertainty and BMP Verification

In the Water Quality Trading Toolkit for Permit Writers, EPA identifies a number of mechanisms for addressing uncertainty associated with nonpoint source reductions. These

[20] The Critical Role of Nutrient Offsets, at xxiii.

[21] EPA Water Quality Trading Policy, at 8; Water Quality Trading Toolkit for Permit Writers, EPA-833-R-07-004 (Aug. 2007, updated June 2009), Water Quality Trading Scenario: Point Source-Nonpoint Source Trading, at 12-15.

include offset ratios, monitoring BMP effectiveness, modeling BMP effectiveness, and estimating BMP effectiveness. It is important to note that the lower the uncertainty of BMP effectiveness, then the lower the need for a credit ratio greater than 1:1.

Because it is difficult to measure reductions in loadings of nutrients from conservation practices adopted on the land,[22] most trading programs use models or other calculations to estimate such pollutant reductions. For example, EPRI is using EPA's Watershed Analysis Risk Management Framework model for its Ohio River Basin pilot project. This modeling allows for the incorporation of difference in assimilation of pollutants within areas of the watershed, allowing for a broad geographic scope for trades. In addition, in the Ohio River Basin, all trades will be executed with trading ratios will be informed by watershed modeling. As noted above, a uniform trading ratio would not be appropriate as a result of geographic differences.

Uncertainty also is reduced by including requirements for conservation practice inspections and certification in trade agreements. Different states have different procedures for ensuring that BMPs are implemented and maintained. In most states, these procedures are implemented by the state department of agriculture. For example, the Maryland Department of Agriculture inspects at least 10% of all traded agricultural credits per year. Third-party inspections also can be used.

If trading is to be successful, there must be willing nonpoint source partners from the agriculture producer community. An agricultural producer is far more likely to participate if the producer knows he or she will be interacting with familiar entities and programs, such as NRCS and state soil and water conservation districts. If EPA or a state water quality agency is given authority to monitor BMP implementation, maintenance, or effectiveness on agricultural land, it is likely that few or no producers will participate.

In addition to verification of BMP implementation, EPA's Trading Toolkit recommends programmatic evaluations, including studies "to quantify nonpoint source load reductions, validate nonpoint source pollutant removal efficiencies." These functions should be carried out by entities in the agricultural community. EPA's Trading Toolkit also recommends "ambient

[22] Nonpoint sources have no discharge point that can be monitored.

monitoring to ensure impairments of designated uses (including existing uses) do not occur and to document water quality conditions." This function can be carried out by environmental agencies. These programmatic evaluations should be used to improve a trading program generally, and not the success of any individual trade.[23]

If a programmatic evaluation identifies a problem then it should be addressed by changing program requirements going forward, without invalidating a particular point source permit. Permits can be changed upon renewal to reflect revised programmatic requirements. Permits that incorporate trading could include conditions such as compliance schedules, to address issues related to lag times between BMP installation and changes to ambient water quality, impacts of extreme weather on ambient water quality, or BMP effectiveness that is less than expected. Alternatively, a state could ensure that adequate credits are available in a credit bank or exchange to allow a point source to obtain replacement credits if needed. Financial liability for the purchase of replacement credits would be addressed in any contract between the point source and the nonpoint source. In trades involving third party aggregators, the aggregator could take this risk and supply the replacement credits, if needed.[24]

