BMP Verification Ad-Hoc Action Team (BMPVAHAT) Decision on Wetland Credit Durations

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Outline

I. Background
II. Proposal
III. Rationale
IV. Questions/Discussion
    I. Decision Requested

Reference Materials

I. Background

Why are we here?

The BMP Verification Ad-Hoc Action Team (BMPVAHAT) re-evaluated credit durations for select CBP practices.

Source sector workgroups were instructed to consider the following when revisiting these credit durations:

1) Contract duration
2) Practice lifespan
3) Design lifespan

Credit durations are the length of time that a BMP is counted towards the TMDL before it has to be verified to make sure it's functioning properly.

II. Proposal

What’s being asked of the group?

In May 2023, the BMPVAHAT came to consensus on the following decision.

Decision: The BMPVAHAT supports the Wetland WG recommendation that **verification requirements for Wetland Restoration, Wetland Rehabilitation, and Wetland Creation be removed** due to regulatory programs in place to provide oversight to these practices, **until such time that the technology is available to use mapping tools that more accurately portray land use changes and determine wetland gains and losses** in the Bay watershed.

When the technology to track these practices is readily available, the BMPVAHAT recommends that the Water Quality GIT revisit the establishment of credit durations for these practices.

What practices does this apply to?

Practice	CBP definition	NRCS practice equivalent	Current credit duration (7/13/23)
Wetland Creation	**Establish** (create) Develop a wetland that did not previously exist at a site. Acreage Gain.	NRCS Practice 658	15 years
Wetland Restoration	**Re-establish** Returning natural/historic functions to a former wetland. Acreage Gain	NRCS Practice 657	15 years
Wetland Rehabilitation	**Rehabilitate** Repairing natural/historic functions to a degraded wetland. Function Gain	NRCS Practice 657*	15 years

What change is being proposed?

Practice	CBP definition	NRCS practice equivalent	Current credit duration (7/13/23)
Wetland Creation	**Establish** (create) Develop a wetland that did not previously exist at a site. Acreage Gain.	NRCS Practice 658	~~15 years~~ **None**
Wetland Restoration	**Re-establish** Returning natural/historic functions to a former wetland. Acreage Gain	NRCS Practice 657	~~15 years~~ **None**
Wetland Rehabilitation	**Rehabilitate** Repairing natural/historic functions to a degraded wetland. Function Gain	NRCS Practice 657*	~~15 years~~ **None**

III. Rationale

Why should we make this change?

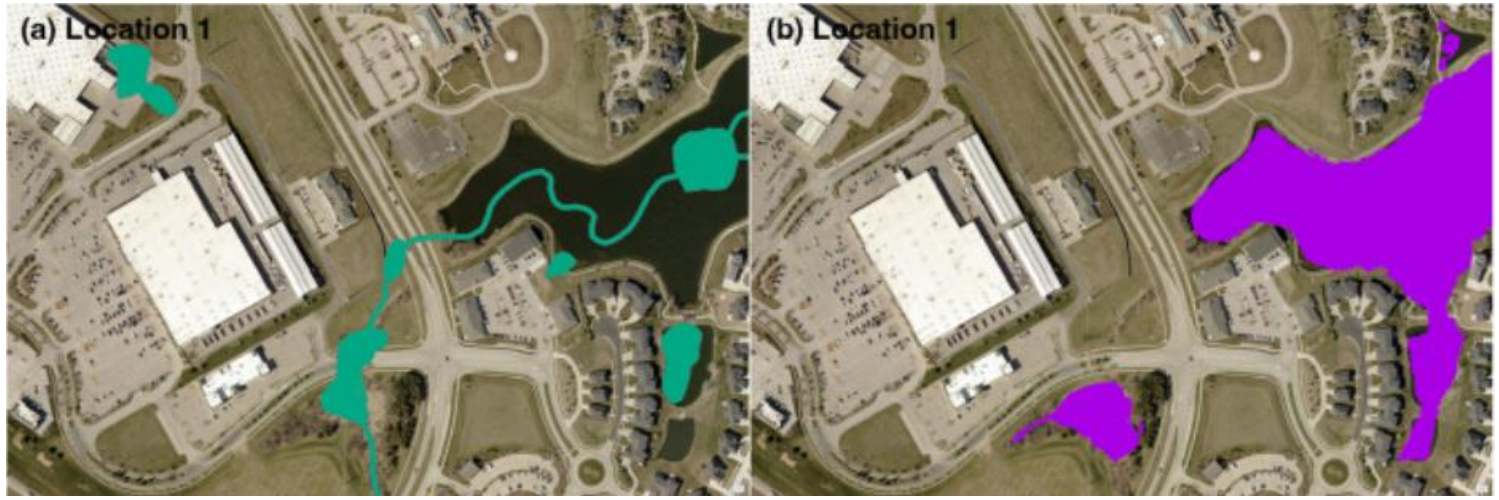
Why are we proposing to remove these credit durations?

