Cost-Effective Non-Point Source Pollution Reduction Grants – Chesapeake & Atlantic Coastal Bays Trust Fund

ACCESSORY DOCUMENT – STREAM RESTORATION AND POND RETROFIT CALCULATION REQUIREMENTS

Stream Restoration Protocols 2 and 3

As the inputs for enhanced stream restoration require engineered specifications, only those proposals that are at least 90% designed can use Protocols 2 and 3. If you are less than 90% designed you will be prompted to input the length of your restoration and answer questions regarding your proposed future design. In accordance with the stream restoration expert panel recommendation for general watershed planning purposes, FieldDoc will calculate your edge-of-stream removal rate based on the revised default rate.

In the "Design Status" field, enter the current percent design of your stream restoration project.

Depending on your design status you will be directed to the appropriate calculations.

In addition to providing reduction calculations, please answer the four questions regarding your stream restoration design:

1) Why have you selected this site for stream restoration?

2) Is the stream restoration implementation in-conjunction with any current upland watershed BMP implementation? If so, will that upland implementation impact runoff entering the proposed stream restoration? If not, is there a watershed assessment or watershed plan underway that identifies load sources to the stream or recommends upland BMPs that would influence delivery of water or pollutants to the proposed stream restoration?

3) Which protocols of stream restoration are you using? The protocols are additive and an individual stream restoration project may qualify for credit under one or more of the protocols depending on its design and overall restoration approach. Check all that apply:

> Protocol 1: Credit for Prevented Sediment during Storm Flow -- This protocol provides an annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that would otherwise be delivered downstream from an actively enlarging or incising urban stream. Pollutants reduced are sediment, nitrogen and phosphorus. This protocol is titled "Bank Stabilization" in FieldDoc
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> Protocol 2: Credit for Instream and Riparian Nutrient Processing during Base Flow -- This protocol provides an annual mass nitrogen reduction credit for qualifying projects that include design features to promote denitrification during base flow within the stream channel through hyporheic exchange within the riparian corridor. Nitrogen is the only pollutant reduced under this protocol. This protocols is titled "Enhanced Stream Restoration" in FieldDoc

Protocol 3: Credit for Floodplain Reconnection Volume-- This protocol provides an annual mass sediment and nutrient reduction credit for qualifying projects that reconnect stream channels to their floodplain over a wide range of storm events. Sediment, nitrogen and phosphorus are reduced. This protocols is titled “Enhanced Stream Restoration” in FieldDoc

Protocol 4: Credit for Dry Channel Regenerative Stormwater Conveyance (RSC) as an Upland Stormwater Retrofit-- This protocol provides an annual nutrient and sediment reduction rate for the contributing drainage area to a qualifying dry channel RSC project. The rate is determined by the degree of stormwater treatment provided in the upland area using the retrofit rate adjustor curves developed by the Stormwater Retrofit Expert Panel and is not considered a stream restoration BMP. Sediment, nitrogen and phosphorus are reduced. Use the urban stormwater retrofit curve for Runoff Reduction in FieldDoc

4) What experience do you have designing and constructing stream restoration projects employing these same protocols? How do the watershed characteristics (soils, hydrology, loading rates, landuse and cover, etc.) from your previous projects compare to the watershed characteristics in the proposed stream restoration watershed?

Pond Retrofits

Note: If the existing stormwater pond provides no nutrient or sediment reduction then please explicitly state that in your proposal.

The protocols for crediting existing BMP retrofits are provided in the BMP expert panel report on stormwater retrofits:
http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2012/10/Final-CBP-Approved-Expert-Panel-Report-on-Stormwater-Retrofits-long_012015.pdf

First, determine the class of retrofit you are proposing by consulting page 8 of the expert panel report. The report lists three existing BMP retrofit options: conversion, enhancement and restoration. Only BMP conversion and enhancement is eligible under the Trust Fund; BMP restoration is considered ineligible. **In order to be eligible for funding, retrofits of existing facilities must be for environmental benefits and not to treat runoff from new development.** Environmental benefits include:

- Conveying additional acres of existing development to the retrofitted facility
- Increasing either the runoff reduction capacity of the retrofitted facility, or increase the nutrient and/or sediment reduction capabilities of the retrofitted facility

For *BMP Conversions:* Nutrient and sediment removal rates are either calculated as an incremental credit, or the credit reflects the full benefit of the conversion.

- If the BMP being converted is a dry detention pond or flood control structure that currently is providing no effective water quality treatment, then the existing BMP will have a **zero removal rate**. Run the “Stormwater Management” BMP in FieldDoc with the proposed design parameters to estimate the reductions from your project.

- If the BMP being converted involves a significant increase in runoff capture volume and/or an increase in runoff reduction, than an **incremental rate** is used. The removal rate for the existing BMP should be determined by providing the existing conditions of the pond into the Stormwater Management BMP in FieldDoc. You will then run FieldDoc again using the planned restoration conditions. A higher removal for the converted BMP will reflect the higher degree of runoff treatment and/or runoff reduction associated with the retrofit, as determined from the retrofit removal adjustor curves. The difference between the existing removal rate and the restored removal rate is your estimated project reduction. This method will generally be the most applicable to the majority of conversion retrofits.

For *BMP Enhancements:* Nutrient and sediment removal rates for enhancements are expressed as an **incremental removal rate**, where the different between the existing credit and the new enhanced credit.

- The rate for the existing BMP is defined based on its combination of runoff treatment and runoff reduction using the retrofit removal adjustor curves. Designers may reduce the actual amount of runoff treatment in the existing BMP that is not effective (e.g., treatment volume that is ineffective because of shortcircuiting or other design problems that reduce the hydraulic retention time).

- The enhanced BMP will have either a greater runoff treatment volume and/or achieve a better runoff reduction rate. Designers can determine the higher rate for the enhanced BMP using the retrofit removal adjustor curves.

- The removal rate for the BMP enhancement is then defined as the difference between the enhanced rate and the existing rate.

References from the expert panel report:

Page 32 (Table A-5) presents the effectiveness estimates to use to determine the reduction from your existing BMP.

Page 17 provides the justification for this methodology.