

North Carolina's Nutrient Trading Framework

Discussion Draft

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N.C. Division of Water Resources, Nonpoint Source Planning Branch



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Introduction

Purpose

The purpose of this document is to provide an overview of existing nutrient trading activity in North Carolina and to propose additional opportunities and mechanisms for nutrient trading. It also seeks to clarify the use of many terms that are often used informally by trading market participants in North Carolina. Finally, this framework seeks to identify existing barriers to trading in North Carolina and proposes some potential solutions to these barriers. Various short and long term proposals are offered for discussion.

Context

Historically, North Carolina has been a national leader in developing and implementing nutrient trading approaches. A first attempt launched in 1990, a group cap exceedance offset design for point sources in the Tar-Pamlico River Basin, has never required a trade but proved instructive for subsequent efforts. Rules for nutrient trading have been in place since the adoption of the Neuse nutrient strategy in 1998. Nutrient strategies for the Tar-Pamlico estuary, Jordan Lake, and Falls Lake have all adapted and refined these approaches while also authorizing new opportunities for trading. Robust trading markets exist in each of these basins in accordance with wastewater and new development rules. These active markets provide important flexibility and economically efficient compliance options for regulated parties. Yet while new opportunities for trading have been authorized in successive strategies, in many cases they have not yet materialized.

Each of North Carolina's nutrient strategy rules are presently undergoing review of some sort. Along with these reviews comes the opportunity to amend and improve the rules. The Neuse strategy, Tar-Pamlico strategy, and the nutrient offset rule have been proposed for readoption pursuant to G.S. 150B-21.3A. Notably, significant amendments to the nutrient offset rule (15A NCAC 02B .0240) have recently been proposed in alignment with this document. The proposed rule is provided in Appendix A.

The Falls Lake strategy's existing development rule is presently driving the renewed effort to expand and improve upon existing trading options. Many analogous rule provisions exist in the Jordan Lake strategy, but implementation of new and existing development rules have been delayed by the General Assembly. Both strategies are under study by the N.C. Policy Collaboratory. The readoption process for those rules has been delayed by several years, and Collaboratory recommendations are also expected to inform future revisions to North Carolina's trading rules.

Existing Trading Authorities

Trading activity in North Carolina is guided and bounded by several federal, state, and contractual sources of authority. At the federal level, wastewater and some stormwater discharges are governed by the Clean Water Act through the National Pollutant Discharge Elimination System (NPDES). While the Clean Water Act and associated regulations are generally silent on the topic of point source trading, EPA policies have been developed to support trading by permitted sources as a compliance option.¹

Regulatory approaches to nonpoint source pollution are largely the domain of the state. The Clean Water Responsibility and Environmentally Sound Policy Act, passed by the General Assembly in 1997, authorizes regulatory approaches to address nutrient-related point and nonpoint sources.² More recent session laws

¹ See <https://www.epa.gov/npdes/water-quality-trading> for more information regarding EPA trading policy and guidance.

² See S.L. 1997-458.

codified under G.S. 143-214.26 more specifically provide legislation authorizing the trading of nutrient offset credits among various parties.

North Carolina's nutrient strategy rules provide more context for trading, whether in relation to specific regulated sectors or through stand-alone nutrient offset and trading rules. Wastewater treatment facilities are authorized to trade among themselves through compliance associations, may purchase offset credits to increase load allocation, and are required to purchase offset credits if exceedances occur.³ New development regulations authorize the purchase of off-site nutrient offset credits after meeting specific criteria.⁴ Agricultural rules are structured such that farmers are not required to purchase offset credits, but the rules do provide an important trading role for oversight committees in each watershed.⁵ Finally, existing development rules in the Jordan and Falls watersheds generally reference trading and joint compliance approaches.

The Jordan and Falls Lake strategies also contain stand-alone trading rules, explicitly authorizing trading for all regulated parties according to specific conditions.⁶ The nutrient offset rule largely governs the creation of nutrient offset credits, but it also includes provisions related to nutrient offset credit transactions.⁷

Finally, contractual sources of authority often govern trading activity. These generally include the banking instruments, project plans and conservation easements necessary for nutrient offset credit generation. The bylaws of wastewater compliance associations also provide sufficient authority to authorize nutrient allocation trading.

