



Technical Memorandum

From: Water Quality Control Division, Clean Water Compliance Unit

Date: August 27, 2015

RE: Utilization of Existing Vegetation (Vegetated Buffer) as a Control Measure
Stormwater Discharges Associated with Construction Activity - CDPS Permit No. COR0300000

Summary

The Water Quality Control Division (division) has prepared this guidance to clarify requirements for utilization of existing vegetation as a buffer type of sediment control measure, while maintaining compliance with the CDPS permit for Stormwater Discharges Associated with Construction Activity, COR0300000 (the permit).

The division has found that construction stormwater management training courses and best management practice resources continue to support the utilization of existing vegetation as an appropriate control measure for reducing pollutants in stormwater discharges from construction sites. In many cases, the guidance provided has resulted in confusion among construction operators about the intent, limitations, and requirements for vegetated buffers as a control measure at construction sites.

In general, the division does not recommend that vegetated buffers be implemented as a sediment removal control measure for runoff from disturbed areas at construction sites, unless implemented as a “finishing” component of a treatment train comprised of additional, adequate up-gradient control measures.

Vegetative buffers are appropriate and beneficial to use as a control measure to provide a set-back from receiving waters or areas of concentrated flow to reduce the potential of water quality impacts. In addition, vegetated buffers used for sediment removal may be appropriate in some scenarios, but only when designed, implemented, and documented in accordance with the permit requirements discussed below.

Permit Requirements

The permit contains the following requirements applicable to the use of a vegetated buffer as a control measure.



Technical Memo Vegetative Buffer as Control Method

- The control measure must be implemented following good engineering, hydrologic, and pollution control practices¹.
- The control measures implemented at the site must be adequately designed to prevent pollution or degradation of State waters¹. (This may include additional control measures implemented in addition to a vegetated buffer as part of a “treatment train.”)
- The Stormwater Management Plan (SWMP) must clearly describe the installation and implementation specifications for the control measure.²

Based on the aforementioned permit requirements the identification of existing vegetation as a control measure in the absence of appropriate site specific design and installation and maintenance details is not in accordance with good engineering, hydrologic, and pollution control practices nor in compliance with the terms of the permit.

The permit additionally requires that use of a vegetated buffer control measure must comply with all lawful requirements of federal agencies, municipalities, counties, drainage districts and other local agencies with jurisdiction³.

Guidance on Design and Documentation

For a vegetated buffer to be implemented as a control measure in compliance with the permit, the variables associated with the control measure must be evaluated and designed in accordance with good engineering, hydrologic and pollution control practices to prevent pollution or degradation of the receiving water⁴.

Primarily, vegetative buffers identified as a control measure for construction activities are appropriate and beneficial when intended to provide a “buffer” or set-back from receiving waters,

¹ Part I.D.2 *BMP Implementation and Design Standards* - “Facilities must select, install, implement, and maintain appropriate BMPs, following good engineering, hydrologic and pollution control practices. BMPs implemented at the site must be adequately designed to provide control for all potential pollutant sources associated with construction activity to prevent pollution or degradation of State waters.”

² Part I.C.3(c) *Best Management Practices (BMPs) for Stormwater Pollution Prevention* - “The SWMP shall identify and describe appropriate BMPs, including, but not limited to, those required by paragraphs 1 through 8 below, that will be implemented at the facility to reduce the potential of the sources identified in Part I.C.3.b to contribute pollutants to stormwater discharges. The SWMP shall clearly describe the installation and implementation specifications for each BMP identified in the SWMP to ensure proper implementation, operation and maintenance of the BMP.”

³ Part I.D.1(g) “All dischargers must comply with the lawful requirements of federal agencies, municipalities, counties, drainage districts and other local agencies regarding any discharges of stormwater to storm drain systems or other water courses under their jurisdiction, including applicable requirements in municipal stormwater management programs developed to comply with CDPS permits”

⁴ Part III.B of the Fact Sheet for COR030000 - “Pollution is defined in CDPS regulations (5CCR 1002-61) as man-made or man-induced, or natural alteration of the physical, chemical, biological, and radiological integrity of water. Utilizing industry-accepted standards for BMP selection that are appropriate for the conditions and pollutant sources present will typically be adequate to meet these criteria, since construction BMPs are intended to prevent the discharge of all but minimal amounts of sediment or other pollutants that would not result in actual pollution of State waters, as defined above. However, sites specific design, including ongoing assessment of BMPs and pollutant sources, is necessary to ensure that BMPs operate as intended.”

Technical Memo Vegetative Buffer as Control Method

areas of concentrated flow, and other sensitive areas to reduce the potential of environmental impacts associated with unplanned encroachment into these areas. When a vegetated buffer is used for this goal, the design is simply to identify the set-back area and method (e.g., fencing) used to delineate the area and/or limit disturbances or other pollutant sources in the area.

