



# North Carolina Nutrient Trading: Existing And Developing Concepts

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*Department of Environmental Quality*



# *North Carolina's Approach to Nutrients*

- Federal + state authorities
- Controlling state legislation requires “fair, reasonable and proportionate” nutrient reductions from point and nonpoint sources.
- NSW water quality classification
- Chlorophyll a criteria: 40 ug/L (10/90)
- No numeric N or P criteria
- Modeling establishes TMDL/WLA for N and/or P
- Few nutrient TMDLs, strategically-selected watersheds

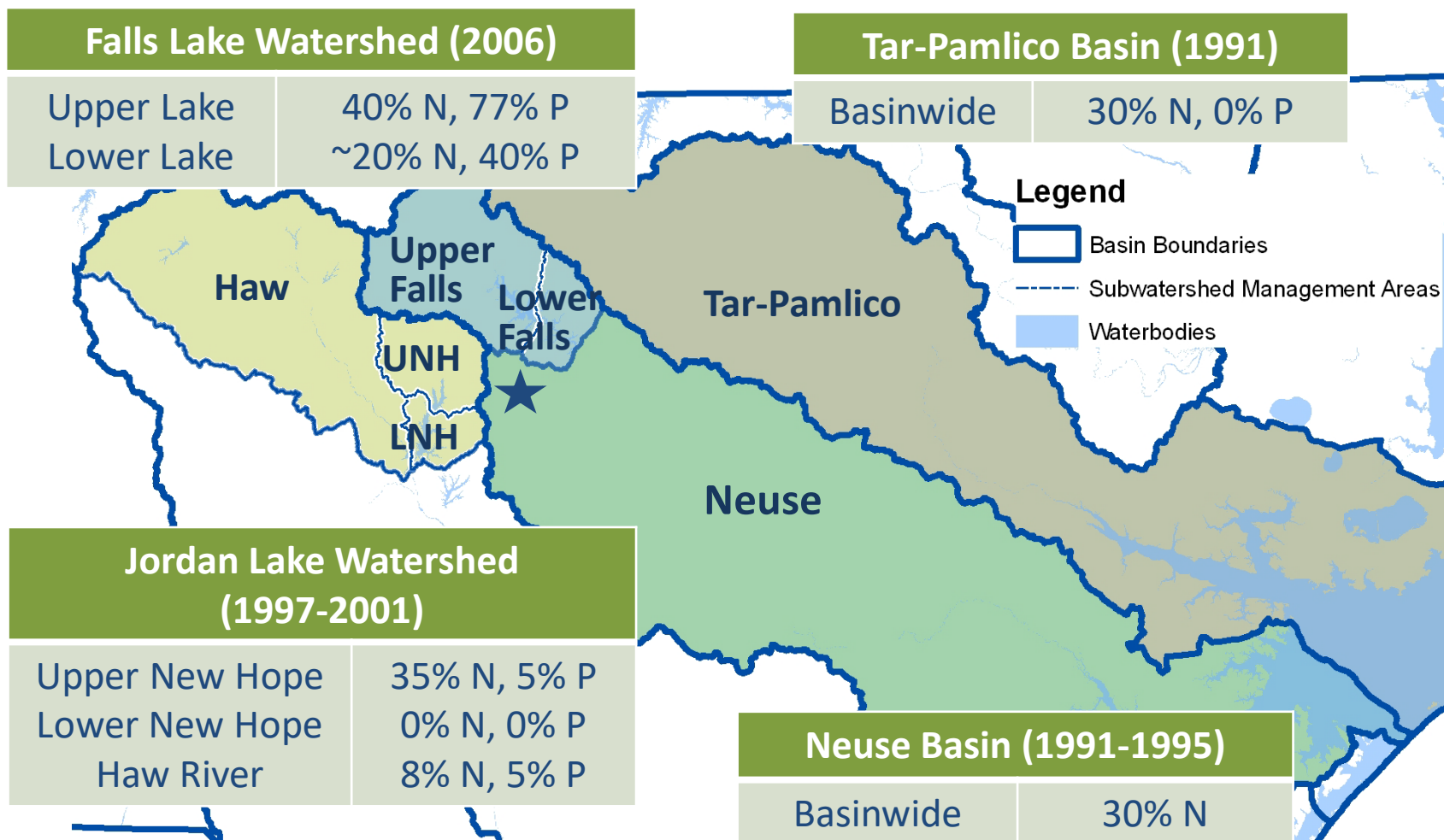


# *Nutrient Management Strategies*

- Comprehensive regulatory nutrient strategies
  - Wastewater
  - Agriculture
  - Existing riparian buffer protection
  - New development stormwater
  - Existing development stormwater
  - Nutrient trading



# Goals for Major Nutrient Strategies



\*Years in parenthesis = baseline period on which goals are based.



