



Stream Buffer Mitigation Guidance

This guidance serves as a framework to provide predictability and consistency for development, review and approval of compensatory mitigation plans for stream buffer variances. It provides a method for determining mitigation requirements for variance applications.

While this guidance is not intended for use as project design criteria, appropriate use of the methods described here should reduce uncertainty in the development of mitigation plans, and allow quicker review of applications.

These procedures should not be interpreted as a promise or guarantee that a project satisfying the criteria or guidelines presented will be assured a stream buffer variance. The Georgia Environmental Protection Division (EPD) Director has the responsibility to consider each project on a case-by-case basis and may determine in any specific situation that a buffer variance should be denied, modified, suspended, or revoked. This guidance does not preclude or modify any requirements in the Georgia Erosion and Sedimentation Act of 1975 O.C.G.A. 12-7 or 391-3-7-.05 DNR Rules on Buffer Variance Procedures and Criteria.

On-going and future stream buffer studies may lead to changes to this document.

Georgia's Customer Service Initiative

On July 25, 2006, Governor Sonny Perdue kicked off the employee awareness phase of his Customer Service Initiative to raise the level of customer service in State government. The Governor's Initiative focuses on the theme of "Faster, Friendlier and Easier" service to customers.

As a part of these efforts, the EPD NonPoint Source Program was tasked with developing two documents: *Stream Buffer Mitigation Guidance* and *Streambank and Shoreline Stabilization Guidance*. These documents will provide consistent and uniform guidance and recommendations for individuals planning to implement these types of projects.

When Mitigation is Required

As stated in Section 391-3-7-.05 (Buffer Variance Procedures and Criteria) of the DNR Rules for Erosion and Sedimentation Control, only 11 project categories (criteria 391-3-7-.05(2) a-k) exist for which the EPD Director will review a buffer variance application. For each project category or criterion, EPD staff will evaluate the applicant's need to mitigate impacts to the buffer. Whether mitigation is necessary for a variance applicant applying under criteria (a) through (g) will be determined by the project's potential impact. However, any applicant applying under criteria (h), (i), (j) or (k) is required to mitigate the buffer disturbance based on guidance described below. In addition, property owners may be required to mitigate for impacts that occurred without the issuance of a variance regardless of the project criteria. Please note that minor land disturbing activities, such as home gardening, home landscaping, etc. and other activities identified in EPD's *Minor Land-Disturbing Activity Guidelines* are not subject to these requirements.

Mitigation Requirements

A buffer extending out from a stream serves three main functions: hydrologic, water quality, and aquatic/buffer habitat protection. The following mitigation requirements were established to address all three functions. All applicants applying for a stream buffer variance before impacting the buffer must comply with the following three components, as applicable:

1. Hydrologic Protection – The applicant must use on-site minimum stormwater management standards that conform to guidance established in Section 1.3 of the Georgia Stormwater Management Manual (or “Blue Book”). These practices reduce downstream bank and channel erosion; reduce downstream flooding; and by capturing run-off from the first 1.2” of rainfall ensure an 80% reduction in total suspended solids (TSS). If applicable the applicant must also use on-site minimum stormwater management standards that conform to the guidance established in the Coastal Stormwater Supplement to the Georgia Stormwater Management Manual. Under criteria (h) and (k), justification must be provided and mitigation credits will be required as a substitute when hydrologic protection cannot be addressed on the site. Mitigation credits must be purchased in accordance with the Standard Operating Procedure in Appendix B, *Calculation of Stream Buffer Credits*.