Present Trading Activity

North Carolina presently has two types of active nutrient trading, authorized by various aspects of individual nutrient strategy rules.

Allocation Trading Among Wastewater Treatment Facilities

Nutrient allocation trading between wastewater treatment facilities occurs in multiple basins, often within the ambit of a watershed-specific compliance association. Formal allocation trades are authorized through mutual permit modifications, with new allocation limits reflected in the facilities' respective permits. More commonly, however, informal temporary allocation trades (or "leases") happen without direct state involvement pursuant to the bylaws of a point source compliance association. From a state regulatory perspective, it is the joint compliance aspect of the rules that allows this informal, contractually-based trading to occur. So long as all facilities are together meeting their nutrient compliance obligations ("bubble permit"), no individual violations occur and thus there is no need for individual permit modifications. Importantly, while "trades" are occurring, nutrient reduction credits are not involved.

Nutrient strategy rules do allow nutrient offset credits to be purchased for new wastewater facilities or those approaching their nutrient allocation limits. The direct purchase of nutrient offset credits by wastewater

³ Nutrient-related wastewater regulations include 15A NCAC 02B .0229 (Tar), .0234 (Neuse), .0270 (Jordan), and .0279 (Falls).

⁴ Nutrient-related new development regulations include 15A NCAC 02B .0235 (Neuse), .0258 (Tar), .0265 (Jordan), and .0277 (Falls).

⁵ Nutrient-related agriculture regulations include 15A NCAC 02B .0238 (Neuse), .0255, .0256 (Tar), .0264 (Jordan), and .0280 (Falls).

Nutrient-related existing development regulations include 15A NCAC 02B .0266 (Jordan) and .0278 (Falls).

⁶ See 15A NCAC .02B .0273 and .0282.

⁷ 15A NCAC .02B .0240

facilities is rare. The Tar-Pamlico basin is unique in that its point source nutrient obligations are determined by an agreement with two state agencies, and that nutrient reduction obligations can be met offsite through direct payment to the state's Division of Soil and Water Conservation.

Nutrient Offset Credit Trades between Providers and Developers

North Carolina also has a robust program of nutrient offset credit trading to facilitate compliance with new development regulations. Private providers and the N.C. Division of Mitigation Services engage in restoration work to generate nutrient offset credits in accordance with 15A NCAC 02B .0240. To date, these credits are almost exclusively generated by agricultural riparian buffer restoration projects. Providers then sell nutrient offset credits to developers that cannot or choose not to meet the onsite nutrient loading targets contained in new development regulations. This type of trade is common to each of North Carolina's major nutrient strategies.

Definitions and Key Concepts

Types of Nutrient Credits

This framework recognizes two potential types of credit, one new and one existing. These might be thought of as varying currencies. Most nutrient reduction projects will generate only one type of currency, but depending on context a regulated party may be able to utilize either or both credit types to help satisfy their obligations through trading.

The **nutrient offset credit** reflects the existing credits that are presently generated through North Carolina's nutrient offset program. Typically, agricultural buffer restoration projects receive an annual nutrient credit for each of 30 years. These credits are utilized to offset new development impacts for a period of 30 years, a one-time exchange. Crediting units can be reduced to a finite number of pounds generated by a project, and they are exchanged in this manner.

In proposed amendments to the nutrient offset rule, DWR recommends making nutrient offset credits exclusively permanent in nature. Crediting units would be lbs./yr. This proposal reflects the recognition that the practices that currently generate nutrient offset credits are secured by permanent conservation easements, and the nutrient offset credits they generate currently offset development activity that is effectively permanent from a regulatory perspective.

The **nutrient exchange credit** is proposed as a new time-limited credit type, with the term depending on the nutrient reduction practice implemented. These credits would be most appropriate for nutrient reduction projects where significant maintenance obligations are required to sustain the project's nutrient reductions. Upon expiration, credits could be renewed upon demonstration that project maintenance obligations are met.