- Natural, restored or created wetlands are a natural resource on the landscape, not a structural practice; therefore, should not be treated with limitations on their lifespans as they are expected to last into perpetuity.
- Majority of CBP-reported wetland practices are NRCS (Ag Conservation Easement Program), which have 30-year or permanent easements.
- Most wetlands last past their contract period.
- Permitting and regulations prevent loss of wetlands to development.

How will we make sure wetlands are still there and functioning as intended?

- NRCS monitors wetlands to ensure size and function is retained and documents this internally.
  - Food Security Act: Ensures classified wetlands are not converted back to ag land. If there is a land use conversion, there are requirements on maintenance or mitigation.
- State regulations ensure no net loss of wetlands:
  - Virginia (VA DEQ): Virginia Water Protection (VWP) permit program
  - Maryland (MDE): Wetlands and Waterways Protection Program
  - Pennsylvania: Bureau of Waterways Engineering and Wetlands (BWEW) Programs
  - New York (NYSDEC): Freshwater Wetlands Program / Freshwater Wetlands Act under Division of Fish and Wildlife Marine Resources Bureau

Can’t we use the land use data to track wetlands?



Source: Chesapeake Conservancy. Using AI to map wetlands. outdated training data shown in green; model prediction in purple, overlaid over recent satellite imagery.

Not right now…

We can only reliably map wetland loss to impervious cover (and maybe to turf grass) but we can’t map wetland gain due to creation or loss due to altered hydrology.

The best available data right now is national wetlands inventory (NWI) which dates back to the 1970s and 80s. Many projects underway to address this gap (e.g. GIT funding projects, Chesapeake Conservancy remote sensing work, etc.).

IV. Questions & Discussion

Are there any concerns with the proposal?

Does the WQGIT approve the following decision made by the BMPVAHAT and Wetlands WG?

Decision: The WQGIT supports the BMPVAHAT/Wetlands WG recommendation that credit durations for Wetland Restoration, Wetland Rehabilitation, and Wetland Creation be removed due to regulatory programs in place to provide oversight to these practices. If technology becomes available to use mapping tools that more accurately portray land use changes and determine wetland gains and losses in the Bay watershed, the WQGIT will consider the reestablishment of credit durations for these practices.

Reference Slides

Reference Materials

- Wetland BMP Verification Guidance (2014)
- Wetland WG Response to BMPVAHAT Comments
- Final BMPVAHAT Vote and Rationale
- Dec 2021 BMPVAHAT Minutes
- Oct 2022 BMPVAHAT Minutes

Current ability to map wetlands for verification purposes (03/2023)