2. Water Quality Protection – The applicant must implement on-site best management practices (BMPs) that address common post-construction pollutants other than TSS. Practices used to address these other pollutants can be selected from Appendix A. The applicant must choose an appropriate BMP or “treatment train”; that is, a combination of BMPs, to fully address all pollutants of concern generated on site. For the first 1.2” of rainfall, the BMP or treatment train must result in at least 60% pollutant removal efficiency from the site run-off for each pollutant of concern. (Please refer to Section 3.1.6 of the Blue Book for calculating removal rates of treatment trains.) Should the applicant choose practices not listed in Appendix A, documented and proven pollutant removal efficiency rates must be submitted with the proposed practice and be accepted by EPD during the application review process. Developments with significant parking spaces and/or high-volume traffic areas must implement BMPs addressing oil and grease as pollutants. Pollutant removal efficiencies for these oil and grease BMPs must be included in the stream buffer variance application. Under criteria (h) and (k), justification must be provided and mitigation credits will be required as a substitute when water quality protection cannot be addressed on the site. Mitigation credits must be purchased in accordance with the Standard Operating Procedure in Appendix B, *Calculation of Stream Buffer Credits*.

3. Aquatic/Buffer Habitat Protection – To protect aquatic and buffer habitats, an applicant must comply with the following when applicable:

- a. Criterion (h) – Mitigation credits must be purchased in accordance with the USACE Section 404 Permitting requirements included in the published USACE Standard Operating Procedures.
- b. Criterion (k) - Mitigation credits must be purchased in accordance with the Standard Operating Procedure in Appendix B, *Calculation of Stream Buffer Credits*.

Additional Information

Impacted Area

The area of impact, as used in this document, includes stream buffer areas impacted by filling, piping, re-routing, other buffer impacts and/or other ecological effects relevant to DNR Rule 391-3-7-.05 (2).

Buffers

According to the Georgia Erosion and Sedimentation Act of 1975 O.C.G.A. 12-7-3(2), a buffer is defined as “the area of land immediately adjacent to the banks of State waters in its natural state of vegetation, which facilitates the protection of water quality and aquatic habitat.” There is an established 25 foot buffer along banks of all State waters, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action, except where the EPD Director determines to allow a variance that is at least as protective as a 25 foot buffer of natural resources and the environment. There is an established 50 foot buffer, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action, along the banks of any State waters classified as “trout streams.” On-site preservation mitigation areas must be permanently protected through a restrictive covenant.

For a complete listing of the Buffer Variance Procedures and Criteria in the Rules for Erosion and Sedimentation (391-3-7), please go to: http://www.gaepd.org/Documents/rules_exist.html

Maintenance

An essential component of a comprehensive stormwater management program is the ongoing operation and maintenance of the various components of the stormwater drainage, control, and conveyance systems. Failure to provide effective maintenance can reduce the hydraulic capacity and the pollutant removal efficiency of stormwater controls and conveyance systems. See Chapter 7, “Stormwater System Operations and Maintenance” of the *Georgia Stormwater Management Manual, Volume 1* for a complete definition of maintenance.

<http://www.georgiastormwater.com/vol1/gsmmvol1.pdf>

Native Riparian Plant Species

Native riparian plant species should be species that are adapted to riparian forests and/or stream edges in Georgia and the Southeast. The applicant should use the information in EPD’s *Streambank and Shoreline Stabilization Guidance* or contact either the local Cooperative Extension Office or National Resources Conservation Service (NRCS) Office to determine the most appropriate species for the area. The web site for the Georgia Cooperative Extension Service is:

<http://www.caes.uga.edu/extension/index.html>

Contact information for the NRCS district offices in Georgia can be found at:

<ftp://ftp-fc.sc.egov.usda.gov/GA/PI/areamap.pdf>

Restrictive Covenants

A restrictive covenant is one in which a property owner places permanent conservation restrictions on the property. A restrictive covenant prevents development and requires that the land be managed for its conservation values. Property owners should make allowances for any foreseeable circumstances (e.g., utility lines, power lines, road crossings, ditch maintenance, etc.) that may conflict with the inherent restrictions of the covenant.