Exchange credits would be appropriate to contribute to satisfying nutrient obligations incurred by point sources and local governments because each of these sources have ongoing compliance obligations and an ongoing presence that allows for more involved reduction programs. By comparison, they are differently situated than developers, who satisfy regulatory obligations of a permanent nature only once during construction.

Exchange credits are proposed to help address the complexities that arise in conjunction with existing development rule compliance. First, they provide needed flexibility for local governments to make incremental early progress while evaluating other sources of permanent reduction. These credits likely provide an avenue to decentralize the regulatory credit approval process. They may also incentivize new market participants otherwise unwilling to commit to permanent restoration projects.

Both the nutrient offset credit and the nutrient exchange credit can be considered **nutrient reduction credits** because they represent verifiable nutrient reductions from a nutrient strategy baseline.

The **nutrient allocation limits** of point source dischargers are not nutrient reduction credits. However, they do have some relationships to nutrient reduction credits. Like nutrient reduction credits, allocation can be traded between facilities under existing rule. Allocation trading can eliminate or delay the need for a point source to purchase offset or exchange credits. DWR also expects that nutrient allocations can be converted into nutrient exchange or nutrient offset credits in specific situations. The nature of suitable conversions will be established in practice specifications and credit documents, which will be incorporated into the N.C. Catalog of Nutrient Reduction Practices.

Utilizing Traded Credits for Compliance

If implemented as proposed in the preceding section, offset and exchange credits would both be available for purchase to satisfy regulatory obligations pursuant to North Carolina’s various nutrient strategies. Some regulated parties, like local governments or wastewater treatment facilities, may demonstrate compliance through some combination of permanent and temporary credits within a given time period. Figure 1 provides an overview of which credits could be used to satisfy the regulatory requirements from various sectors.

FIGURE 1: CREDIT TYPES PROPOSED TO SATISFY VARIOUS REGULATORY OBLIGATIONS

	Nutrient offset credit	Nutrient exchange credit	Nutrient allocation
New development nutrient reductions	x		
Existing development nutrient reductions	x	x	
Point source reductions	x	x	
Point source allocations	x	x	x

Joint Compliance

In addition to utilizing traded nutrient credits, North Carolina’s nutrient strategies have long provided mechanisms for joint compliance among a group of regulated entities. This feature is a common characteristic of North Carolina’s agriculture nutrient rules, where the entire sector seeks to reduce its baseline nutrient loading estimates by a given percentage.⁸ Wastewater nutrient rules provide an option for group compliance as well, including the aforementioned bubble permit issued for all facilities participating in a wastewater compliance association.⁹ These provisions have been in place for nearly two decades in some watersheds and are generally well understood by their respective regulated communities.

In contrast with agriculture and wastewater nutrient regulations, North Carolina’s existing development regulations are relatively new and untested, but both the Jordan and Falls nutrient strategies envision additional types of joint compliance associated with these rules. First, local governments may choose to jointly meet existing development obligations within the same subwatershed.¹⁰ Also, an individual local government may combine its wastewater and existing development obligations and jointly meet them.¹¹

⁸ For Falls Lake example, see 15A NCAC .0280(2) (“This Rule requires accounting for agricultural land management practices at the county level in the Falls watershed, and implementation of practices by farmers to collectively achieve the nutrient reduction objectives on a watershed basis.”)

⁹ For a Falls Lake example, see 15A NCAC .0279(11).

¹⁰ For a Falls Lake example, see 15A NCAC .0278(6) (“A municipality shall have the option of working with the county or counties in which it falls, or with another municipality or municipalities within the same subwatershed, to jointly meet the loading targets from all lands within their combined jurisdictions within a subwatershed.”)

¹¹ For a Falls Lake example, see 15A NCAC .0282(4) (“Local governments have the option of combining their reduction needs from NPDES dischargers assigned allocations in 15A NCAC 02B .0279 and existing development as described in 15A NCAC 02B .0278, including loads from properly functioning and malfunctioning septic systems and discharging sand filters, into one reduction and allocation requirement and meet them jointly.”)

While the terminology has not been settled, these options are hereafter referred to as interlocal and intersectoral joint compliance, respectively.

