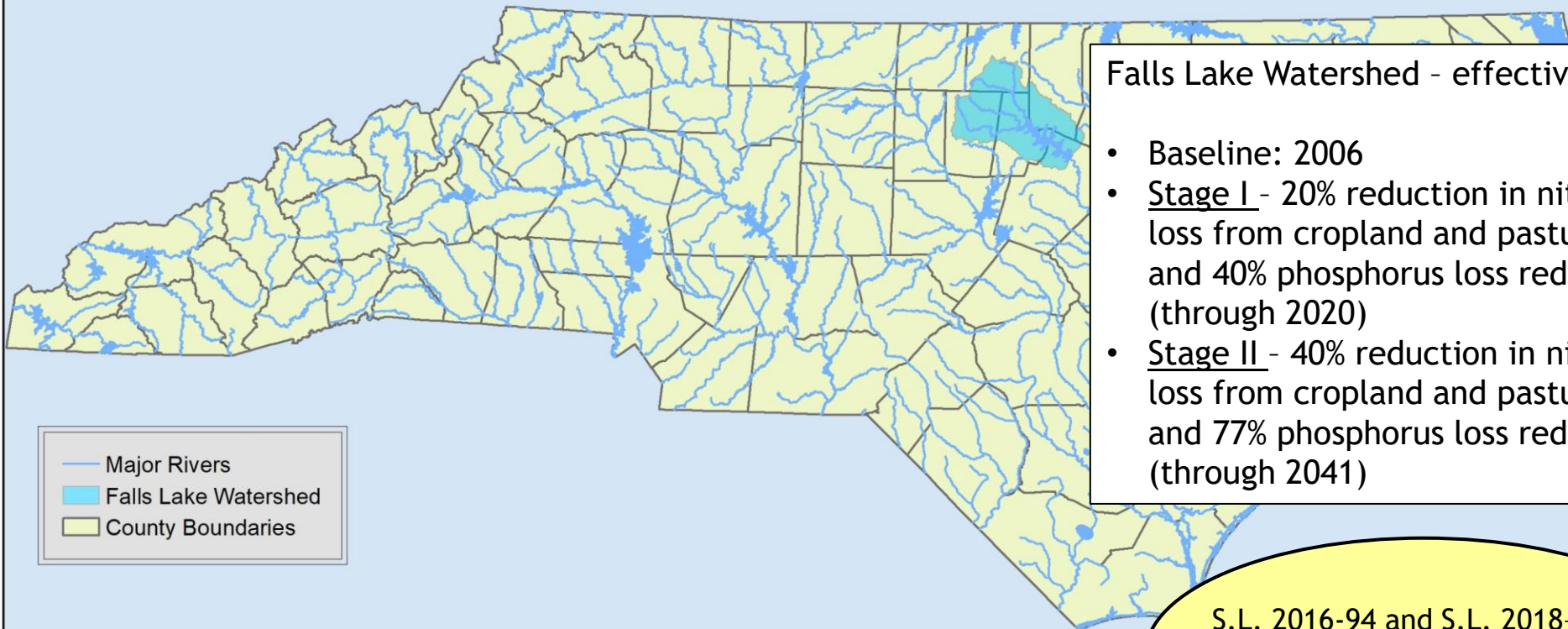


Nutrient Sensitive Waters

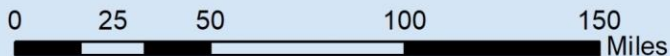
CY2022 Annual Progress Reporting for Agriculture Rule Implementation



