Nothing Compares
NORTH CAROLINA

Revised Design Specifications & Nutrient Accounting for Buffer Restoration in Developed Areas

January 5, 2018 - NSAB

Department of Environmental Quality

Background for Nutrient Reduction Practice

- Existing Buffer Restoration crediting is based on rural conditions
- Assumes literature-based values for areas of agricultural drainage and nutrient loads from ag land covers
- Needed a nutrient crediting method for buffer restoration in developed (non-ag) settings

Brief History

- Initial practice development by UNRBA and Cardno Spring 2016
- Presentation to NSAB December 2016
- Lots of comments, reviewed method against data, extensive revision through 2017
- Review/comment by UNRBA, 401 Unit, DMS
- Incorporate comments and revise for NSAB

Desired Practice Elements

- Variable buffer widths (min 20’ – max 200’)
- Calculation based on site-specific conditions
- Diffuse concentrated flows for more credit
- Time-limited implementations (requires no conservation easement)
- Minimized surveying and reporting requirements
- Incorporate existing forest and utility easements
- Simple credit calculation method
- Otherwise: use similar conditions and requirements as Alt. Buffer Mitigation Rule (.0295)

Jan 2018 Draft: Practice Conditions

- Use in areas of >50% developed
- Restoration and/or enhancement
- All stream flow types and conditions
- Min 20’ width, max 200’ width
- Allow the use level spreaders to diffuse more flows
- Buffer use limitations recommended by CWP

Jan 2018 Draft: Practice Requirements

- Buffer Improvement Plan:
  - Map with delineated area of land covers
  - Implementation schedule, plant establishment, grading, soil improvement / erosion control, fertilization, weed / pest control
  - O & M and Monitoring plan
- 260 stems/ac at 5 years, 4+ hardwood/shrub species
- Annual documentation first 5 years, every 5 years after for time-limited projects
- Level spreaders designed to 65ft/cfs

Jan 2018 Draft: Credit Calculation

- Nutrient reduction: land conversion + treatment of runoff through buffer
- Reduction from land conversion and nutrient loads in upslope runoff (developed) → SNAP v4
- Nutrient loads from upslope ag → fixed loading
- Buffer treatment → percent reduction
- Percent reduction (N & P) based on Nitrogen Loss Estimation Worksheet
- Credit modifications for credit release schedule, enhancement, low survivorship

Jan 2018 Percent Reductions

Average Buffer Width from Top-of-Bank (feet)	Percent Nitrogen Reduction	Percent Phosphorus Reduction
20-29	20%	20%
30-49	25%	25%
50-74	30%	30%
75-99	32%	32%
100-199	35%	35%
200+	40%	40%

Jan 2018 Credit Release Schedule

Reporting Period	Credit Release Modifier
Initial implementation	50% of full credit
1 year after implementation	60% of full credit
2 years after implementation	70% of full credit
3 years after implementation	80% of full credit
4 years after implementation	90% of full credit
5 years after implementation	100% of full credit
>5 years after implementation	100% of full credit

Jan 2018 Agricultural Land Use Loading Rates

Agricultural Land Cover	N loading rate (lb/ac/yr)	P loading rate (lb/ac/yr)
Crops	8	2
Pasture	5	1

- *Only use to calculate load where ag land use is <50% of area*
- *Use SNAP v4 for all other calculations of nutrient load in runoff*

Changes from Dec 2016 Draft

- Sticks to conditions and requirements of .0295 as much as possible:
  - Vegetative success criteria
  - Stream types and site conditions
  - Improvement plan requirements
- Mods from .0295 are for desired elements and to ensure accountability
  - 5 year reporting for time-limited projects, no easement
  - Credit release schedule and low survivorship discount
  - Veg survey explicit, but simpler than standard UMBIs
  - Buffer use limitations

Changes from Dec 2016 Draft

- Same crediting for all stream flows/conditions
- Same reduction through buffer for N and P
- Simplified buffer use limitations
- Predominantly developed drainage area
- Inclusion of minor areas of agriculture
- Enhancement may be 100% of project
- Sewer easements in Zone 2 OK
- Simplified differences between permanent and time-limited
- Percent reduction based on blocks of buffer width
- Options for incremental percent reduction if not restoring adjacent to the streambank

Unchanged from Dec 2016 Draft

- Sites with all kinds of stream conditions/flows
- Min width 20’, max width 200’
- Level spreaders to diffuse flows, MDC with 65ft/cfs
- Requires diffusion of roof drains, small stormwater
- No additional stormwater flows
- Permanent and time-limited options
- Land conversion calculation separate from buffer treatment calculation
- Percent reduction based on NLEW

QUESTIONS?

Department of Environmental Quality