# *Wastewater Rules*

- Nutrient load allocations set to collectively achieve reduction goal from baseline condition
- Watershed permitting
- Individual mass limits (EOP and delivered)
- Compliance associations, group permit
- Must secure (PS) allocation or (NPS) offset credits to for new/expanding facilities
- Group acquires nutrient offset credit for allocation exceedances in addition to facility-level enforcement



# *Stormwater Rules*

- New development
  - Implemented locally
  - Developers must hit nutrient rate targets
  - Stormwater nutrient calculator(s)
  - Can purchase offsite nutrient credits
- Existing development
  - Local governments as regulated community
  - Account for nutrient reductions on existing developed lands
  - State rule authorities and administration



# *Point Source Trading Options*

1. Joint Compliance
2. Allocation Trades
3. Nutrient Offset Credit Acquisition
4. Nutrient Offset Credit Generation



# *Joint Compliance*

- Watershed permitting approach means:
  - Regulated trading not necessary to meet individual facility limits
  - Compliance association bylaws govern contractual trading
  - Addresses economic free rider problem
  - Facilities over individual limits purchase “credit” from other facilities
  - Prices range from \$4-\$9 per lb.





## *Allocation Trades*

- Bilateral allocation trades have occurred (7)
- Enacted through mutual permit modifications
- Permanent sales historically, periodic leases possible
- Prices range from \$275-491 lbs. N/year
- Last trade in 2012



# *Joint Compliance and Allocation Trades: Neuse Basin*

## NRCA Nitrogen Transactions (Sales/Leases)

Date: 2/14/18

Year	Type of Nitrogen Transaction	Seller/Leasor	Buyer/Leasee	Estuary Lbs. of Nitrogen *	Cost per Pound
2017	Lease	Contentnea MSD	CWS, Inc.	7,000 \$	5.00
	Lease	NRCA	Craven County	50	9.00
	Lease	Dow-Dupont	Craven County	307	4.00
2016	Lease	Contentnea MSD	Town of LaGrange	1,000 \$	4.00
	Lease	NRCA	Craven County	50	9.00
2015	Lease	Contentnea MSD	Aqua, N.C., Inc.	750 \$	4.00
	Lease	Contentnea MSD	Town of LaGrange	1,300	4.00
	Lease	NRCA	Craven County	50	9.00
2014	Lease	Contentnea MSD	Aqua, N.C., Inc.	4,000 \$	4.00
	Lease	Contentnea MSD	Town of LaGrange	1,300	4.00
	Lease	NRCA	Craven County	50	9.00



# *Nutrient Offset Credit Acquisition*

- Acquire credits from existing private nutrient offset banks
- Also Division of Mitigation Services?

Neuse basin 8-digit HUCs 03020202, 03020203 and 03020204	Nitrogen	\$13.37
Neuse – 03020201 outside the Falls Lake watershed	Nitrogen	\$21.86
Neuse - Falls Lake watershed	Nitrogen	\$10.52
Neuse - Falls Lake watershed	Phosphorus	\$187.56
Tar-Pamlico basin	Nitrogen	\$8.28
Tar-Pamlico basin	Phosphorus	\$117.96
Jordan Lake watershed	Nitrogen	\$132.00
Jordan Lake watershed	Phosphorus	\$343.93



# Nutrient Offset Credit Acquisition

WEI – Neuse 01 Riparian Buffer and Nutrient Umbrella Bank – Buck Swamp Parcel (HUC 0320201 Neuse River Basin)  
 Nitrogen Credit Ledger  
 Date Last Updated: 10-2-18  
 DWR Bank Parcel Project #: 2012-0144  
 Total Credits Released To Date: 75,040.56