Nutrient Strategy Watersheds



— Major Rivers
Falls Lake Watershed
County Boundaries

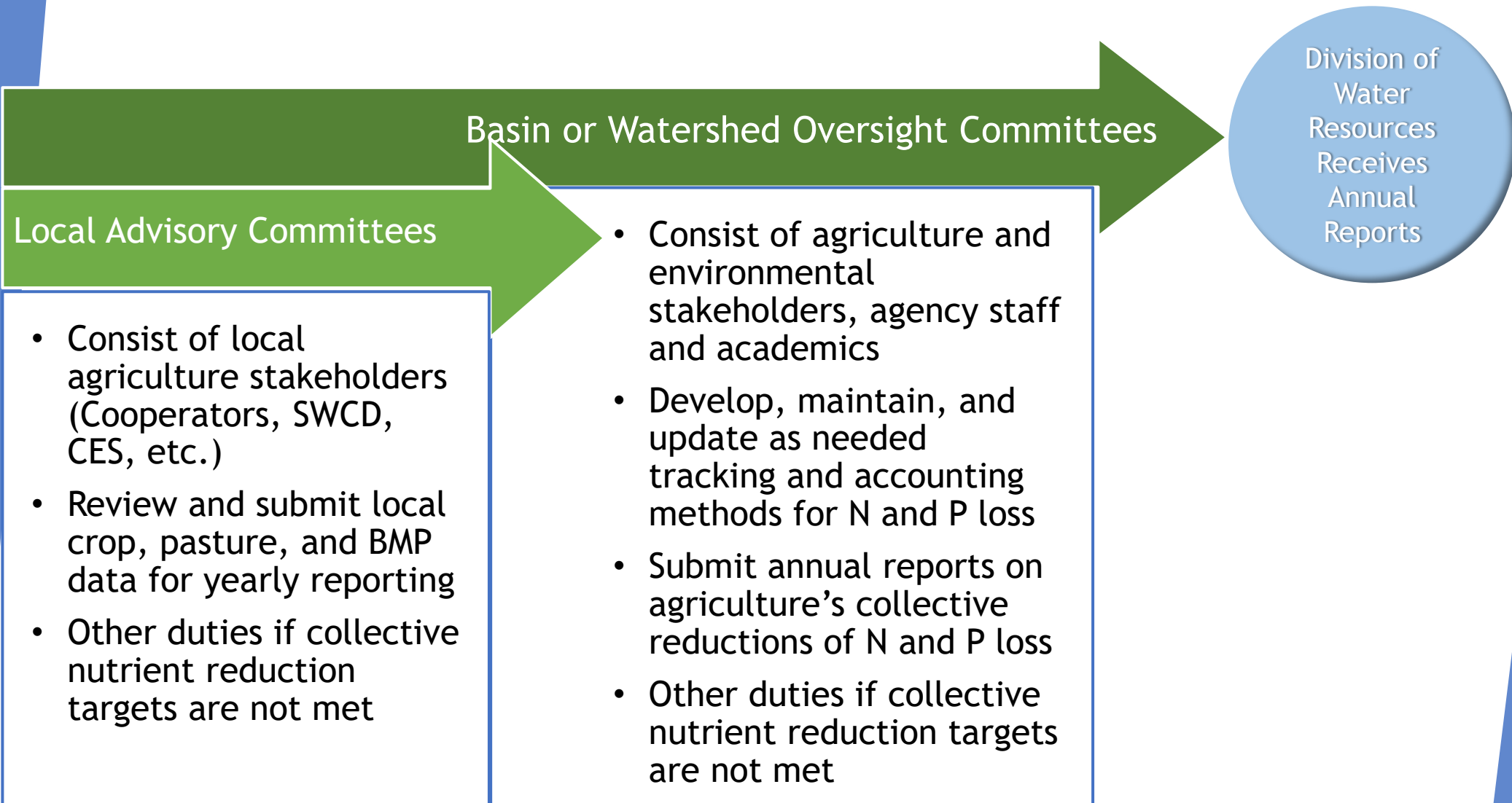


Falls Lake Watershed - effective 2011

- Baseline: 2006
- Stage I - 20% reduction in nitrogen loss from cropland and pastureland and 40% phosphorus loss reduction (through 2020)
- Stage II - 40% reduction in nitrogen loss from cropland and pastureland and 77% phosphorus loss reduction (through 2041)

S.L. 2016-94 and S.L. 2018-5 extended Stage I until the Falls Lake Rules are readopted.