The intersectoral joint compliance option is subject to some rule- and permit-based limitations. Nutrient credit generated by overtreating wastewater may be used toward a local government's compliance with an existing development rule. A local government's intention to use this option must be clearly and specifically described in its existing development program. Then, existing development rule compliance may be demonstrated by reporting overtreatment credits as part of a local government's annual report. Evaluating the converse scenario, wastewater permit violations cannot be avoided by purchasing other nutrient reduction credits after an exceedance occurs. To avoid penalties, a facility at risk of exceedances must plan to increase its nutrient allocation by purchasing either nutrient allocation or nutrient credits, which may be converted to allocation.

Importantly, nutrient credit trading and joint compliance are not mutually exclusive approaches nor are they directly synonymous. In each joint compliance scenario described above, regulated parties can demonstrate joint compliance (from a state regulatory perspective) without the need to trade credits. While nutrient reduction credit trades can provide a reliable option for these parties to equitably exchange credits among themselves, they may instead or in addition wish to negotiate terms contractually. This arrangement is exemplified by the informal allocation trading that presently occurs within compliance associations. Thus, nutrient credit trading is a desirable but optional feature to support joint compliance.

Anticipated Trading Needs

Regulatory structure and market forces will eventually dictate the direction and volume of nutrient credit trading among parties. In the meantime, the design of a trading framework needs to anticipate the most likely types of trades. Consideration must also be given to the market drivers for those trades, including the allocation of regulatory obligations among trading market participants.

Nationally, most trading programs proceed upon the paradigm that point sources are the primary buyers of nutrient credit. Sellers are typically other point sources or agricultural producers that can generate nutrient reductions beyond regulatory requirements at lower cost than the credit purchaser. The recently published Water Quality Trading Toolkit, presented as a nationwide model for trading program development, reflects this general approach.¹² National guidance documents and comparative program analyses have provided many helpful insights in the development of this document. Yet while many important similarities exist, North Carolina's nutrient management strategies diverge somewhat from the national model.

A key difference is the ability for North Carolina's new development and existing development rules to serve as additional market drivers for nonpoint source trading. In the near term, the most likely credit purchasers are parties regulated under new development (developers) and existing development rules (local governments). Point sources may also eventually become buyers of credit, but presently most large facilities and compliance associations appear to be operating comfortably within their nutrient allocations. New development and point source markets are in place and described above. Existing development rules are still

¹² Association of Clean Water Administrators and the Willamette Partnership. Water Quality Trading Toolkit Version 1.0. August, 2016. <https://www.acwa-us.org/wp-content/uploads/2017/04/Water-Quality-Trading-Toolkit-Version-1.0-1.pdf>

in early implementation stages in the Jordan and Falls watersheds, but local governments subject to these rules are likely to seek offset or exchange credits from as many sources as can offer cost-effective options.

Net credit generators and sellers are envisioned to be private parties, agricultural operators, and local governments. Point sources with surplus allocation (at present) may also be interested in temporarily converting allocation into nutrient credit. As DWR expands its list of approved nutrient reduction practices, these parties and others will have new opportunities to engage in the nutrient market. Private individuals or corporations may be able to opportunistically generate nutrient credits on their land either through direct market engagement or by participating in local government programs. Local governments will undertake nutrient reduction projects on public lands within their jurisdictions, and some may be able to generate a surplus available for trading. Agricultural producers can also generate new credits, but they are also subject to strategy-specific agricultural regulations. Existing challenges to engaging the agricultural sector are discussed further on page 14.

Mechanisms for Trading: Existing and Proposed

Generating Credit

Credit generation generally describes the process of creating and documenting nutrient load reductions in compliance with a nutrient strategy. Once credit is generated, it may be used for compliance purposes by the party that generated it. In the near term, except for private nutrient offset providers, the vast majority of nutrient credits that are generated are likely to be used for direct compliance purposes by the party that generated them.