- "Cannot assess change in wetlands aside from change to new development. Field-based wetland mapping for regulatory purposes is based on hydrology, soils, and vegetation. We only map land cover and land use, though the LU team is working on mapping hydrology. We use state, NWI, and topographic overlays to determine what's a wetland and these overlays are mostly static over the 2013-2021 timeframe. Therefore, we can only reliably map wetland loss to impervious cover (and maybe to turf grass) but we can't map wetland gain due to creation or loss due to altered hydrology." - Information from Peter Claggett, USGS/Land Use Workgroup Coordinator.
- **How about remote sensing?**
  - "Nothing is affordable yet. The best remote sensing work I've seen is high-res side-aperture radar acquired for select sites that indicate the seasonal pulsing of surficial soil wetness in forested environments. Hyper-spectral data would provide another option for both soil wetness and species identification, but such data are very expensive and difficult to manage and interpret 200+ spectral bands (instead of 4) and the software and field data needed to interpret them.
  - Regulatory definitions may limit shifting focus from monitoring wetlands to monitoring hydrologically important landscape features (many of which are wetlands.)" - Information from Peter Claggett, USGS/Land Use Workgroup Coordinator.

Current projects to improve ability to map wetlands (as of 03/2023)

- GIT-funded projects concerning wetlands, one focused on mapping non-tidal wetlands to update the National Wetlands Inventory and another to monitor seasonal changes in vegetation condition with an emphasis on tidal wetlands on the DelMarVa (to detect early signs of marsh migration).
- Remote sensing and machine learning are at the point where we can use them to map, and potentially to monitor, the probability of wetland presence/absence. This assertion comes with a few caveats. Such data are likely more accurate at mapping wetlands that are ponds unobstructed by 11 tree canopy with year-round standing water compared to seasonally-wet non-tidal forested wetlands.
- More importantly, freely-available remotely sensed imagery (e.g., Landsat, Sentinel, NAIP, LiDAR) are not yet reliable for assessing wetland vegetation type and wetland hydrology. We can only infer function based on landform, landscape position, soils, and spectral qualities. Without field verification, there is no way to know with certainty if a wetland is still performing as designed. Even for ponds, our remote sensing techniques won't be able to tell us if it is filling up with sediment, overrun by invasives, or is experiencing altered hydrology. There are special instruments such as hyper-spectral sensors and side-aperture radar that can be used to map invasives and monitor changes in wetland hydroperiod. Such data are currently cost-prohibitive, requiring dedicated flights and special expertise for data interpretation.

Current projects to improve ability to map wetlands (as of 03/2023)

- One component of a “compromise” could involve evaluating the accuracy of our tools and data for mapping presence/absence of wetland BMPs. For this purpose, we would ideally need polygons (or less preferably points) representing the location of wetland restoration, rehabilitation, and creation projects. We could then quantify the ability of our land use/cover data and the Conservancy’s machine learning model to accurately identify those projects. The project polygon data could be further used for testing new approaches for monitoring projects remotely.

GIT Funding Project #1: Mapping non-tidal vegetated wetlands in areas with outdated wetland maps.

- Full scope of work (page 34 of 70).
- Objective: develop a **new approach to cost-effectively model the likely location of non-tidal vegetated wetlands** within the Chesapeake Bay watershed west of the fall line, and to develop a workflow and cost estimate for making these features FGDC standard compliant.
- Techniques developed as part of this project will support future production of contemporary FGDC standard compliant NWI data for the Bay watershed and **can be incorporated into future updates of high-resolution land use/land cover data** anticipated for the Bay watershed in the years 2025 and 2030.

GIT Funding Project #2: Monitoring vegetation condition throughout the Delmarva Peninsula.

- Full scope of work (page 38 of 70).
- Objective: develop automated processing of Landsat and Sentinel imagery into spectral indices of vegetation greenness and wetness, which will **provide a temporally rich dataset of vegetation and surface moisture conditions over several decades**.

Wetland program/contract types for CBP wetland practices.

Program/Contract Type	Contract Duration
NRCS Wetland Reserve Easements (WRE) – **majority of CBP practices reported**	30-year easement or maintained in perpetuity
FSA Conservation Reserve Program (CRP)	10-15 years
FSA Conservation Research Enhancement Program (CREP)	10-15 years
Environmental Quality Incentives Program (EQIP)	Max 10 years
VA Agricultural Cost-share Program	10 years
Maryland Agricultural Water Quality Cost-Share (MACS)	Min 15 years

When establishing the credit durations for each Wetland practice, the wetland workgroup considered contract durations tied to existing regulatory programs which implement wetland practices across the watershed.