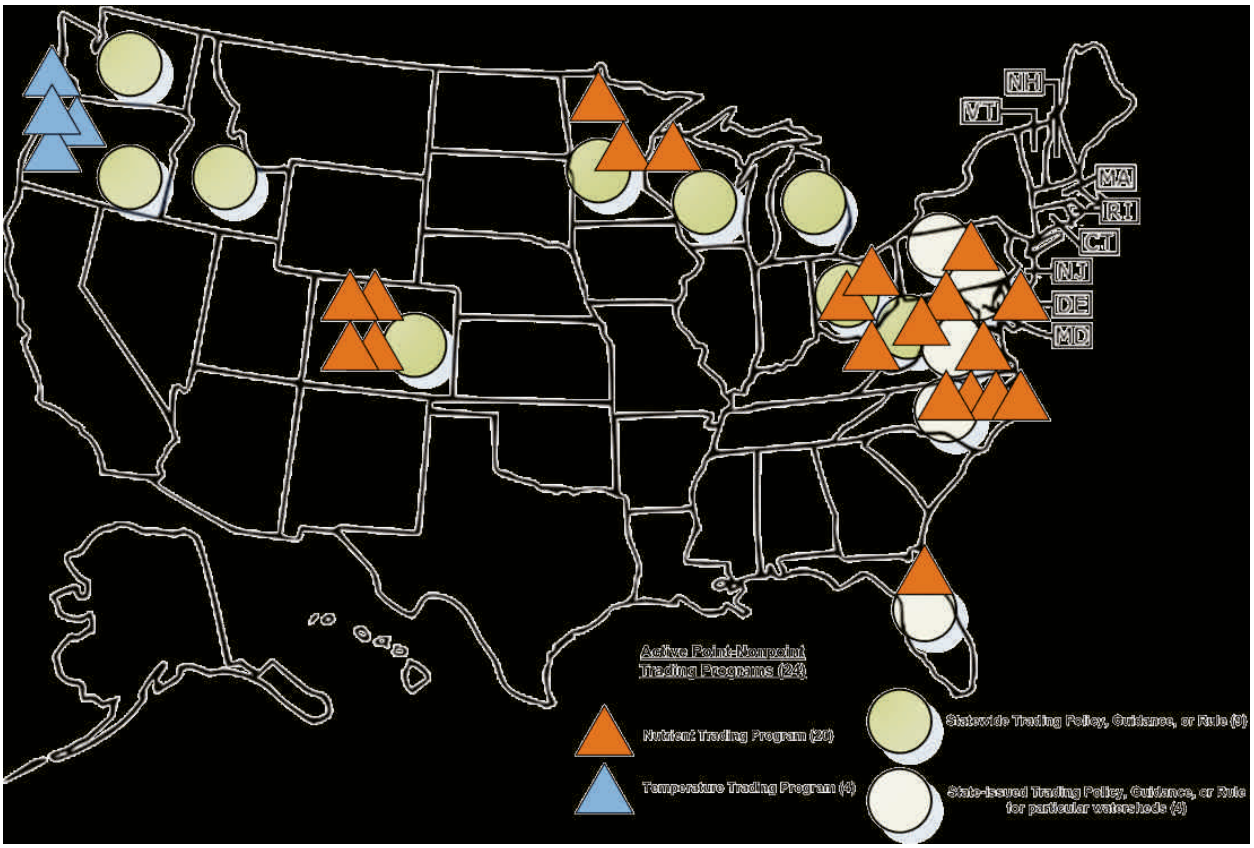
Conclusion

Nutrient trading is already occurring and, unless constrained by overly stringent policies, trading shows great promise in reducing costs for water quality improvement.

[23] In particular, changes in ambient water quality resulting from nonpoint source BMPs must be tracked over a period of time before water quality changes can be detected. Dr. Deanna Osmond of North Carolina State University recommends monitoring through programs such as USDA's Conservation Effects Assessment Project (CEAP) program. *See* Osmond, D.L., D.W. Meals, D. LK. Hoag, and M. Arabi, eds. 2012. How to Build Better Agricultural Conservation Programs to Protect Water Quality: The National Institute of Food and Agriculture–Conservation Effects Assessment Project Experience. Ankeny, IA: Soil and Water Conservation Society, available at http://www.swcs.org/en/publications/building_better_agricultural_conservation_programs/

[24] Many of the issues identified here are addressed in a report titled: Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide, Conservation Technology Information Center (July 2006), available at www.ctic.org/resourcedisplay/261/

Map of Active Point-Nonpoint Water Quality Trading Programs and State Policies [25]



