

EEP PPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02		
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 1 of 9	
		Date: May 4, 2008		

1.0 PURPOSE AND SCOPE

- 1.1 Purpose. The purpose of this procedure is to describe how, when and where riparian buffer mitigation credits can be generated and calculated. Riparian buffer type mitigation credits may be used to fulfill mitigation requirements allowed by NCDWQ permits issued under 15A NCAC 02b .0233, 15A NCAC 02B .0259, 15A NCAC 02B .0243 and 15A NCAC 02B .0250 (NCDWQ's Riparian Buffer Protection Rules for the Neuse, Tar-Pamlico, Catawba Basins and the Randleman watershed). An accounting of available credits is crucial to EEP's strategic planning and to decisions about accepting mitigation.
- 1.2 Scope. This procedure addresses the technical requirements, location, asset type decision making, and estimation of riparian buffer mitigation credits where riparian buffers areas are being restored and can be used as mitigation credit. Additionally, some discussion of stream, wetlands, and nutrient offset mitigation types are discussed since restored riparian buffers can be used to generate credit for these types of mitigation as well.
- 1.3 Participants. This procedure applies to the following personnel:
- EEP Project Manager
 - EEP Implementation Supervisor
 - EEP Monitoring Supervisor
 - EEP Monitoring Specialist
 - Strategic Planning Supervisor
 - Design Firm

2.0 DEFINITIONS AND PROJECT REQUIREMENTS TO GENERATE RIPARIAN BUFFER MITIGATION CREDITS.

- 2.1 Riparian Buffer Restoration. The process of restoring a vegetated riparian buffer where one does not currently exist. The process requires taking an unvegetated buffer within a riparian zone and planting native riparian vegetation. Riparian buffer restoration is often a component of stream mitigation projects and occasionally with wetland mitigation projects. Some Stream Enhancement II projects are composed entirely of riparian buffer restoration. Not all riparian buffer restoration projects or activities generate riparian buffer mitigation credits.
- 2.2 Riparian Buffer Mitigation. Riparian Buffer Restoration that is implemented according to DWQ rules, regulations, and policies that results in riparian buffer mitigation credits that can be used to fulfill mitigation requirements of NCDWQ permits issued under 15A NCAC 02b .0233, 15A NCAC 02B .0259, 15A NCAC 02B .0243 and 15A NCAC 02B .0250 (NCDWQ's Riparian Buffer Protection

EEP PPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02	
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 2 of 9
		Date: May 4, 2008	

Rules for the Neuse, Tar-Pamlico, Catawba Basins and the Randleman watershed). Riparian preservation or activities that do not plant and restore riparian buffers do not generate riparian buffer mitigation credit.

- 2.3 Watershed Location. Riparian buffer mitigation credits can only be generated in the Neuse River Basin, Tar-Pamlico River Basin, and portions of the Catawba and Cape Fear River Basin. In Catawba, projects are required to be in the Catawba 01 CU, and be located on a tributary or the main stem of the Catawba River located downstream of Lake James. In Cape Fear, if the project was instituted prior to October 11, 2007, the project is required to be located in Cape Fear 03 in order to generate riparian buffer mitigation credits. If the project is instituted after October 11, 2007, the project is required to be located upstream of the Randleman Reservoir in Cape Fear 03 in order to generate riparian buffer mitigation credits.
- 2.4 Riparian Zone Location. In order to generate riparian buffer credits, riparian buffer restoration or enhancement must occur within a specified distance of the stream. For projects instituted prior to October 11, 2007, the riparian zone where credits may be developed extends from 0 to 200 feet from each side of the stream. For projects that are instituted after October 11, 2007, the riparian zone where riparian buffer mitigation credits can be generated is from 0 to 50 from each side of the stream. However, in order to achieve any riparian buffer credits, a minimum width 50 feet of restoration or enhancement must be conducted. Projects that restore or enhance less than 50 feet, do not generate any riparian buffer mitigation credits. Riparian Buffer mitigation projects may be located along only one side of the stream. Planted buffers outside the riparian zone do not generate riparian buffer mitigation credit (see table and figure below in 2.11).
- 2.5 Conservation Easements. In order to generate riparian buffer mitigation credits, the riparian restoration area must be protected in perpetuity via conservation easement. The conservation easement may be acquired via donation, easement purchase or simple fee purchase.
- 2.6 Instituted Assets. Riparian mitigation credits can only be applied to EEP mitigation requirements if the project has been instituted. Instituted projects have the land secured via option, donation, conservation easement, or fee simple purchase and have a designer assigned to them. Prior to institution, project credits are not considered assets within the EEP in-lieu fee programs.
- 2.7 Funding Program and Credit Ownership. Buffer restoration activities may be funded by any of EEP's in-lieu fee mitigation programs, however the ownership of those credits originally resides with the funding program. The EEP Strategic Planning Section may buy or sell credits from one in-lieu program to another by utilizing EEP Buy Sell procedure.

