



DWR – NPDES-SOP – G – 16 –Erosion Prevention and Sediment Control Handbook–06202025

Erosion Prevention and Sediment Control Handbook

3.3.3.2 Riparian Buffer Zones



STREAM BUFFER
DO NOT DISTURB

Source: TDEC

Definition and Purpose

A riparian buffer zone is a protected area along an onsite water resource that can be temporary or permanent. Its primary function is to physically protect the water resource and act as a separator between the water body and disturbance. Though not a sediment control, riparian buffers provide water quality benefits through filtration by the vegetation. These zones also protect banks and promote bank stabilization by slowing construction site runoff with vegetative resistance (City of Albany, 2024; NCDEQ, 2013).

Appropriate Applications

All streams, wetlands, ponds and reservoirs are required to have riparian buffer zones between the top of the bank and soil disturbance during construction and in regulated municipal areas after construction. However, buffers can be beneficial in additional areas, such as ditches or wet weather conveyances.

Several municipalities and counties have more restrictive requirements for the width and/or maintenance of riparian buffer zones. While the CGP only has requirements for temporary construction buffers, MS4s may have permanent buffer requirements that must also be met. If there are differences between local and CGP buffer requirements, the more conservative of the two must be met.



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Limitations and Maintenance

Inspections must focus on the stability of the riparian buffer zone, examining the zone for transported sediment and erosion and ensuring buffer boundaries are well defined and clearly marked in the field. If erosion or sediment deposition is found within the buffer zone, implement measures to minimize upgradient erosion and restore the buffer. Disturbances to riparian buffers are not permitted unless the designer justifies encroachment, which typically occurs on roadway or utility line projects. In the case where the temporary average buffer width requirement cannot be met, designers must implement other measures to obtain riparian buffer equivalency.



Maintenance of riparian buffer zones may extend into post-construction phases. This depends on the location of the project: if it is within the limits of a regulated municipality, permanent buffers may be required with a continuous maintenance agreement. Permanent buffer widths can vary between municipalities and CGP requirements. This information can be important in the construction planning process, and owners are encouraged to reach out to the local MS4 for pre- and post- construction requirements.

Planning and Design Considerations

Effective riparian buffer zones consist of an undisturbed tree line along the waterbody and upland vegetation. The CGP requires preserved buffers to have an average width of 30 feet between the waterbody and limits of disturbance, with a minimum of 15 feet at any given location. Waters with unavailable parameters for siltation and ETWs are required to have 60 feet of undisturbed vegetation on average, with a minimum width of 30 feet. Though there is no one ideal buffer zone width, the width is directly related to its effectiveness (ALSWCC, 2022). For optimal stormwater treatment, it is recommended to convert concentrated flow into sheet flow with a level spreader or similar prior to discharging into the riparian buffer zone to prevent erosion within the buffer zone. If a buffer is disturbed, promptly stabilize disturbed buffers with a dense cover of strong-rooted grasses, native plants, and native trees.

All construction-related materials and equipment must be stored outside the buffer area. EPSC measures such as high-visibility fencing (Section 3.3.3.1) are ideal to install along the edge of the riparian buffer zone, creating a visual and physical barrier which prevents inadvertent disturbance. Ensure that EPSC measures are installed upgradient from the buffer to protect it from sediment-laden runoff.



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An example of a riparian buffer zone plan is as follows:

1. All areas of the riparian buffer zone undergoing restoration must be planted with non-invasive or native vegetation and nurse crops. Mixing cover crops with native seeds may be necessary, depending on the time of year;
2. Refer to Section 4.2.6.11 (Vegetation and Landscaping: Permanent) for guidance on soil bed preparation for native mixes;
3. EPSC measures must be installed to protect the water resource during restoration. These measures can include coir matting, erosion control blankets, wattles, etc., to stabilize the area short and long term. All measures used within the buffer should be made of natural materials that are biodegradable and can be left in place.
4. Plant species, density, placement, and diversity in the buffer restoration plan must be appropriate to ensure a healthy buffer zone. See Appendix D for example seed mixes, planting seasons, and application rates.
5. Native seedlings can take several years to fully establish and may require maintenance, such as the removal of invasive species. Vegetation mortality must be included in planting densities to ensure meeting the 70% density requirement per the CGP. This benchmark may be difficult to obtain by natives alone; therefore, supplementing with turf grasses and nursery crops may be necessary.

Example Application

No formal design or quantities are required for this measure and therefore are not presented here.

References

- ALSWCC. (2022). *Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*.
- City of Albany. (2024). *Erosion Prevention and Sediment Control Manual*.
- NCDEQ. (2013). *Erosion and Sediment Control Planning and Design Manual*.