Water Resources
ENVIRONMENTAL QUALITY

# Water Quality Trading Case Study: North Carolina

**Overview of trading activity.** North Carolina implements nutrient trading programs in specific watersheds where impairments have been identified, including those draining to the Neuse and Pamlico estuaries and Jordan and Falls Lakes. Two types of trading occur regularly. First, point sources within a watershed have a collective nutrient allocation ("bubble") permit. Pursuant to this joint compliance approach, allocation is sold or leased between these facilities through an independently-operated compliance association. Second, nutrient impacts from new development activity are offset by purchasing nutrient offset credits, which are created by private mitigation banks or the N.C. Division of Mitigation Services through environmental restoration projects. Other trading options are allowable but occur rarely.

**Drivers for starting a water quality trading program.** The overarching driver for a comprehensive regulatory approach to reducing nutrient pollution in North Carolina resulted from high-profile algal blooms and fish kills in North Carolina's estuaries during the 1980s. For point sources, specific trading drivers include a collective nutrient allocation cap for all major facilities within the watershed and nutrient allocation caps for individual facilities. So long as the collective cap is met, individual nutrient limits are not enforced. Independent compliance associations have formed among dischargers to take advantage of the flexibility offered by this arrangement, with association members trading allocation among themselves. For new development projects, the driver is a nutrient target (in lbs. N and/or P per acre per year) that developers must meet. This target is often met in whole or in part by purchasing nutrient offset credits. Other supporting requirements for this approach include a stormwater nutrient calculator for new development projects and state programmatic support for the creation, approval, and exchange of nutrient offset credits.

**Key stakeholders.** North Carolina's nutrient strategies include regulations designed to reduce nutrient loading from many sources including wastewater facilities, agriculture, new development activity, and preexisting development. Point source allocation trading is conducted among wastewater facilities with state oversight and environmental NGO interest. In recent years, point sources have also expressed an interest in increasing their allocation through the acquisition of nonpoint source credits. This approach is allowable but also touches on other regulated sectors including agriculture. Nutrient offset credit trading for new development purposes involves local governments (who implement new development stormwater regulations locally), developers (who have heightened regulatory requirements but also benefit from a cost-effective nutrient offset credit option), mitigation bankers (who generate nutrient offset credits for profit), and the N.C. Division of Mitigation Services (an in-lieu fee program that serves as a backstop when no privately generated credits are available). Because most nutrient offset credits are generated through agricultural buffer restoration, the agriculture sector is also an important stakeholder.

**Public perspectives on trading.** Point source allocation trading is now a generally accepted and valued source of flexibility for wastewater facilities. However, one trade of this type generated substantial

controversy when a facility upstream of Falls Lake (an important drinking water source for Raleigh and other municipalities) sought to purchase a large amount of allocation from a coastal facility near the Neuse estuary that shifted to land application. Falls Lake already showed signs of nutrient stress, and the implications of this trade were further magnified by the effect of the facilities' relative delivery factors. Ultimately, controversy stemming from this trade was an important driver for the development of the Falls Lake nutrient strategy. Therefore, other jurisdictions are cautioned to consider the potential for hotspots to be created within their trading areas, particularly for impoundments.

The new development rules that serve as a driver for nutrient offset credit trading have had a mixed reception. They have been routinely implemented for nearly twenty years in the Neuse and Tar-Pamlico basins, but for Jordan Lake a similar set of rules has been delayed several times by the North Carolina General Assembly. Where new development rules are in place, the opportunity to purchase nutrient offset credits is valued by developers and from a state regulatory perspective, as it is an important feature for preventing unforeseen and disproportionate regulatory impacts. Mitigation bankers and DMS primarily generate nutrient offset credits on agricultural land, which is perceived to reduce opportunities for agricultural sector compliance with nutrient strategy rules. Coupled with the hotspot issue described above, the agricultural sector and environmental NGOs are often wary of trading if not outright opposed.

**Implementation challenges.** The trading activities described above have been in place for more than a decade. However, North Carolina has recently been revisiting its nutrient trading and joint compliance approaches. North Carolina generally seeks to retain the existing features of its current approach while also providing greater flexibility for new trading activity among regulated sectors. Two ongoing challenges are as follows:

- *Valuing nutrient-reduction practices.* Rigorously developing a nutrient reduction practice requires a significant investment of time and research. Beyond the substantial technical challenges, some stakeholders will have an inherent incentive to inflate the nutrient-reducing value of a practice, and doing so could come at the expense of water quality. Others may seek to be overly cautious in valuing the practice, which could inflate its expense beyond an affordable level for credit seekers. Despite these difficulties, it may be even more challenging to reduce the value of a credit once an industry has come to rely on it, even in the face of new scientific information. Such is the case for the prevailing practice in North Carolina used to generate nutrient offset credits: agricultural buffer restoration. An insight to be shared from this is to be sure to make initial credit method establishment fully public and transparent, and if not already in place, to include with adoption of credits an equally public and transparent process for revision of crediting and practice standards as well as for adoption of new practices.
- *Considering regulatory influences on supply and demand.* Like many jurisdictions, some trading options in North Carolina are unused due to insufficient regulatory drivers and ultimately insufficient demand. However, in some cases adequate credit supply is also a concern because North Carolina's nutrient strategies require substantial nutrient reductions from many nutrient-producing sectors. When all sectors seek to achieve regulatory goals, regulated parties may be hesitant to part with credits that may later become necessary for regulatory compliance. The

chief case in North Carolina is agriculture's resistance to serving as a source of credits for the needs of developed and developing areas given their own compliance responsibilities. In large part the tension results from the collective compliance design of the agriculture rules, which to some extent leave producers with a choice between private gain and contribution to the collective good.

**Water Quality Trading Toolkit?** North Carolina's existing nutrient trading approaches were developed before the publication of the toolkit. However, the toolkit has been an influential source of information for North Carolina's regulators and the wastewater sector. Wastewater facility representatives have recently shown substantial interest in acquiring additional nutrient allocation from nonpoint sources as procedurally described in the toolkit.

**Contact.** Jim Hawhee, N.C. Division of Water Resources, (919) 807-6438 or jim.hawhee@ncdenr.gov.