Reporting & Rule Compliance Process



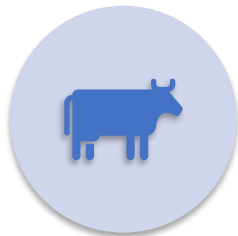
Data Used in Annual Reporting



Farm Service Agency Annual Crop Reports or USDA NASS Annual Crop Data



Fertilization rate application data



USDA NASS livestock data & Agriculture Census Data



Local knowledge and data on farmer-implemented nutrient-reducing BMPs not supported by cost-share funding



Select BMPs implemented using state and federal cost share funding

We rely on local knowledge and expertise to make sure collected data is correct. Special thanks to all LAC members who contributed to annual reporting efforts!



Agriculture Nutrient Loss Reduction Tracking

Aggregate Nitrogen Loss Estimation Worksheet (NLEW)

- Developed initially to meet Neuse Agriculture Rule requirements and approved for use in other watersheds and basins under nutrient strategies
- Assumes majority of nitrogen (N) lost in a NC cropping system moves as soluble N through the soil system to shallow groundwater
- Estimates a baseline N loss for agriculture
- Captures inorganic and animal waste fertilizer application
- Tracks N-reducing BMP implementation
- Tracks changes in N losses at whole-county scale adjusted for acreage in the basin or watershed



Reported Crops through NLEW

Bahiagrass (Hay)
Barley (Grain)
Caucasion/Old World Bluestem (Hay)
Common Bermudagrass (Hay)
Corn (Grain - Coastal)
Corn (Grain - Conventional)
Corn (Grain - No Till)
Corn (Silage - Coastal)
Corn (Silage - Conventional)
Corn (Silage - No Till)
Cotton
Cucumber
Dallisgrass (Hay)
Fescue (Hay)
Hybrid Bermudagrass (Hay)
Hybrid Bermudagrass overseeded with
Rescuegrass (Hay)
Mixed Cool Season Grass (Hay)
Oats (Grain)

Orchardgrass (Hay)
Peanuts
Pearl Millet (Hay)
Rescuegrass (Hay)
Rye (Grain)
Small Grain (Silage)
Sorghum (Grain)
Sorghum Sudan (Hay)
Soybeans (Double Cropped - Manured)
Soybeans (Double Cropped)
Soybeans (Full Season - Manured)
Soybeans (Full Season)
Sweet Potatoes
Timothy Grass (Hay)
Tobacco (Burley)
Tobacco (Flue Cured)
Triticale (Grain)
Tropical Corn (Silage)
Wheat (Grain)