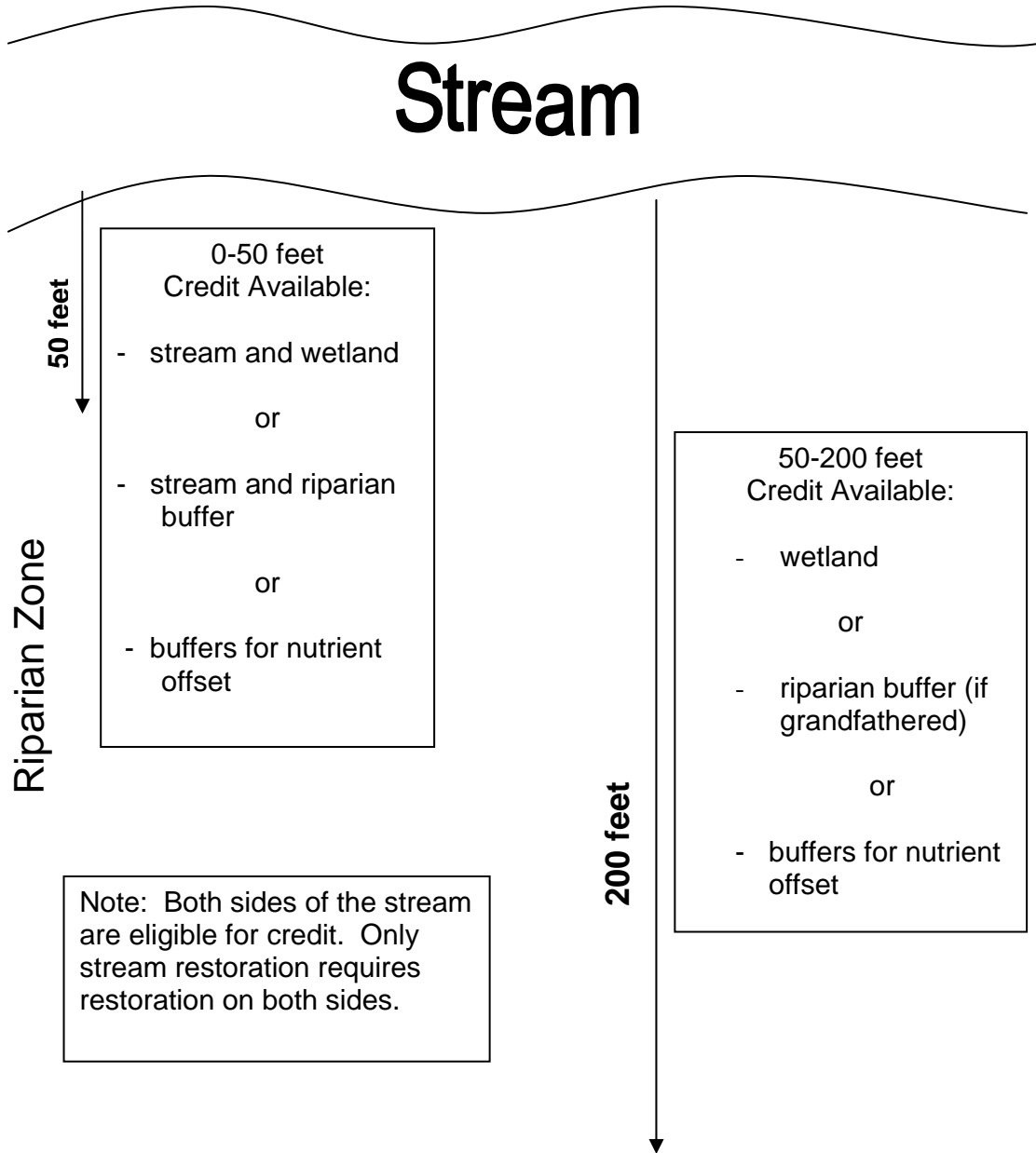
EEP PPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02	
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 3 of 9
		Date: May 4, 2008	