As a sediment control measure, runoff passing through vegetation utilizes the physical process of straining to remove sediment. In most cases, the ability of a vegetated buffer to remove sediment through straining is limited and will not allow for adequate pollutant removal as a stand-alone control measure.

Unlike some common sediment control measures (e.g. silt fence) specification sheets with standard design criteria are not available for vegetated buffers being used as a sediment control measure for runoff from construction activities. Therefore, the permittee must ensure that site-specific design occurs and is documented prior to implementation of the vegetated buffer as a control measure for sediment removal from runoff. Note that it is not appropriate to utilize design methodology that is identified from unrelated pollutant sources, such as runoff from developed areas or row crops, to design treatment for runoff from disturbed areas associated with construction activity.

The design variables must be defined and included in the SWMP control measure specifications **prior** to implementation. These variables include, but may not be limited to:

- Vegetation density (sufficient plant density required to reduce runoff velocity)
- Slope profile (mild enough slope that sheet flow conditions prevail and runoff velocity can be reduced)
- Slope length and width (in relation with the area of disturbance and total tributary area)
- Assimilative capacity (quantity of sediment the buffer can accumulate compared to the expected load from the disturbed area)
- Inspection & maintenance criteria (buffer components to inspect, benchmarks at which maintenance is required, access if off of the construction site, and maintenance activity procedures)
- Final stabilization (including any impacted buffer areas off of the construction site)

Incorporation of a vegetated buffer as a control measure for construction stormwater runoff management on a project without the appropriate planning and design provided above is not in accordance with the permit and will result in a finding of non-compliance. Note that the control measure also must be assessed during implementation to ensure that it is operating in accordance with its design goals.

Some general guidelines to take into account prior to design when evaluating if a vegetated buffer may be a potential sediment control measure for a site, include:

- Will all flows to, and through, the vegetated buffer area be sheet flow? A vegetated buffer will likely not provide for pollutant removal in concentrated flows.
- Once deposited can the sediment be removed from, or stabilized in the buffer area? The buffer area must meet the final stabilization criteria in the permit prior to

Technical Memo Vegetative Buffer as Control Method

inactivation of the permit.

- Is adequate buffer area available to allow for the necessary pollutant removal given the contributing drainage area? The entire contributing area(s) must be considered, not just the area disturbed. The amount of buffer area required will increase significantly as the contributing drainage area and/or the disturbed area increases. It is likely that implementation will only be reasonable for relatively small contributing areas, unless combined with additional pollutant removal control measures.
- Does the use of a vegetated buffer comply with requirements of the local city, county, or other local agency?
- The ongoing evaluation of the effectiveness of control measures is also an essential component of effective site management and permit compliance. Sediment deposition within the buffer that limits the effective treatment area, evidence of sediment discharges, and concentrated flow conditions may all indicate that additional or alternative control measure may be necessary to ensure compliance with the permit.

Review of Existing References

Several references exist that support the use of the natural vegetated buffer for controlling pollutants in stormwater runoff. However, the references that the division has identified either do not address the use of the control measure for sediment removal from runoff from CDPS permitted construction activities, or do not include information for site-specific design and implementation necessary to comply with the CDPS construction permit. The division is providing an overview of some important concepts in the following vegetated buffer references to ensure proper utilization while maintaining compliance with the stormwater construction permit.

EPA

- The EPA Construction General Permit provides requirements for the use of vegetated buffer at construction sites. However, the requirements for vegetated buffers are in addition to the requirement to implement other sediment and erosion controls. Section G.2.1.3, requires that the permittee: *“ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site’s erosion and sediment controls...”*.
- The EPA Appendix G includes guidance for the implementation of vegetated buffer strips, but the guidance is not identified as being applicable for CDPS permitted discharges from construction activities. The guidance provided by the EPA for the vegetated buffer strip is for *“the purpose of removing or mitigating the effects of nonpoint source pollutants.”* Stormwater runoff from construction activity requiring a CDPS permit is a **point source pollution source**. Nonpoint source pollution, such as associated with agricultural, has a significantly different pollutant potential and is not subject to permit effluent limits.

Urban Drainage and Flood Control District (UDFCD)

- The Urban Drainage and Flood Control District’s Volume 3 (UDFCD-V3) includes guidance for implementation of vegetated buffer strips, but the guidance is not identified as being

Technical Memo Vegetative Buffer as Control Method

applicable for CDPS permitted discharges from construction activities. The guidance provided by UDFCD is for utilization of the buffer as a post-construction control measure (i.e., for developed urban areas). Utilized as such, the buffers address distinctly different pollution sources and satisfies different regulatory standards (Maximum Extent Practicable (MEP) versus pollution prevention). UDFCD-V3 goes on to specifically state “Erosion and sediment control measures on upgradient disturbed areas must be maintained to prevent excessive sediment loading to grass buffer” (T-1 buffer fact sheet). Additionally, UDFCD-V3 identifies a pollutant reduction based Event Mean Concentration of only about 50% for grass buffers (Table 2-2).