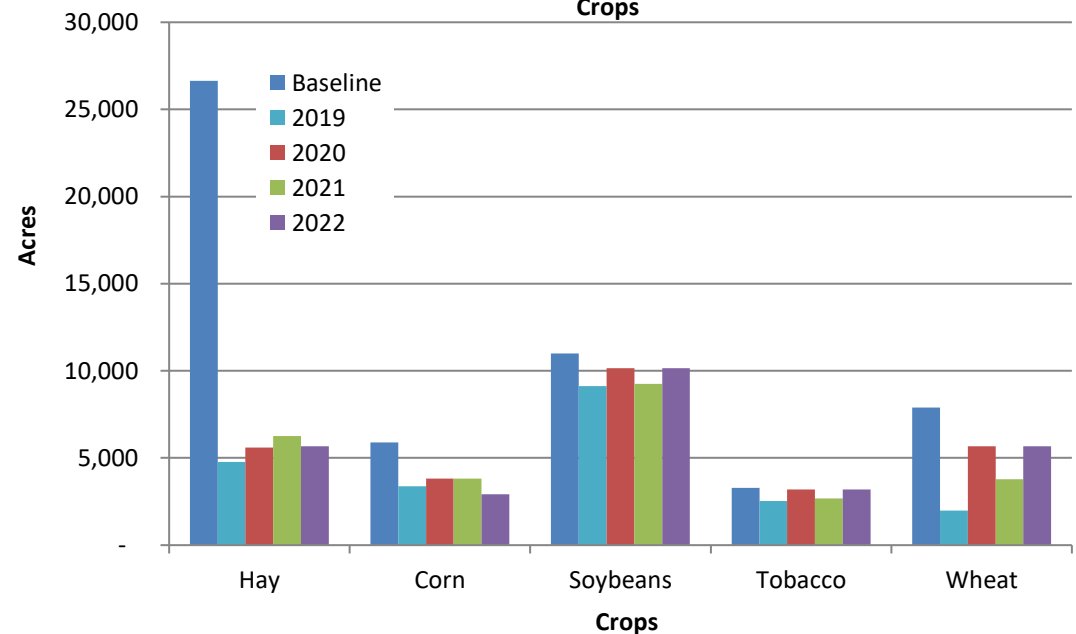
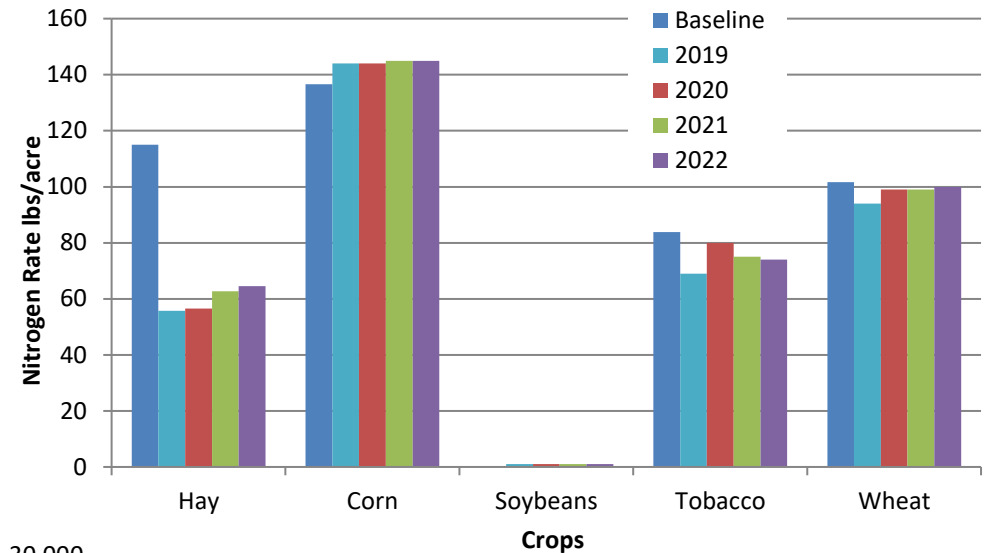
Not all
crops are
reported!



Crop Year 2022 Highlights - Crop & Fertilizer

Oct. 1, 2021 - Sept. 30, 2022

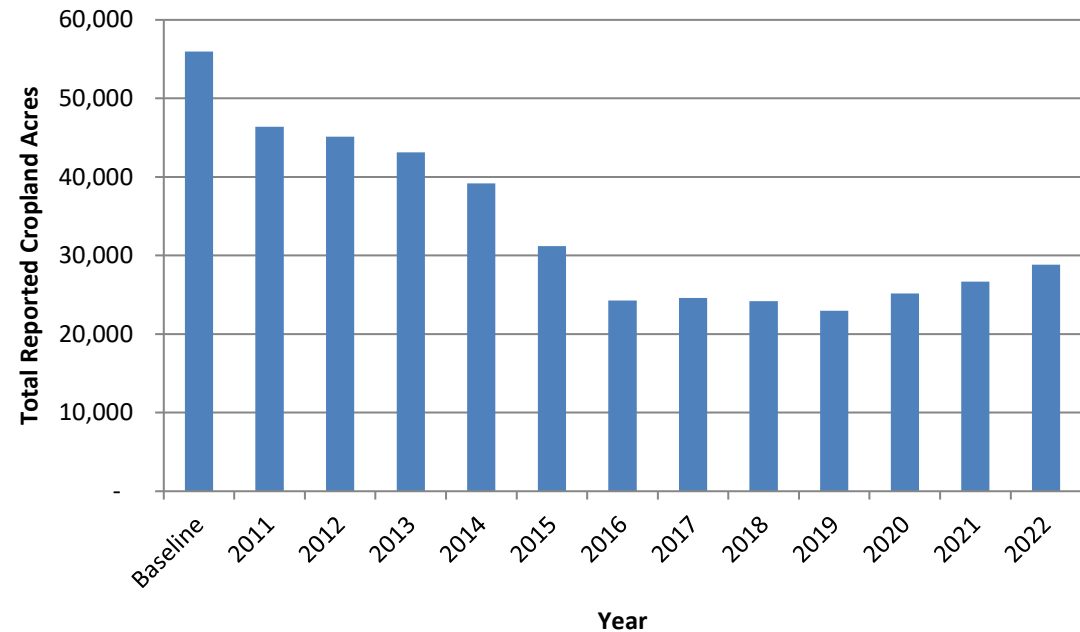
- Agriculture is primarily pasture-based
- Between CY21 and CY22 hay and corn acreage ↓ and soybean, tobacco and wheat acreage ↑
- Weighted average hay nitrogen application rate is ~50 lbs N/ac lower than the baseline (2006) hay rate
- Corn, soybean, tobacco, and wheat rates fluctuated less than 5 lbs N/ac between CY21 and CY22