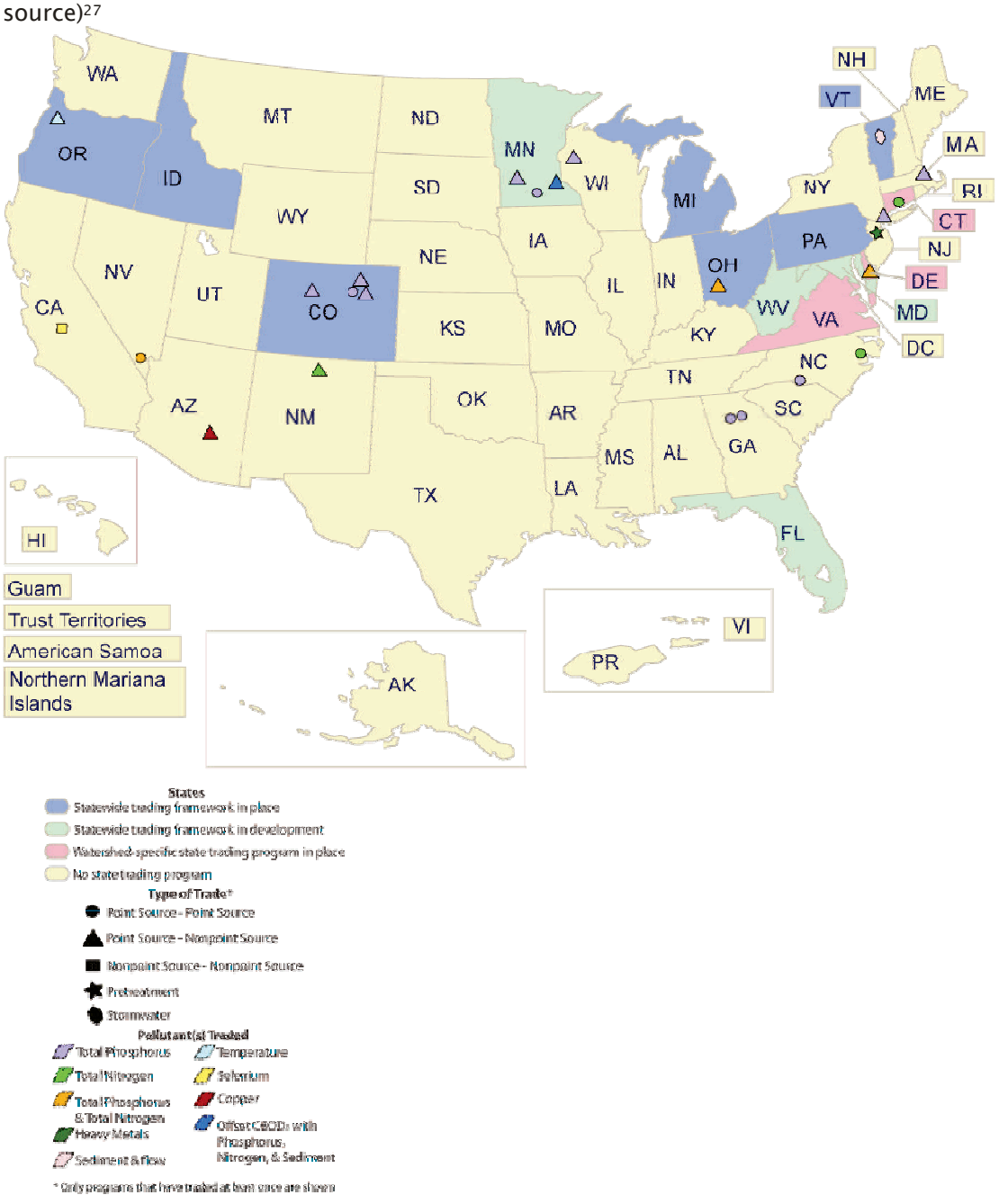
[25] In it Together, A How-To Reference for Building Point-Nonpoint Water Quality Trading Programs, Willamette Partnership (July 2012), at 15.

Active Point Source - Nonpoint Source Trading Programs in the United States in 2011[26]

Program	State	Market structure
Bear Creek	CO	Bilateral & Brokered trades
Chatfield Reservoir	CO	Bilateral
Cherry Creek Basin	CO	Sole-source offsets
Lake Dillon	CO	Bilateral
Delaware Inland Bays	DE	Bilateral
Lower St. Johns River	FL	Bilateral
MD Chesapeake Bay	MD	Auction & Bilateral
Rahr Malting	MN	Brokered trades
Southern Minnesota Beet Sugar Coop	MN	Bilateral & Sole-source offsets
Falls Lake	NC	Bilateral from private banks & in-lieu fees to the NC Ecosystem Enhancement Program
Neuse River	NC	Bilateral from private banks & in-lieu fees to the NC Ecosystem Enhancement Program
Jordan Lake	NC	Bilateral from private banks & in-lieu fees to the NC Ecosystem Enhancement Program
Tar-Pamlico Estuary	NC	Bilateral from private banks & in-lieu fees to the NC Ecosystem Enhancement Program
Great Miami River	OH	Sole-source offsets
Sugar Creek (Alpine Cheese)	OH	Bilateral & Brokered trades & Exchange
Ohio River Basin Trading Project	OH	Auction
Tualatin River (Clean Water Services)	OR	Sole-source offsets
Rogue River (Willamette Partnership)	OR	Sole-source offsets
Willamette River (Willamette Partnership)	OR	Sole-source offsets
Lower Columbia (Willamette Partnership)	OR	Sole-source offsets
PA Chesapeake Bay	PA	Auction & Bilateral & Brokered trades
VA Chesapeake Bay	VA	Bilateral through the VA Water Quality Improvement Fund or brokered trades for compliance credits exchanged through the VA Nutrient Credit Exchange Association
Red Cedar River	WI	Bilateral
WV Potomac/Chesapeake Bay	WV	Auction & Bilateral

[26] In it Together, A How-To Reference for Building Point-Nonpoint Water Quality Trading Programs, Willamette Partnership (July 2012), at 16.

State and Individual Trading Programs (point source to point source and point source to nonpoint source)[27]



[27] Available at http://water.epa.gov/type/watersheds/trading/tradingmap-big.cfm