Agriculture Workgroup

Memo to the Water Quality GIT Regarding Non-Urban Stream Restoration Best Management Practices

Summary of Concerns for Tracking, Reporting, & Crediting

In late 2018, the Urban Stormwater Workgroup (USWG) began a process to clarify the best management practice (BMP) recommendations of the 2013 Stream Restoration Expert Panel report sponsored by the USWG. In December 2019, the Water Quality Goal Implementation Team (WQGIT) approved one of a series of USWG reports, Recommendations for Improving the Application of the Stream Restoration Prevented Sediment Protocol, that provides further guidance on utilizing *Protocol 1- Prevented Sediment* for individual stream restoration (SR) projects. These recommendations will be incorporated into the Chesapeake Bay Watershed Model (CBWM) in September 2021. At the same time, the WQGIT requested that the Agriculture Workgroup (AgWG) convene an expert panel (EP) to evaluate non-urban SR practices that do not adhere to the SR protocols developed by the USWG.[1] Concern was voiced regarding the USWG's recommendation to discontinue use of overall default removal rates for SR projects in favor of site-specific data on TN, TP, and/or TSS for crediting toward nutrient and sediment load reduction goals. Per AgWG request in January 2020, an ad hoc group of interested parties convened a phone conference to discuss and clarify concerns regarding the new USWG recommendations. Below is a summary of the fundamental issues that the AgWG should consider addressing related to non-urban SR *before* the Prevented Sediment recommendations are integrated into the CBWM in September 2021.

APPLICABILITY OF SR RECOMMENDATIONS TO NON-URBAN PROJECTS:
This summary comes amid concerns raised in reaction to the Prevented Sediment (*Protocol 1*) report approved in December 2019, however non-urban SR restoration projects may include additional restoration techniques (beyond bank stabilization) that can be quantified using the relevant pollutant load reduction protocols (Figure 3, Lane 2 or 4) first defined in the 2013 report (p. 5, Protocol 2- Instream Denitrification and Protocol 3- Floodplain Reconnection). Non-urban SR projects that *do not* qualify for load reduction credit per the 2013 EP report's qualifying conditions are also indicated in the report (Figure 2). Figure 3 provides general guidance for jurisdictions on classifying stream-related projects, in light of the USWG's recent updates of the 2013 EP report and the December request from the WQGIT.

IMPORTANT NOTE FOR SUBMITTING TO NEIEN:
**Any urban OR non-urban stream restoration project meeting the qualifying conditions defined by the USWG and able to produce site-specific data on TN, TP, and/or TSS reduced (lbs/yr) should be reported as "Stream Restoration …[Urban or Ag]" (SB_BMP = [Urb or NonUrb] …StrmRestPro). If site-specific data for TN, TP, and/or TSS reduced (lbs/yr) reduction cannot be collected, tracked, and submitted to NEIEN appropriately, jurisdictions should choose an alternative BMP name to report length (ft) or risk receiving no load reduction credit for the project.* Contact the Chesapeake Bay Program (CBP) office for further clarification.*

ISSUE #1: Default Removal Rate
The 2013 EP report provided an overall default removal rate (lb/ft/yr) for TN, TP and TSS that can be used by SR project managers in those situations where the load reductions are not estimated with the defined protocols, although the EP also concluded, "there was no scientific support to justify the use of a single rate for all stream restoration projects," (p.14). As of 2019, no jurisdiction has submitted site-specific TN, TP, and/or

[1] https://www.chesapeakebay.net/channel_files/39308/wqgit_actions_and_decision_12.9.19_(3).pdf: "Action: The project leads of the Stream Restoration Prevented Sediment Memo will add clarifying language that indicates the memo is only for urban stream restoration, with the understanding that the AgWG will create their own expert panel regarding non-urban stream restoration BMPs."