Crop Year 2022 Highlights - Land Change

Oct. 1, 2021 - Sept. 30, 2022

- Annually cropland is lost to development, converted (grass or trees), or taken out of production (idle land)
- Since the 2006 baseline, there has been a decrease in over 27,000 acres of NLEW-reported cropland
- Almost 2,500 acres has been converted (grass or trees) and more lost to development



Nutrient Reduction Best Management Practices (NRCS & ACSP) - What Do We Report for Credit?

Receive N Reduction Credit

- Unfertilized Cover Crops
 - Wheat, Rye, Oats, Triticale, & Barley
- Buffers
 - Riparian buffers
 - Filter strips
 - Field borders (only if adjacent to a blue line stream)
- Livestock Exclusion Systems (pasture accounting only)
 - Falls Lake & Jordan Lake only

Do not Receive N Reduction Credit

- Additional Nutrient Reducing BMPs
 - Diversion, precision agriculture, sod-based rotation, tillage management, terraces, field borders, & grassed waterways
 - Do not receive nitrogen-reduction credit for implementation of these practices; however cumulative and active contract acre totals are included in the Annual Progress Reports

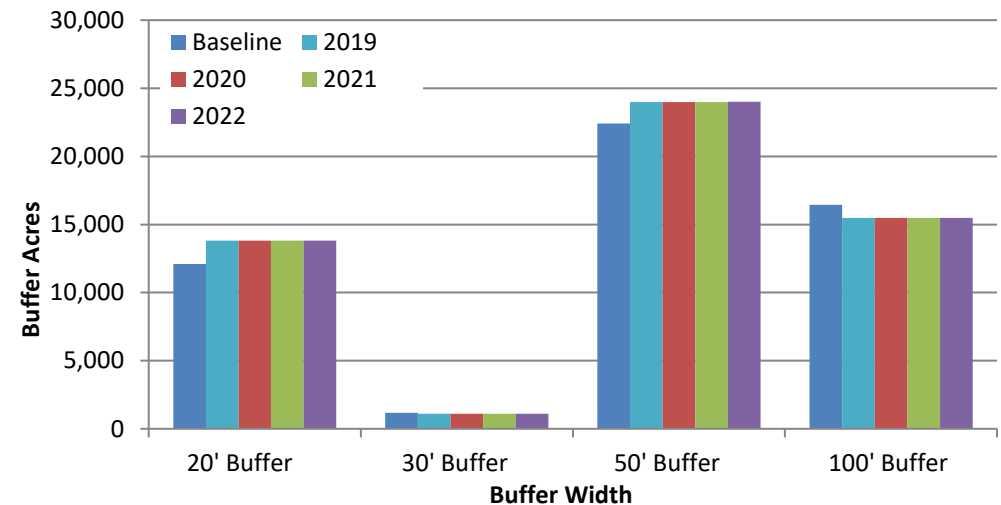


Crop Year 2022 Highlights - BMPs

Oct. 1, 2021 - Sept. 30, 2022

- Accurate reassessment of active agricultural land and remaining buffer systems is needed
- Buffer data comes from state and federal cost share program data and, in some cases, where buffer was installed with other funds (no mitigation)
- Nutrient and sediment-reducing practices (not tracked in NLEW) are also included in reports