As regulated parties develop a surplus of nutrient reduction credits, they may wish to sell them on the trading market. New development offset credits would be handled through DWR's existing Nutrient Offset program pursuant to the offset rule, 15A NCAC 02B .0240. For temporary exchange credit activities under the Jordan and Falls rules, currently the strategy rules titled *Options for Offsetting Nutrient Loads*, 15A NCAC 02B .0273 and .0282 for Jordan and Falls respectively, establish basic requirements for trading such credits. However, additional procedural requirements will be needed to carry out the "release" and "trade" of these credits to other parties, as described in the sections below. In addition, the subset of tradable nutrient reduction credits generated by all regulated sources as "extra" credit will require more rigorous and centralized tracking to ensure a functional and reliable market.

For each available nutrient reduction practice, design criteria, calculation methods, and the scientific basis for generating nutrient reduction credit are presently contained in individual documents authorized and maintained by DWR. These documents will be compiled and published as the N.C. Catalog of Nutrient Reduction Practices. Within the Catalog, each practice will be approved for generation of permanent nutrient offset credits, temporary nutrient exchange credits, or both depending on varying design criteria.

Stormwater control measures (SCMs) meeting applicable rule requirements of 15A NCAC 02H are also proposed to be suitable for generating permanent nutrient offset credits. This provision has been proposed as part of the readoption of the nutrient offset rule (15A NCAC 02B .0240), and the Catalog will include reference to the location of design criteria and a credit calculation method, along with any additional procedural requirements for SCMs.

DWR and local governments have been working in partnership to expand the number of nutrient reduction practices available for existing development rule compliance. The generation of nutrient reduction credits for compliance purposes will be governed by local governments' existing development local programs, and projects generating these compliance credits may be temporary or permanent. Local governments will report to DWR regarding their progress, with these reports subject to state oversight and audit.

Releasing Credit

A credit release is the process by which some entity certifies that a nutrient reduction credit has been generated and is eligible to be traded. DWR's Nutrient Offset Program presently releases nutrient offset credits for all nutrient reduction projects according to the nutrient offset rule and the terms of a project's banking instrument. Usually, credit is periodically released over time to reflect the achievement of milestones during the implementation of a nutrient reduction project.

Nutrient credit trading in North Carolina is presently limited to a regulated and sophisticated market. While DWR is not a party to every trade, DWR regulatory staff presently has a significant role in recording, verifying, and/or auditing all nutrient offset trades. Trades from the nutrient offset program are documented by the credit providers, who submit updated ledgers to DWR on a recurring basis. Formal point source trades are

presently documented via permit adjustments, supporting correspondence, and desktop spreadsheet software.

The DWR website acts as a central repository of these ledgers for all existing private banks. If trading volume expands exponentially or even significantly, the existing centralized regulatory processes may be strained.

Near term proposal: decentralizing authority for nutrient exchange credit release

As the volume and type of nutrient reduction projects expand, DWR envisions delegating the authority to release temporary, nutrient exchange credits to one or more other parties in specific situations. Delegation of approval authority to local governments over nutrient exchange credits for retrofitting of stormwater practices into existing developed landscapes may be most likely given that communities are already delegated authority to approve use of SCMs to comply with new development rules. For agricultural practices, professionals representing the N.C. Division of Soil and Water Conservation or N.C. Cooperative Extension are well positioned to release exchange credits for agricultural nutrient reduction practices. Nationally, other jurisdictions utilize third-party contractors for credit releases and inspections, an option that may be developed further if demand requires. In all cases, DWR anticipates retaining audit authority for credit releases to ensure consistency and integrity in the credit release process. DWR also envisions providing key forms and guidance for all parties to help facilitate and provide consistency in this process. Importantly, to carry out this delegation of authority, a new rule governing temporary credit trading would be necessary.

Trading and Tracking Credit

Existing nutrient offset credit trading mechanisms are described above. Existing processes that facilitate and record nutrient offset credit trades are not proposed for change.

Nutrient offset credit providers record available credits and trades through a credit ledger, which is periodically submitted to DWR for review and audit. Ledgers provide critical information regarding the creation of nutrient reduction credits by the provider and show when and to whom they have been sold. These ledgers are also posted on DWR's website, providing market transparency and advertising the existence of nutrient offset credits for purchase.