Sale/ Release Date	Purchaser or % Credit Release	Project Name	Credits Released/Available to Bank		Credits Debited/Sold From Bank		Nutrient Credit Balance		Gov't Requiring
			Pounds of Nitrogen	Acres	Pounds of Nitrogen	Acres	Pounds of Nitrogen	Acres	
06/20/14	1st Credit Release (20%)		20,911.60	9.20		-	20,911.60	9.20	NCDENR
06/23/14	City of Raleigh	Critical Public Safety Facility		-	1,044.00	0.46	19,867.60	8.74	City of Raleigh
06/23/14	Sheetz	Sheetz Commons (NC 42 and NC 50)		-	274.70	0.12	19,592.90	8.62	Johnston County
06/24/14	Bruce Smith	Charles Luck Stone Center		-	396.69	0.17	19,196.21	8.45	City of Raleigh
07/03/14	DWR approved transfer to Buck Swamp Buffer ledger			-	7,614.62	3.35	11,581.59	5.10	DWR
07/16/14	Juanito Ponsones	3329 Granville Road		-	21.31	0.01	11,560.28	5.09	City of Raleigh
07/21/14	Gateway Bank money order	Wade Park III		-	896.67	0.39	10,663.61	4.69	City of Raleigh
07/28/14	SECU	SECU-Cary Crossroads		-	277.59	0.12	10,386.02	4.57	Town of Cary
07/31/14	Konti Construction	Goldsboro Veterinary Hospital		-	122.69	0.05	10,263.33	4.52	Wayne County
07/31/14	Vance Construction	All Saints Anglican Church		-	28.50	0.01	10,234.83	4.50	City of Raleigh
08/01/14	Pizzagalli Properties, LLC	4400 Emperor Blvd		-	17.39	0.01	10,217.44	4.50	City of Durham
08/01/14	Pizzagalli Properties, LLC	4400 Emperor Blvd (5% Durham)		-	0.87	0.00	10,216.57	4.49	City of Durham
08/08/14	Spec Con, Inc.	WTCC Alteration 3200 Bush Street		-	706.54	0.31	9,510.03	4.18	City of Raleigh
08/08/14	Gregory Poole Equipment	Gregory Poole Storage Lot		-	1,202.50	0.53	8,307.53	3.65	City of Raleigh
08/11/14	Capital Ready Mix Concrete	Capital Ready Mix Concrete		-	558.19	0.25	7,749.34	3.41	Wake County
08/22/14	Riverwood Haven, LLC	Riverwood Haven		-	600.50	0.26	7,148.84	3.15	Johnston County
08/25/14	Stonehenge Manor Developers, LLC	Stonehenge Manor Subvision P. 1, 2 & 3		-	1,742.82	0.77	5,406.02	2.38	City of Raleigh
08/26/14	Coastal Federal Credit Union	Coastal Federal Credit Union		-	79.60	0.04	5,326.42	2.34	Town of Garner
08/27/14	Raleigh Mechanical and Metals	Raleigh Mechanical and Metals 7405 ACC Blvd.		-	55.63	0.02	5,270.79	2.32	City of Raleigh
09/04/14	PIRHL Developers, LLC	Calvary Trace Apartments			737.98	0.32	4,532.81	1.99	City of Raleigh
09/05/14	Post Properties, Inc.	Post Parkside Phase II			3,037.69	1.34	1,495.12	0.66	City of Raleigh



# *Nutrient Offset Credit Generation*

- NPDES permittees generate credits through NPS projects
- Vertically-integrated
- Consistent with national trading approaches
- Uncertainty in North Carolina



## *Work Underway*

- Development of nutrient trading framework
  - Trading guidance
  - Final stages of development
  - Based on currently existing rules
- Rewriting nutrient offset rule and wastewater rules
  - Enabling permanent and temporary credits
  - Tiered credit acquisition
  - Fiscal note (comparison of trading options)



# *Fiscal Analysis Scenarios*

Neuse River Basin, 10 MGD expansion in 2038 @ 3mg/L TN

Cost NPV	Allocation Lease	Allocation Purchase	Offset Credit
Proposed rule	\$1,121,908	\$2,893,420	\$10,642,453
No action alternative	\$1,121,908	\$2,893,420	\$34,186,437
Policy alternative: no tiered offset acquisition	\$1,787,248	\$4,518,379	\$16,619,309
Policy alternative: no permanent credits	\$1,121,908	\$2,893,420	\$12,603,316
Policy alternative, proposed with 3:1 offset ratio	\$1,121,908	\$2,893,420	\$29,024,872
Policy alternative, proposed with 2.5:1 offset ratio	\$1,121,908	\$2,893,420	\$24,187,393
Policy alternative, proposed with 2:1 offset ratio	\$1,121,908	\$2,893,420	\$19,349,915
Policy alternative, proposed with 1.77:1 offset ratio	\$1,121,908	\$2,893,420	\$17,124,675
Policy alternative, proposed with 1.2:1 offset ratio	\$1,121,908	\$2,893,420	\$11,609,949
Policy alternative, proposed with 1:1 offset ratio	\$1,121,908	\$2,893,420	\$9,674,957

\* New permitted loading is 91,323 lbs. N/yr.



# *Ongoing Challenges*

- Clarifying complex options
- Trading ratios
- Crediting NPS practices
- Transport Factors
- External pressure on trading markets





# QUESTIONS?



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