Buffer Width (feet)	NLEW % N Reduction
20	20%
30	25%
50	30%
100	35%



BMP	Units	BMPs Installed (CY2012-CY2022)
Critical Area Planting	Acre	558
Composting Facility	Number	11
Diversion	Feet	15,992
Dry Stack	Number	3
Fencing (USDA programs)	Feet	52,271
Field Border	Acre	714
Grassed Waterway	Acre	60
Nutrient Management Plan	Acre	425
Pasture Renovation	Acre	0.26
Stream Crossing	Number	5
Sod-Based Rotation	Acre	15,514
Tillage Management	Acre	3,668
Terraces	Feet	700
Trough or Tank	Number	72
Waste Storage Facility	Number	5

Nutrient Loss Reduction Tracking

Phosphorus Loss Risk Estimation

- A defensible, aggregated, county-scale accounting method for estimating phosphorus losses from agricultural lands was determined not feasible
- Relative changes that either increase or decrease the risk of phosphorus (P) loss from agricultural lands in basins/watersheds are qualitatively tracked annually
- Developed initially to meet Tar-Pamlico Agriculture Rule requirements, adopted for use in Falls Lake and Jordan Lake Watersheds

Parameters Tracked

Agriculture Land Acres (annual)

Cropland Conversion to Grass & Trees Acres (cumulative)

Wetlands Reserve Program and Conservation Reserve Program Acres (cumulative)

Conservation Tillage Acres (active contract)

Vegetated Buffers Acres (cumulative)

Unfertilized Cover Crop Acres (annual)

Animal Waste Phosphorus (annual)

Soil Test P Median (annual)

Tobacco Acres (annual)



P Loss Risk Tracking

Most tracked parameters for P loss risk indicate reduced risk!

Parameter	Units	Source	Baseline 2006	CY2020	CY2021	CY2022	% change '06-'22	P Loss Risk +/-
Reported Cropland (annual)	acres	FSA, LAC	55,969	25,166	26,667	28,807	-49%	-
Cropland conversion to Grass & Trees (cumulative)	acres	USDA-NRCS & NCACSP	1,527	2,249	2,290	2,410	+58%	-
Conservation tillage (active contract)	acres	USDA-NRCS & NCACSP	277§	3,448†	3,448†	3,668†	+1,224%	-
Vegetated buffers (cumulative)	acres	USDA-NRCS & NCACSP	52,139	54,424✘	54,425✘	54,449✘	+4% ✘	-
Unfertilized Cover Crop (annual)	acres	LAC	0	1,105	1,651	1,626	+1,626%‡	N/A
Tobacco (annual)	acres	FSA, LAC	3,288	2,198	2,684	3,194	-3%	-
Animal waste P (annual)	lbs of P/ yr	NC Ag Statistics	586,612	470,945	465,598	454,608	-23%	-
Soil test P median (annual)	P Index	NCDA&CS	77	77	76	78	1%	+

§ The baseline value for conservation tillage was updated to correct a calculation error in the master spreadsheet.

† Conservation tillage is being practiced on additional acres, but this number only reflects estimated acres under active cost share contracts approximated by a rolling ten-year window (2012 – 2022).

✘ This number may include some buffer acres on formerly agricultural land which has been converted to other uses (see page 6).

‡ The percent change for unfertilized cover crop acres is assumed to have increased from 1 due to the problem with calculating a percentage difference from zero.