However, with a new proposed credit type and more potential market participants, new mechanisms for facilitating and recording nutrient exchange credit trades are desirable.

Near term proposal: expanding ledger submission requirements to exchange credit sellers

If a decentralized process is implemented for releasing exchange credits, further steps would be necessary to connect new exchange credit owners with potential buyers and ensure state regulatory oversight is retained. With some adjustments, the existing process for trading nutrient offset credits can be adapted to trading nutrient exchange credits.

Similar to offset trading and tracking, the end result of this process would be a DWR-hosted website that is updated routinely, provides public information regarding all nutrient exchange credit transactions, and offers a resource to determine whether credits are available for sale. This arrangement should suffice if exchange credit trading volume remains light to moderate.

Like offset trading and tracking, credit providers would produce exchange credit ledgers and periodically provide them to DWR. Importantly, the required fields for a nutrient exchange credit ledger would require adjustments. Where nutrient offset credits are effectively retired immediately upon purchase by a

developer, nutrient exchange credits will have a finite lifespan. Therefore, new fields regarding their date of creation and date of expiration would be required. Credits with relatively long lives may be apportioned and sold for discrete time periods, requiring additional tracking information. Other information that may be required includes: geographic service area, project origination information, credit amount, credit effective dates, buyer and seller identification, and trade verification.

In addition to the ledger, additional checks might be employed by DWR to ensure that exchange credit transactions are occurring with eligible buyers (geographically and by sector). Consideration might also be given to the rate of periodic ledger submission by exchange credit generators and sellers, and to proportionate consequences if credit reporting requirements are not met.

Long term proposal: Online trading registry

An online trading registry may eventually engage new market participants and significantly reduce transaction costs. Eventually, online nutrient trading registries are likely to provide significant benefits including improved regulatory workflow, transparency, and market access. However, adoption of an online nutrient trading registry would be a significant investment for North Carolina. In addition to the need for significant vetting by DEQ staff and potential market participants, a plan should be in place to sustainably finance a registry before one is adopted. Mechanisms to fund such a registry could include direct state appropriations and/or user fees, each of which would require legislative support and approval.

Given these challenges, a turnkey solution for an online trading registry is unlikely to be implemented soon. However, some federal efforts are underway to provide this functionality, including potential updates to the Army Corps of Engineers' Regional Internet Bank Information Tracking System (RIBITS). Private companies also offer custom and semi-custom registry options.

Redeeming Credit

Credit redemption refers to the process of utilizing an acquired credit to meet regulatory obligations. Presently, nutrient offset credits are traded, then immediately utilized and retired to offset new development projects. No changes are proposed regarding this process.

For existing development rules, it will likely become necessary for local governments to track offset credits indefinitely and exchange credits for a set period of time. If proposed changes to the nutrient offset rule are implemented, nutrient offset credits may be claimed indefinitely. Exchange credits, on the other hand, may be claimed under a future exchange credit trading rule for the period for which they have been credited. Local government compliance with existing development rules will be guided primarily by DWR's existing development model program and then by local programs upon adoption. Reporting commitments in these programs will specify reporting requirements for self-generated nutrient reduction credits as well as any offset and exchange credits that satisfy their regulatory obligations.

Upon completion of the wastewater overtreatment credit under development by DWR, wastewater treatment facilities will have the option to convert offset credit into nutrient allocation. They may also utilize exchange credits to temporarily supplement allocation, subject to any limitations that may arise as rules and policies for temporary credit trading are developed.

Retiring Credit

In some circumstances, it will be appropriate to retire credit, effectively eliminating it from accounting ledgers. This would be appropriate when a permanent offset credit is paired with a permanent nutrient reduction obligation. It would also be appropriate when an exchange credit has expired.

When used for existing development purposes, nutrient offset credits will not be retired. Upon transfer, liability for these credits remains with the provider and/or long term steward. If audits determine that the nutrient reduction project supporting these credits has failed, DWR will work with the provider or long-term steward to replace the project.