- 2.8 Stream Mitigation Projects and Buffer Mitigation. Stream mitigation projects often generate riparian buffer mitigation credits and vice versa. Portions of stream mitigation projects that meet the definitions and requirements of watershed location, riparian zone location, conservation easement and riparian buffer restoration generate riparian buffer credits and stream credits. Similarly, Riparian Buffer Mitigation Projects may yield stream mitigation credits if they meet the requirements of stream mitigation. Stream protection zones for the stream mitigation and riparian buffer mitigation areas may overlap.
- 2.9 Wetland and Buffer Mitigation. Wetland mitigation may not overlap with riparian buffer mitigation. When wetland mitigation is implemented in a riparian zone using buffer restoration techniques that could also generate riparian buffer mitigation, a decision must be made as to which type of credit will be claimed from the project. A specific area on a project can generate either wetland mitigation credits or riparian buffer mitigation credits. Portions of a project can be designated as generating riparian buffer mitigation credits and portions generating wetland credit, but these areas cannot overlap.
- 2.10 Nutrient Offset and Buffer Mitigation. Nutrient offset mitigation is required to be stand alone mitigation in order to generate nutrient offset mitigation. Any area being used for nutrient offset mitigation cannot be used to generate stream, wetland, or buffer mitigation credits. Similarly any area being used to generate riparian buffer mitigation credits cannot be used to generate nutrient offset mitigation.

2.11 Summary of types of credits that may exist together on various projects in different riparian zones:

Mitigation Credit Type	Riparian Zone (feet from stream bank)			
	0-50		50-200	
Stream	Yes, even if area is also used for wetland or buffer credit	No, if area is used for nutrient offset buffer credit	No (unless stream is preservation)*	
Wetland	Yes, for stream and wetland credit only	No, if area is used for riparian buffer or nutrient offset buffer credit	Yes, if area is for wetland credit only	
Riparian Buffer	Yes, for stream and riparian buffer credit only	No, if area is used for nutrient offset buffer or wetland credit	Yes, only if project is grandfathered and for riparian buffer credit only	No, if not grandfathered or if used for wetland or nutrient offset buffer only
Nutrient Offset Buffer	Yes, for nutrient offset buffer credit only	No, if area is used for stream, wetland or buffer mitigation	Yes, if used for nutrient offset buffer credit only	

*Some regulatory guidance exists that promotes wider than 50' protected riparian zones to achieve greater mitigation credit ratios. Currently only High Quality Preservation utilizes riparian zones greater than 50' as part of the stream project mitigation credit calculation.



3.0 PROCEDURE STEPS

3.1 Project Manager must determine the project watershed location to determine if project could potentially generate riparian buffer mitigation credits.

EEP PPPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02	
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 6 of 9
		Date: May 4, 2008	

- 3.2 Project Manager must determine if riparian buffer restoration will be conducted on project.
- 3.3 Project Manager must determine if wetlands mitigation or nutrient offset credits may be generated on site. If so, the potential credits that could be generated for each alternative approach should be outlined, calculated, and submitted to his or her supervisor for consideration prior to assignment of Fund Code. The selection of the appropriate mixture of stream, wetland, riparian buffer, or nutrient offset types is critical. This decision will be based on the Operational Strategic Plan, financial considerations, mitigation needs, and contractual limitations.
- 3.4 Estimate potential riparian buffer mitigation credits. Once the project manager has classified the type of restoration activity and the type of mitigation credits (stream, wetland, buffer, and/or nutrient offset that are targeted for the site), the project manager can calculate the number of riparian buffer mitigation credits that can be generated.
- 3.5 The number of riparian buffer mitigation credits on a site is calculated by first determining when the site was or will be instituted. If the site is instituted prior to October 11, 2007, then the riparian zone that may generate riparian buffer credits will extend from 0 to 200 feet. If the site will be instituted after October 11, 2007, then the riparian zone that may generate riparian buffer mitigation credits will only extend from 0 to 50 feet on each side of the stream.
- 3.6 The amount of riparian buffer mitigation credits is calculated by determining the square feet of restored riparian buffer within the effective riparian zone less any area being utilized for wetland credits and less any area being used for nutrient offset credits. The basic formula for calculating riparian buffer mitigation credits:

$$\text{Amount of Riparian Zone Restored (sf)} = \text{Planted Width (ft)} \times \text{Planting Length (ft)} - \text{wetland mitigation credit zone (sf)} - \text{nutrient offset credit zone (sf)}$$