Crop Year 2022 Highlights - Pasture

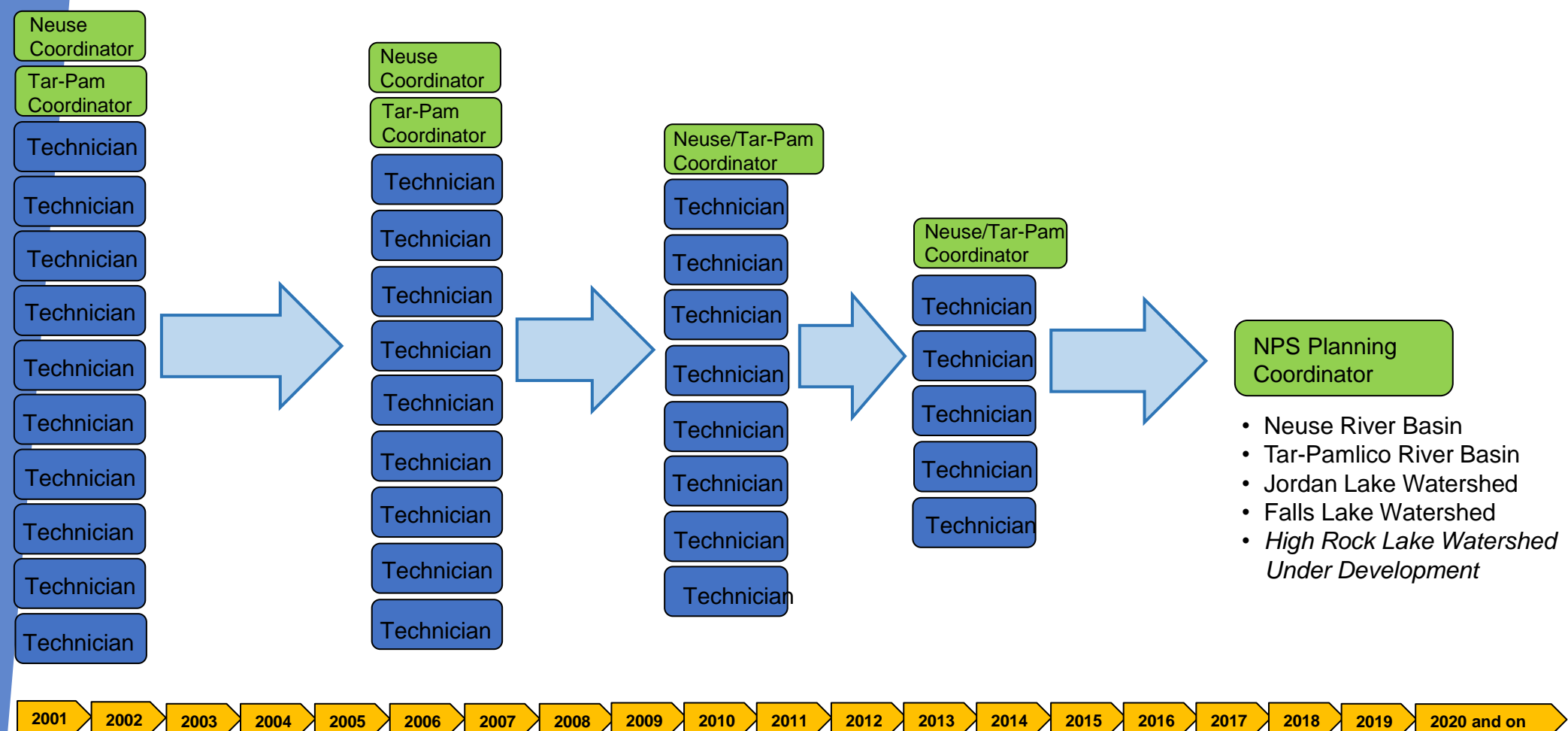
Oct. 1, 2021 - Sept. 30, 2022

- Calculated based on pasture acres, pastured livestock numbers from USDA-NASS census data (released every 5 yrs), and livestock exclusion system implementation.
- Achieved a 42% N reduction in CY17 (last available census)

County	Baseline N Loss (lbs)	CY2012 N Loss (lbs)	CY2012 N Reduction (%)	CY2017 N Loss (lbs)	CY2017 N Reduction (%)
Durham	55,564	41,891	25%	36,348	35%
Franklin	1,600	1,776	-11%	1,538	4%
Granville	104,474	72,371	31%	59,288	43%
Orange	47,689	24,861	48%	23,864	50%
Person	50,088	30,824	38%	29,114	42%
Wake	5,747	3,689	36%	3,795	34%
Total	265,162	175,411	34%	153,947	42%