TSS reduced (lbs/yr) in conjunction with length (ft) restored for a non-urban SR project. The USWG 2019 Prevented Sediment report aimed to clear up any confusion specifically related to the use of *Protocol 1-Prevented Sediment* and to better equip jurisdictions to report site-specific load reduction data to NEIEN. The report additionally recommends discontinuing use of the 2013 EP report's overall default removal rates for TN, TP and TSS, thus requiring submission of site-specific pollutant load calculations for each SR project. There is concern among CBP partners that many non-urban SR projects meet the USWG SR qualifying conditions (i.e. the CBP approved definition of stream restoration) but are unable to provide site-specific TN, TP and/or TSS reduction estimates. For these projects, an overall default removal rate (lb/ft/yr) is needed in order to obtain a minimal load reduction credit. In order to maintain the default option, the AgWG is tasked with providing scientific justification to:

1. continue the use of default removal rates for TN, TP, and TSS and
2. determine a default removal rate appropriate for non-urban SR projects when TN, TP, and TSS reductions are not estimated with the defined protocols (Figure 3, Lane 3).

ISSUE #2: NRCS Conservation Practice Standards (CPS)

When preparing BMP data for submission to NEIEN, it is up to each jurisdiction to decide if a stream-related project meets the SR qualifying conditions defined by the USWG (Figure 1). In the case of NRCS projects, this decision is complicated by a lack of detailed project information available to the jurisdictions. Within the NRCS framework, projects aligned with NRCS CPS 580 (Streambank and Shoreline Protection) and 584 (Channel Bed Stabilization) have the highest potential to meet the USWG's qualifying conditions, although the extent to which they meet those conditions is currently unclear (see Figure 3, Lane 4 or 5). Should a jurisdiction determine that an NRCS project does not conform to these conditions (Figure 3, Lane 5) and does not fit within another existing CBP BMP definition, it would need to be defined, assessed for water quality benefits and affirmed with an acceptable method of tracking, reporting, and verification in order to receive load reduction credit towards their TMDL goal. Such an endeavor must occur within the current partnership-approved framework for establishment of loading and effectiveness estimates for nutrient and sediment control in the CBWM, i.e. the CBP "BMP Expert Panel Protocol." A significant amount of agricultural BMP implementation occurs with the support of NRCS, therefore accurate accounting of water quality benefits from these stream restorative practices is imperative.

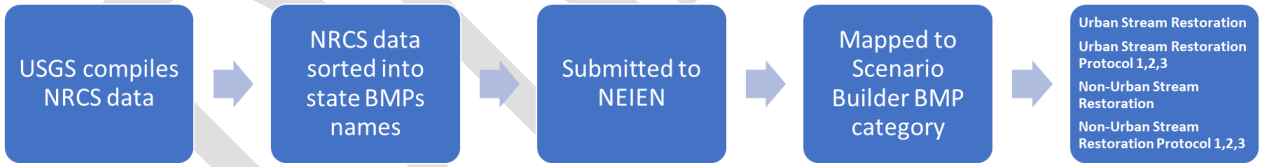

Figure 1.

ISSUE #3: Credit Duration

Non-urban SR BMPs are currently assigned a 10-year credit duration in the CBWM, in contrast to a 5-year credit duration assigned to urban SR BMPs (the clock on those 5 years begins after the typical 3- to 5-year post-construction monitoring required in permitting of urban SR projects). Because urban and non-urban SR projects are defined by the same qualifying conditions in the 2013 EP report and are treated equivalent regarding the default removal rate (lb/ft/yr), the 10-year credit duration for non-urban projects has come into question. It is likely that the 10-year lifespan for non-urban SR projects is influenced by practice lifespans associated with NRCS CPS 580 and 584, as well as a series of 2015 decisions that resulted in 10-year credit durations for the majority of CBP BMPs associated with agriculture. In any case, rationale for this decision should be cited appropriately in future documentation.