For the USACE's "Restrictive Covenant Guidance," please go to:

<http://www.saw.usace.army.mil/wetlands/Mitigation/Documents/restrictive%20covenants8-03.pdf>

Mitigation Scheduling

As much as possible, mitigation should be done before or at the same time as the authorized buffer impacts. This can reduce loss of buffer functions and facilitate compliance. However, it is recognized that because of equipment availability, job scheduling and other factors typical of construction projects, it may be necessary to do mitigation during the overall project development, but after the buffer impacts. This is usually acceptable provided the time between impacts and mitigation is minimized and the mitigation is completed within one growing season after the adverse impacts have occurred. Credit purchase must occur at least 14 days prior to any land disturbance on site.

Wrested Vegetation

Wrested vegetation is vegetation that has been disturbed, moved, or removed by flowing water creating a clear demarcation between water flow and vegetative growth.

Coordination with Section 404 Permits

Applicants for a stream buffer variance under criterion (h) in Section 391-3-7-.05 of the DNR Rules on Buffer Variance Procedures and Criteria must also apply for and obtain a federal Clean Water Act (CWA) Section 404 permit from the USACE. EPD will review such variance applications at the same time the USACE is reviewing the Section 404 application. Mitigation for the buffer variance may include mitigation required for the Section 404 permit as well as mitigation required to address EPD's buffer variance rules.

Appendix A Pollutant Removal Efficiency Rates by Practices

Structural Control	Total Suspended Solids	Total Phosphorus	Total Nitrogen	Fecal Coliform	Metals
Stormwater Ponds	80	50	30	70*	50
Constructed Wetlands	80	40	30	70*	50
Bioretention Areas	80	60	50	~	80
Sand Filters	80	50	25	40	50
Infiltration Trench	80	60	60	90	90
Enhanced Dry Swale	80	50	50	~	40
Enhanced Wet Swale	80	25	40	~	20
Filter Strip	50	20	20	~	40
Grass Channel	50	25	20	~	30
Organic Filter	80	60	40	50	75
Underground Sand Filter	80	50	25	40	50
Submerged Gravel Wetland	80	50	20	70	50
Gravity (Oil-Grit) Separator	40	5	5	~	~
Porous Concrete	**	50	65	~	60
Modular Porous Paver System	**	80	80	~	90
Alum Treatment	90	80	60	90	75
Proprietary System	***	***	***	***	***

* If no resident waterfowl population is present

** Due to the potential for clogging, porous concrete and modular block paver systems should not be used for the removal of sediment or other coarse particle pollutants

*** The performance of specific proprietary commercial devices and systems must be provided by the manufacturer and should be verified by independent third party sources and data

~ Insufficient data to provide removal efficiency

Source: Georgia Stormwater Management Manual, Volume 2, Section 3.1-7

Appendix B Standard Operation Procedure Calculation of Stream Buffer Credits

The highest number of stream credits that any USACE approved mitigation bank can generate per square foot of stream restoration/preservation is 0.046 stream credits. This includes the restoration/preservation of the stream channel and associated stream buffer. Using this number as a basis, mitigation banks are encouraged to maximize the riparian areas (i.e., stream buffer areas) surrounding restored/preserved streams within the mitigation bank boundaries.

Since USACE mitigation banks are located off-site from potential buffer encroachments, a 2.5 multiplier is applied to the mitigation calculations. Therefore, this buffer mitigation alternative requires the procurement of 0.115 stream credits per square foot of stream buffer impact.

Example 1:

2500 sq ft of buffer impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits = **288 total stream credits**

To encourage the use of USACE mitigation banks in close proximity to the buffer encroachment, if the applicant purchases credits from a mitigation bank in the same 12-digit HUC, a multiplier of 0.9 will be placed on the number of stream credits needed to serve as mitigation for the proposed buffer impact. However, if the applicant purchases credits outside the 12-digit HUC, but within the larger 8-digit HUC, a multiplier of 1.0 will be placed on the number of stream credits needed to serve as mitigation for the proposed buffer impact. If the applicant purchases credits outside the 8-digit HUC, but within the Primary Service Area (PSA)/Secondary Service Area (SSA) serving the 8-digit HUC, a multiplier of 1.1 will be placed on the number of stream credits needed to serve as mitigation for the proposed buffer impact. Equivalent out of kind mitigation bank credits (i.e., wetland) will be considered if no stream mitigation credits are available in the PSA/SSA.

