Date: April 24, 2018

From: Tom Schueler and David Wood, CSN

To: Urban Stormwater Work Group

Re: Proposal for Nutrient Reduction Credit for Conservation Landscaping

1. Background

In March of 2018, the USWG discussed potential ways to credit conservation landscaping for nutrient reduction in the context of the Chesapeake Bay watershed model. A conservation landscaping credit would fill a key gap by enabling homeowners, institutions, and municipalities to manage their open space as meadows rather than intensively managed turf grass. Based on subsequent communications with VA DEQ and DOEE staff, we have drafted a proposal to provide credit for conservation landscaping as a homeowner BMP retrofit.

2. Definition of Conservation Landscaping

Definition: Conservation landscaping areas are areas of managed turf that are converted into perennial meadows using species that are native to the Chesapeake Bay region. The landscaping areas are slightly depressed so they can hold rainfall and, in some cases, treat runoff from adjacent hard surfaces. Conservation landscaping is designed to provide habitat for birds and pollinators, and does not rely on mulch to suppress weeds over the long term.

Conservation landscaping may also be described as urban meadows, Bayscapes, or Bay-wide landscaping practices. More details on conservation landscaping can be found in Lane and Schueler (2013) and references cited therein.

3. Proposed Credit

Two options are offered for credit:

Option 1: Conservation Area (Turf)

The credit is calculated by applying the removal rates provided in Table 1 to the unit loads produced by urban turf grass, adjusted for the surface area of the conservation landscaping (usually a fraction of an acre)

Option 2: Conservation Area with IC Run-on.

In this situation, the credit is calculated for the surface area of adjacent impervious cover that runs onto the conservation landscape. This load for the impervious cover is

multiplied by the load reduction values in Table 1 to determine the nutrient load removed (which is in addition to the turf load reduction calculated under Option 1).

Note: to prevent the run-on from overwhelming the conservation area, the contributing IC area cannot exceed twice the conservation landscaping area.

Table 1: Removal Efficiency for Conservation Landscaping			
Pollutant	Sediment	Total N	Total P
Removal Rate*	0% **	78%	50%
* Nutrient removal rates based on differential load for managed turf grass compared to the load for the "mixed-open natural" land use category created for the new Phase 6 watershed model (see Schueler and Wood, 2018).			
** No sediment removal is expected for conservation landscaping since its vegetation is equivalent to that provided by turf grass (UNM EPR, 2013).			

Note to Reviewers: It would be a lot easier to do the calculation based on Bay-wide average loads for turf grass and impervious cover, and just give a load reduced per thousand square feet of CA

4. Technical Rationale

Conservation landscapes reduce nutrient loads for several reasons. The first reason is that they do not receive any fertilizer inputs, which is major source of N export for urban turf grass. The second reason is that the biomass of each conservation area is "recycled" back into the soil every year (unlike lawn clippings that can wash off). This helps conservation areas build up organic matter and improve soil quality over time, thereby retaining more nutrients. Lastly, the deeper root systems associated with meadow plants extend further into the soil profile, help de-compact urban soils, promote better infiltration, and enhance the soil microbial community.

5. Qualifying Conditions

Several minimum criteria need to be met before conservation credits can be granted.

- The turf conversion needs to follow a plan to sustain the meadow landscape over the years. This will usually include the methods to:
    - Initially prepare the site (e.g., dethatching, tilling, and soil amendments).
    - Establish the meadow plant community (seeding/container plants) including native plant species used to improve biodiversity from current conditions.
    - Maintain the conservation area to arrest succession and remain in a meadow state (e.g., biannual mowing, invasive species removal, controlled burns, etc.).

- Most communities that provide incentives to build and maintain conservation landscapes have established effective criteria for homeowners. A good example of

these criteria can be found in the District of Columbia RiverSmart Homes program. In general, any local conservation area criteria should be followed to earn this credit.

- **Note:** This IS NOT a credit for normal landscaping in residential or commercial areas. Any landscaping project that requires continuous mulch replacement is not eligible for this credit (although rain gardens may be eligible as an on-site retrofit --- see CBP, 2012).

6. Eligibility

- The credit applies to all conservation areas that have been installed since 2009 and will be verified 2018 or 2019.

- No credit is allowed for conservation landscaping installed prior to 2019 since it now accounted for in the mixed-open natural land use category in the Phase 6 CBP watershed model.

7. Practice Reporting

Communities that operate incentive programs to install conservation areas on public or private lands will likely be the ones reporting this practice.

To streamline reporting, they may submit the total acreage of landscape conservation each year from multiple property owners, although they will need to keep records on each individual project to assist in future verification.

Communities that have access to the SMART tool to provide easier tracking and reporting of conservation landscape areas. The SMART tool should become available in PA, MD, and VA later in 2018

http://umdseagrant.appspot.com/
https://extension.umd.edu/watershed/smart-tool

8. Verification

Since most conservation landscapes will be very small in area (usually much less than one acre in size), they can be a hard practice to inspect and verify.

Conservation landscaping should undergo the same verification procedures for homeowner BMPs and on-site retrofits (CBP, 2012, Goulet and Schueler, 2014), namely:

- Their condition should be inspected every five years, using visual indicators that the conservation landscape still exists and functions as a meadow;
- Self-reporting of these indicators by homeowners using digital photos is acceptable; and

- Alternatively, a community can elect to inspect a subset (10%) of the conservation landscaping areas in their jurisdiction.

9. References

Chesapeake Bay Program (CBP). 2012. Recommendations of the expert panel to define removal rates for urban stormwater retrofit projects.

Goulet, N. and T. Schueler. 2014. Revised memo: application of CBP approved urban BMP protocols to credit nutrient reduction associated with installation of homeowner BMPs. USWG recommendations, as approved by Water Quality Goal Implementation Team. April, 2014.

Lane, C. and T. Schueler. 2013. Homeowners guide for a more Bay-friendly property. Chesapeake Stormwater Network. Ellicott City, MD.

Schueler, T. and D. Wood. 2018. Request for a land use credit for conversion of turf to mixed-open land use. Draft memo submitted to USWG. March 7, 2018.