- 3.7 Estimate potential nutrient offset mitigation credit. Riparian buffer restoration that will be used to generate nutrient offset mitigation credits cannot be located in a riparian zone being used for stream, wetland, or buffer mitigation credits. However, the riparian zone that can generate nutrient offset credit is 200 feet on both sides of the stream. Nutrient offset credit cannot be generated from the first 50 feet adjacent to a stream mitigation project, but could be generated from 50 to 200 feet. Thus the area generating Nutrient Offset Credits is calculated as follows:

$$\text{Amount of Riparian Zone Restored (sf)} = \text{Planted Width (ft)} \times \text{Planting Length (ft)} - \text{wetland mitigation credit zone (sf)} - \text{stream mitigation riparian zone (sf)} - \text{riparian buffer credit credit zone (sf)}$$

EEP PPPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02	
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 7 of 9
		Date: May 4, 2008	

- 3.8 The amount of nutrient reduction credits generated from this zone uses the DWQ formula for calculating Nutrient offset credits which establishes that restored buffers used for nutrient offset produce a total Nitrogen reduction of 2,273.02 lbs per acre over 30 years and a total Phosphorus reduction of 146.40 lbs per acre over 30 years.
- 3.9 Project Manager develops a preliminary estimate of credits and enters them into the EEP mitigation database. The estimate is based on several documents: an in-house assessment, GIS, the project feasibility study and the restoration plan..
- 3.10 Amend credit estimates. Throughout site acquisition, project design, implementation and monitoring, the credit estimates will be reassessed and amended as the project progresses. EEP Project Managers determine the initial credit estimate, the Design Firm determines a more refined estimate during project design, the Design Firm provides the as-built estimate of credits after construction is complete, and final estimated credit amounts are determined by EEP's Monitoring and Maintenance Section at the end of the monitoring period. The Implementation Managers and Monitoring Supervisor record estimated credits in the database each time the credits are amended. At the end of five years of successful monitoring, NC DWQ approves the final riparian buffer mitigation credits. The final credit determination is recorded by the Monitoring Supervisor (see IMP.PRO.04.02.01, Submitting Credits to the Ledger)
- 3.11 Obtain approval for final credit estimates. Once a project has successfully completed monitoring, the Monitoring Specialist obtains approval from the Monitoring Supervisor for the number and type of credits attributed to each site. The Monitoring Specialist then submits the final credit determination to the EEP mitigation ledger, as described in IMP.PRO.04.02.01, Submitting Credits to the Ledger.

3.0 RESPONSIBILITIES AND AUTHORITIES

Project Managers are primarily responsible for estimating credits for mitigation sites during project development. The Implementation Supervisor provides review, input and final approval.

Table 1. Responsibilities and Authorities

Step #	Procedure Step	EEP Project Manager	Implementation Supervisor	EEP Monitoring Specialist	EEP Monitoring Supervisor	Strategic Planning Supervisor	Design Firm			
1	Estimate Potential Credits	P	RA			S				
2	PM enters prelim credits into EEP IMS	P								
3	Amend estimates	RI	RA				P			
4	Approve final credit estimate			P	RA	S				
5	Obtain approval from DWQ for final credit determination			P	RA	S				
6	MS enters final credits into EEP IMS			P	RA	S				

Legend:

- P** = Primary responsibility
- A** = Assist
- RI** = Review to provide Input
- RA** = Review and Approve
- N** = Notify
- S** = Submit final output to this person

EEP PPM Section 8.3.1.2		Document No.: IMP.PRO.01.01.02	
Procedure Title: Estimating/Calculating Riparian Buffer Credits		Rev. No.	Page: 9 of 9
		Date: May 4, 2008	

4.0 PROCEDURE FLOW DIAGRAM

5.0 REFERENCES

6.0 FORMS