Example 2:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 0.9 in-watershed multiplier = 258.75 stream credits = **259 total stream credits**

Example 3:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.0 in-basin multiplier = 287.5 stream credits = **288 total stream credits**

Example 4:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.1 out of basin multiplier = 316.25 stream credits = **317 total stream credits**

If hydrologic and/or water quality protection components (see page 2 of this guidance) cannot be addressed on the site, justification must be provided and mitigation credits will be required as a substitute:

When applying under **criterion (k)**, a multiplier of 1.1 or 1.2 will be placed on the number of stream credits needed to serve as mitigation for the proposed buffer impact. If only one component cannot be addressed, use a multiplier of 1.1. If both components cannot be addressed, use a multiplier of 1.2.

Example 5:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.1 out of basin multiplier = 316.25 stream credits

316.25 stream credits X 1.1 multiplier for hydrologic **or** water quality protection = 347.875 stream credits = **348 total stream credits**

Example 6:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.1 out of basin multiplier = 316.25 stream credits

316.25 X 1.2 multiplier for hydrologic **and** water quality protection = 379.5 stream credits = **380 total stream credits**

When applying under **criterion (h)**, a multiplier of 1.1 or 1.2 will be placed on the number of stream credits needed to serve as mitigation for not addressing the hydrologic and/or water quality protection components. These stream credits are calculated by first determining the number of stream credits required according to the State's Standard Operating Procedure, *Calculation of Stream Buffer Credits*. The applicant then calculates the number of stream credits with the multiplier of 1.1 or 1.2 for not addressing hydrologic and/or water quality protection components. Lastly, the applicant calculates the difference between the two stream credit calculations. This difference is the amount of stream credits that must be purchased to offset not addressing hydrologic and/or water quality protection components.

Example 7:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.1 out of basin multiplier = 316.25 stream credits

316.25 X 1.1 multiplier for hydrologic **or** water quality protection = 347.875 stream credits

347.875 stream credits – 316.25 stream credits = 31.625 stream credits = **32 stream credits**

Example 8:

2500 sq ft of impact X 0.046 credits per sq ft X 2.5 factor for off-site = 287.5 stream credits

287.5 stream credits X 1.1 out of basin multiplier = 316.25 stream credits

316.25 stream credits X 1.2 multiplier for hydrologic **and** water quality protection = 379.5 stream credits

379.5 stream credits – 316.25 stream credits = 63.25 stream credits = **64 stream credits**

For all projects, the applicant must identify and provide a rationale for the chosen bank as part of the stream buffer variance application. In addition, the applicant applying under criterion (k)(1) must provide a letter from the USACE documenting that the water body identified in the stream buffer application is not considered a jurisdictional water under Section 404 of the Clean Water Act.

All stream buffer impacts that are granted by EPD via a variance will have a discrete document number. This document number generated by EPD will be the reference for tracking the sale of stream credits and will be used to report sales of stream credits to the USACE. The mitigation bank from which the stream credits will be purchased has the responsibility of notifying the USACE of the credit transaction by way of inputting the credit transaction into the RIBITS system via the Internet.

Credit purchase must occur at least 14 days prior to any land disturbance on site. If the applicant purchases mitigation credits after this deadline, a multiplier of 1.5 will be placed on the number of stream credits needed to serve as incentive to comply with the aforementioned deadline. Once the transaction has been completed, the mitigation bank will provide the applicant with sales receipt verifying the transaction. This receipt shall be forwarded to EPD by return receipt certified mail (or similar service) by the applicant to document buffer mitigation compliance.