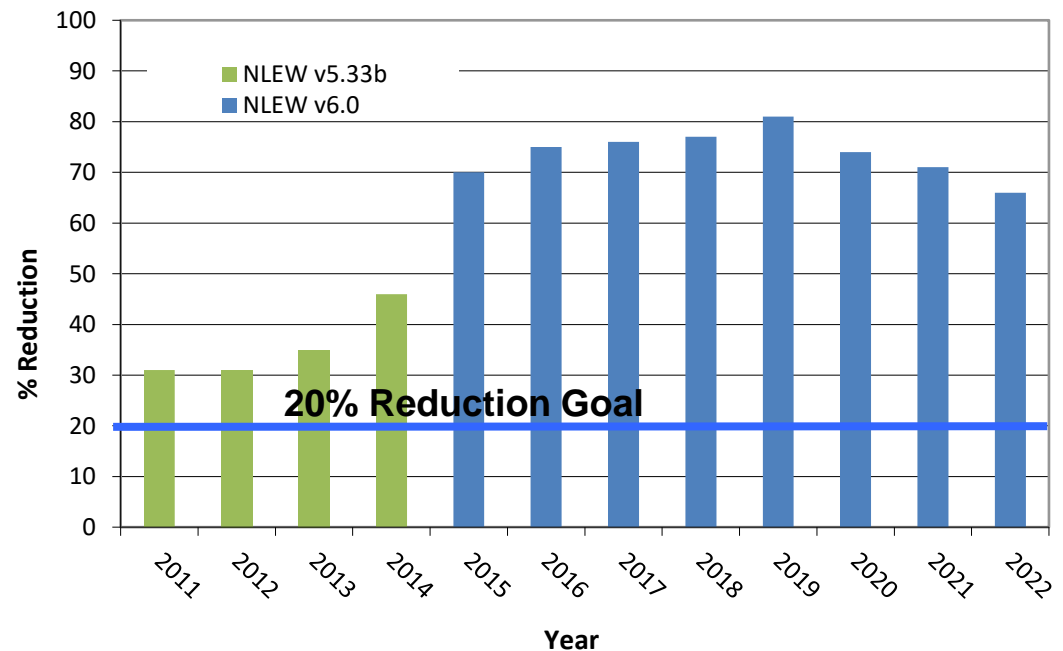
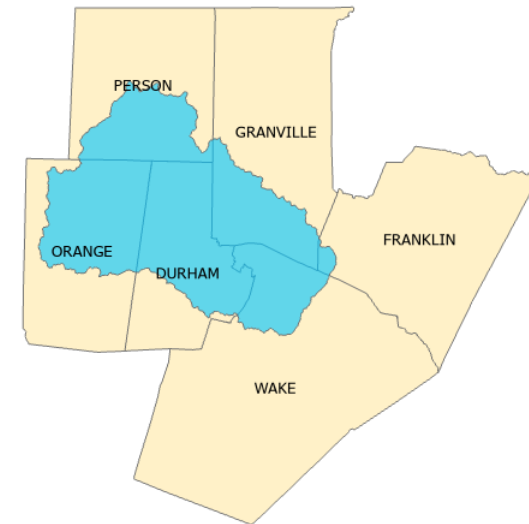
Funding Changes



Crop Year 2022 Highlights - Falls Lake Watershed

Oct. 1, 2021 - Sept. 30, 2022

- 66% nitrogen loss reduction for cropland from baseline
- Two of the six counties, Orange and Durham, are reporting a greater than 70% nitrogen loss reduction
- Most tracked parameters for P loss risk indicate reduced risk
- Since 2006, there's nearly a 50% decrease of NLEW-accountable crops
- Over \$149,000 ACSP and over \$180,000 EQIP dollars spent in watershed



Questions?

Allie Dinwiddie

Nonpoint Source Planning Coordinator

Phone: 919-707-3795

Email: alexandra.dinwiddie@ncagr.gov