NEXT STEPS

Pursuant with CBP partnership decisions, non-urban SR projects that meet the current CBP-approved definition of *Stream Restoration* will refer to the 2013 EP report for guidance on tracking, reporting, and crediting until such a time that new definitions are approved for such projects. In order to follow through on past intentions related to non-urban stream restoration and address the request made by the WQGIT in December 2019, the AgWG will convene a temporary ad hoc group known as an Expert Panel Establishment Group (EPEG) to:

1. Clarify the definitions of "urban" vs. "non-urban" in relation to stream restoration projects (with consultation from USWG representatives).
2. Assess available scientific literature and field data to address Issue #1 (default removal rates; Figure 3, Lane 3) and provide recommendations for appropriate next steps following that assessment.
3. Identify and characterize the stream-related NRCS projects implemented in the Chesapeake Bay watershed and determine if/how they relate to the approved CBP SR qualifying conditions. Recommend appropriate next steps based on determination (NRCS CPS projects; Figure 3, Lane 5).

Should the EPEG identify other non-urban stream-related practices that do not fit within any of the current CBP BMP definitions, are employed in the CBW, and are likely to reduce nutrient and sediment load deliveries, they are encouraged to communicate these findings to the AgWG for further consideration (Figure 3, Lane 1).

Issue #3 (credit duration) is expected to be addressed by the Verification Ad Hoc Action Team established by the WQGIT (per CBP Management Board direction). The team is expected to convene in Summer 2020.

USDA-NRCS CPS = United States Department of Agriculture-Natural Resources Conservation Service Conservation Practice Standard; NEIEN = National Environmental Information Exchange Network; TN = total nitrogen; TP = total phosphorus; TSS = total suspended solids; lbs =pounds; yr = year; TMDL = Total Maximum Daily Load

Section 4.5
Applicability to Non-Urban Stream Restoration Projects

As noted in Section 2.3, the CBP-approved removal rate for urban stream restoration projects has been extended to non-urban stream restoration projects. Limited research exists to document the response of non-urban streams to stream restoration projects in comparison to the still limited, but more extensive literature on urban streams. However, many of the papers reviewed were from rural streams (Bukaveckas, 2007; Ensign and Doyle, 2005; Mulholland et al., 2009; and Merritts et al., 2010).

The Panel was cognizant of the fact that urban and non-urban streams differ with respect to their hydrologic stressors, nutrient loadings and geomorphic response. At the same time, urban streams also are subject to the pervasive impact of legacy sediments observed in rural and agricultural watersheds (Merritts et al., 2011). The Panel further reasoned that the prevented sediment and floodplain reconnection protocols developed for urban streams would work reasonably well in rural situations, depending on the local severity of bank erosion and the degree of floodplain disconnection.

Consequently, the Panel recommends that the urban protocols can be applied to nonurban stream restoration projects, if they are designed using the NCD, LSR, RSC or other approaches, and also meet the relevant qualifying conditions, environmental considerations and verification requirements.

At the same time, the Panel agreed that certain classes of non-urban stream restoration projects would not qualify for the removal credit. These include:'

- Enhancement projects where the stream is in fair to good condition, but habitat features are added to increase fish production (e.g., trout stream habitat, brook trout restoration, removal of fish barriers, etc.)
- Projects that seek to restore streams damaged by acid mine drainage
- Riparian fencing projects to keep livestock out of streams

Figure 2. Applicability of CBP-approved Stream Restoration Expert Panel report to non-urban projects (p. 31-32). Note excluded projects.