For exchange credits, ledgers will be required to clearly state the expiration date for the credit, which coincides with the term of the underlying nutrient reduction project. For many temporary nutrient reduction practices, provisions will be in place to periodically re-release and thus renew exchange credits if the underlying project retains its nutrient reducing functions.

Financing Nutrient Reduction Credits

Many sources of governmental funding contribute to improved water quality and may support the generation of nutrient reduction credits. Payment stacking describes the idea that nutrient reduction projects, and ultimately credits, may be financed by multiple sources of funding. Various sources of statutory and contractual authority are likely to govern whether payment stacking is allowable in given situations, but state statutes and regulations are relatively quiet on the subject.

Existing trading rules generally allow a provider or other entity implementing a nutrient reduction project to claim nutrient reduction credit for that project, and any nutrient reduction credit generated beyond regulatory requirements may be traded. However, exceptions are likely warranted in relation to some funding types.

In proposed revisions to the nutrient offset rule, DWR has proposed barring state and federal grant sources from financing nutrient offset credits. These grant sources usually draw upon taxpayer funds to finance net environmental improvements. Allowing these grant types to finance permanent, tradable credits raises concerns that these public funds will directly enrich the grant recipient, be used to offset other nutrient increases, and distort pricing in the credit market. Where granting agencies bar the utilization of funds for regulatory compliance purposes or more narrowly for generating credits for transfer to other parties, this rule proposal would be redundant, but inclusion of this prohibition in the offset rule captures DWR's concerns.

This issue merits further consideration with regard to the proposed category of temporary nutrient exchange credits. One important consideration is the existence of various cost-share programs that are available to fund nutrient reduction projects on agricultural land. In most cases, the granting agency (USDA) asserts no interest or limitation in generating nutrient credits. While the considerations described above are applicable to agricultural producers, adopting this same policy for temporary credits may also reduce the agricultural sector's ability or willingness to engage in the market.

DWR is generally reticent to evaluate potentially complex contractual arrangements between granting agencies and potential providers. However, rules requiring disclosure or affirmations from potential providers may serve a role in addressing this issue. Endorsement letters from granting agencies might also be a tool to clarify these arrangements.

Potential Barriers to Expanding Trading in North Carolina

While some forms of trading continue to occur in North Carolina, others may be hindered by several foreseeable barriers. Significant policy adjustments may be necessary to fully realize the potential benefits of nutrient trading, but it should also be recognized that trading is a secondary means to a broader policy goal: the cost-effective reduction of nutrient loading in North Carolina's lakes and estuaries. Identification of the issues below does not necessarily signal any shifting policy positions by DWR or DEQ, but is instead provided by staff with the intention to begin a dialogue among policymakers and the regulated community.

Agricultural Regulations

In most nonpoint source trading schemes, agricultural lands are conceptually the primary source of credit generation. With new trading drivers on the horizon, particularly for existing development, the demand for credits generated is likely to increase in some areas.

Compared to other states, North Carolina has adopted a novel approach to regulating crop and pasture agriculture in nutrient strategy watersheds. Other states typically seek voluntary nutrient reductions from the agricultural sector through a multi-pronged approach including BMP funding, agricultural sector nutrient accounting, and sometimes minimum stewardship standards. While DWR has not conducted a comprehensive review, direct regulation of these sources by other states is rare if it occurs at all.

In North Carolina, crop and pasture operations within nutrient strategy watersheds are regulated but not individually. Instead, they are collectively obligated to reduce nutrient loading from their fields by a certain percentage. The agricultural sector has always demonstrated compliance or satisfactory progress toward compliance under the rules, and therefore the implied regulatory threat of farm-specific compliance has never materialized.

A perennial concern from the agricultural community is that some credits obtained by restoration on agricultural land are not credited to the agricultural community. This typically occurs when a mitigation banking company purchases the rights to restore buffers on agricultural land and the credits offset nutrient loading from new development. While an individual farmer is financially rewarded in such a transaction, the opportunity for collective agricultural sector improvement is lost.

Agricultural professionals have consistently expressed concerns about the implications of increased trading as it relates to their ability to meet collective compliance obligations. Yet to maximize agricultural sector participation in nutrient trading, these same professionals would be called upon to endorse such a framework, encourage farmers to enter the market, and educate them regarding the steps necessary to generate nutrient credits.

