Considerations of Stream Restoration Projects in Pennsylvania for eligibility as an MS4 Best Management Practice

June 22, 2017

Stream restoration projects must meet qualifying criteria to be eligible for MS4 load reduction credits. Qualifying criteria are described in the Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects ("Expert Panel Report") September 8, 2014). Demonstration that a project meets qualifying criteria are required regardless of whether the MS4 permittee uses the "simple method" to calculate loading rates (using the Developed Land Loading Rates for PA Counties, Appendix B of the PRP Instructions, document number 3800-PM-BCW0100k), calculates loads at a local watershed scale (e.g. MapShed), or uses some other method. It is also the case regardless of what BMP efficiencies are assumed (e.g. the 44.88 lb/ft/year using the simple method loading rates, 115 lb/ft/year, using Mapshed loading rate, or using the protocols in the Expert Panel Report).

"Stream restoration," for the purpose of this eligibility determination, is defined as any natural channel design, wet channel regenerative stormwater conveyance, legacy sediment removal or other stream modifications intended to restore natural forms and processes that reduce streambank or streambed erosion and capture pollutants. The pollutant of concern generally is assumed to be sediment, with the added assumption that a 10% sediment removal also captures 5% TP and 3% TN.

Defining what constitutes a qualifying stream restoration project is not a simple task, given the wide variety of variables that may affect performance. In general, relevant qualifying criteria are:

1. Siting:

    - Permittee must document existing channel or streambank erosion and an actively enlarging or incising urban stream condition prior to restoration (an existing problem)
    - Effectiveness is most readily demonstrated for projects in 1st-3rd order streams (small). Larger scale projects will require additional documentation
    - The project must address at least 100 linear feet of stream channel
    - Impervious areas upstream of the project must be sufficiently treated to address peak flows that may exceed engineering design thresholds or compromise channel form and function
    - The project must address both sides of the channel on sites where a need to do so is evident

2. Techniques:

- The goal is to apply a comprehensive approach that may employ a mix of techniques appropriate to the site, creating long-term stability of the streambed, streambanks and floodplain

- Streambank or streambed armoring may be used where necessary to maintain channel stability, but the length of stream that is armored (such as with riprap and gabions) may not be included in the load reduction calculation.

- Projects must maximize floodplain reconnection, with a minimal channel invert elevation increase required to achieve this objective. Restoration bank height ratios must be 1.0 or less.[1]

- A permanent 35' minimum riparian buffer

As with all MS4 BMPs, a comprehensive stream restoration project must include an O&M plan that identifies O&M activities, frequencies and responsible parties.

Projects that satisfy the majority of the siting and techniques criteria above in full, and that satisfy all of the above to a degree, may be credited as an MS4 BMP.

The Department reserves the right to determine that a proposed project meets the qualifying criteria and is an eligible MS4 BMP. [2]

[1] Bank Height Ratio is Bank Height/Bankfull depth. Bank Height is the difference in elevation between the top of the bank and the stream bottom. Bankfull depth is the depth of the stream at base flow. A ratio of 1.0 or less means that the stream will not have exposed banks that are susceptible to erosion.

[2] Projects which involve legacy sediment removal require DEP Central Office involvement in the Chapter 105 permit review. Contact Jeff Hartranft or Jack Kraeuter.