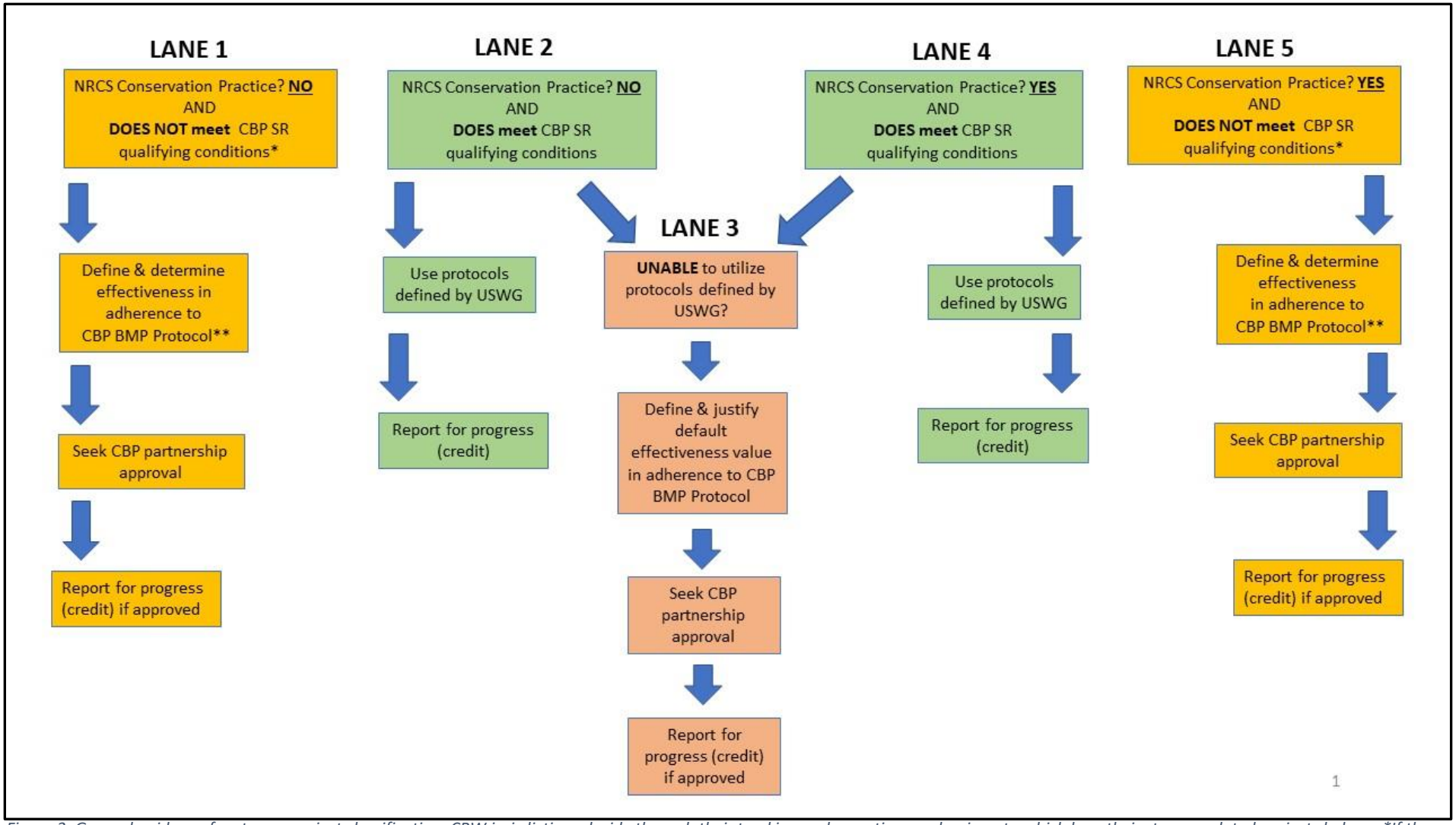

*Figure 3. General guidance for stream project classification. CBW jurisdictions decide through their tracking and reporting mechanisms to which lane their stream-related projects belong. *If the project/practice is not currently partnership-approved in terms of definition, specifications, or effectiveness, this must be addressed before it can be submitted for credit towards nutrient and sediment load reduction goals. The 2013 Expert Panel report (p. 31) lists classes of non-urban stream restoration practices that DO NOT quality for removal credit. **Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model approved July, 13th 2015.*