While nutrient strategy rules vary on this point, in some watersheds agricultural oversight committees have the authority to reject individual trades generated by farmers if collective compliance is at risk. In addition to the considerations described above, this authority could significantly hinder trading activity.

While the collective compliance approach to regulating agriculture has some attractive features, it has also been subject to critiques. Even without individual mandates, some farmers may resent the relatively heavy collective burden imposed on them as compared to other states. The method by which agricultural reductions are quantified has also been a source of critique, primarily because reporting procedures estimate edge-of-field and not instream nutrient reductions. Finally, annual reports arguably suggest that most reductions would have occurred absent existing regulations due to broader economic trends like crop shifts and more expensive fertilizer.

Again, this regulatory arrangement has positive aspects, and a full evaluation of North Carolina's agricultural rules is beyond the scope of this document. However, the current scheme is likely to significantly restrict agricultural participation in a nutrient credit market. If the agricultural sector is envisioned to generate a high volume of tradable nutrient credits for purchase by other regulated sectors, a more thorough evaluation of the current regulatory approach to agriculture is warranted.

Interpretation of the "Fair, Reasonable, and Proportionate" Standard

One of the key factors in designing a functional trading framework is the initial allocation of regulatory obligations among parties or sectors. A high-volume trading scheme theoretically depends on some market inequity between a buyer and a seller's costs to generate required nutrient credits. Otherwise, no nutrient trading would occur because all parties would be able to generate credits at equal cost. No matter the initial allocation, an efficient nutrient trading market should eventually allow participants to negotiate economically efficient outcomes.

The Clean Water Responsibility and Environmentally Sound Policy Act, passed in 1997, requires that "all point sources and nonpoint sources of pollutants jointly share the responsibility of reducing the pollutants in the State's waters in a fair, reasonable, and proportionate manner..." Through each of North Carolina's nutrient management strategies, that "fair, reasonable, and proportionate" mandate has been operationalized by seeking identical percentage nutrient reductions from all regulated sectors.

North Carolina's historical approach clearly meets the standard articulated above, but the standard also arguably provides significant flexibility in the assignment of nutrient load reductions. Alternate approaches may also meet this standard while accounting for other considerations like population, projected compliance costs and access to financial capital, just to name a few.

Too much inequity in the initial allocation process would create political concerns and could violate the "fair, reasonable, and proportionate" standard. But a reasonable amount of market inequity might drive supply and demand for a functional, high-volume trading market that improves access to lower cost nutrient reduction practices and helps minimize per-unit transaction costs.

When new nutrient management strategies are proposed and existing strategies are studied in preparation for amendment and readoption, the relationship between the initial assignment of regulatory obligations and their influence on a trading market merits a closer look.

Transaction Costs

If nutrient credit trading volumes increase significantly, minimizing transaction costs and maximizing the efficiency of the nutrient credit trading market will be a significant challenge. Various transaction costs will be borne by regulatory agencies as well as entities engaging in trade. If transaction costs are too high, they can drive a wedge in the market, reducing its overall efficiency and potential trading volume. As mentioned above, legislative authorization would be required for the state to increase staff, directly invest in an online trading registry, or authorize user or transaction fees. Some or all of these approaches to supporting nutrient trading infrastructure may be necessary in the future.

Hotspots

A concern about nutrient trading is that it has the potential to allow concentrated nutrient pollution in smaller areas, potentially resulting in new localized impairments. Nutrient wastewater rules allow for permit modifications if discharges are creating localized water quality issues. However, this issue is not fully addressed in relation to nonpoint sources or trading, and it is likely to become exacerbated if credit trading

volume increases significantly. Amendments to rules and/or policies related to credit generation and trading might help alleviate these concerns and provide regulatory certainty for credit market participants. One potential approach might include limits on buying or selling nutrient credits if a localized impairment develops. Regulatory incentives might also be considered for providers that agree to monitor downstream reaches within their project's vicinity, providing DWR with additional information regarding nutrient strategy performance.