Chesapeake Bay Program | Indicator Analysis and Methods Document
Forest Buffers | Updated July 2025

Indicator Title: Riparian Forest Buffers

Relevant Outcome(s): Forest Buffer

Relevant Goal(s): Vital Habitats

Location within Framework (i.e., Influencing Factor, Output or Performance):
Performance

A. Data Set and Source

(1) Describe the data set. What parameters are measured? What parameters are obtained by calculation? For what purpose(s) are the data used?

The Riparian Forest Buffer outcome has two parts: 1) Plant 900 miles of new riparian forest buffer per year; and 2) Conserve existing buffers until at least 70% of riparian areas throughout the watershed are forested. The Riparian Forest Buffer indicator has two parallel components to match the outcome: 1) Riparian Forest Buffer BMPs reported by states annually to track progress towards meeting the Chesapeake Bay Watershed Total Maximum Daily Load (TMDL); and 2) remotely sensed data on forest cover in the riparian area updated every four to five years. These two components together will allow us to track progress for the Riparian Forest Buffer outcome.

Reported Riparian Forest Buffer Plantings:
This data set includes miles of forest buffer planted for each jurisdiction in the Chesapeake Bay watershed. Data are collected for tracking towards the 900 miles per year target in the 2014 Chesapeake Bay Watershed Agreement.

Acres of forest buffers were measured directly and obtained from annual state reports via the National Environmental Information Exchange Network (NEIEN) to the Chesapeake Assessment and Scenario Tool (CAST). For 2018 and 2019, we used 2017 average widths for each state to calculate length of forest buffers. For 2020, MD, VA, and NY updated their average widths, and the 2017 average widths were used for the other states who did not update their average widths. Between 2021 and 2024 the average widths were not changed.

Remotely Sensed Data on Riparian Forest Cover:
The second component of the indicator consists of an analysis of the high-resolution land use/land cover data developed and updated by the Chesapeake Bay Program partnership approximately every 4-5 years. These data are critical for accounting for

both gains and losses of riparian forest that occur on the landscape and helping us track our progress towards having at least 70% of the riparian area throughout the watershed forested. The indicator focuses on tracking riparian forest within 100 ft of streams, as defined by a new, higher density 1:24K stream network for the entire Chesapeake Bay watershed developed for the partnership by USGS. The forested acreage computed in this footprint includes land use classes with mature tree cover (>15 ft tall) and an unmanaged understory (the Forest and Forested, Other classes).

It is important to note that in the land cover/land use change mapping, forest loss is detected more readily/instantaneously than gains. Forest gains from newly planted trees or growth at the margins of existing canopy take much longer to pick up in these datasets, which are predominately based on NAIP imagery supplemented by LIDAR where available for the appropriate time period.

The next update of high-resolution land use and land cover data based on the 2025/2026 imagery is scheduled for release in 2028.

(2) List the source(s) of the data set, the custodian of the source data, and the relevant contact at the Chesapeake Bay Program.

Reported Riparian Forest Buffer Plantings:
- Source: Maryland Forest Service (DNR), Pennsylvania DEP, Virginia Dept. of Forestry and DCR, West Virginia Division of Forestry, Delaware Dept. of Environment and Natural Resources, Upper Susquehanna Coalition (NY)
- Custodian: NEIEN database, Jessica Rigelman, CBP

Remotely Sensed Data on Riparian Forest Cover:
- Source: Chesapeake Bay Land Cover Dataset (CBP/Chesapeake Conservancy), further analyzed/filtered by CBP GIS team.
- Custodian: Michelle Katoski, CBP/USGS.

- Chesapeake Bay Program Contact: Katie Brownson, Katherine.brownson@usda.gov, 410-991-2613.

(3) Please provide a link to the location of the data set. Are metadata, data-dictionaries and embedded definitions included?

The data file is available for download on the Riparian Forest Buffer outcome page. The riparian footprint data is available at: https://doi.org/10.5066/P99HZHQ0 and the land use data is available at: https://doi.org/10.5066/P14BEBRC.

B. Temporal Considerations

(4)   Data collection date(s):

Reported Riparian Forest Buffer Plantings: 1996 – 2024
Note: Prior to 2010, the reporting procedure only included data from the Signatory states of Maryland, Pennsylvania, and Virginia. From 2010 onward, we began including data from other jurisdictions. Beginning in 2012, the time period for reporting was changed from September-August of each year to July-June of each year to align with state reporting processes for CAST. To avoid duplicate counting during the transition reporting year of 2012, buffers planted in July-August 2011 and reported the prior year were removed from the 2012 reporting year.

Remotely Sensed Data on Riparian Forest Cover (2024 edition):
    Time 1 (baseline) – 2013 (DE, DC, MD, NY, PA) and 2014 (VA, WV)
    Time 2 – 2017 (DC, NY, PA) and 2018 (DE, MD, VA, WV)
    Time 3 – 2021 (DE, DC, MD, VA) and 2022 (NY, PA, WV)

(5) Planned update frequency (e.g., annual, biannual, etc.):

Reported Riparian Forest Buffer Plantings:
- Source Data: Annual
- Indicator: Annual

Remotely Sensed Data on Riparian Forest Cover:
- Source Data: Every 4-5 years
- Indicator: Every 4-5 years

(6) Date (month and year) next data set is expected to be available for reporting:

Reported Riparian Forest Buffer Plantings: Tentatively June 2026, dependent on release of the 2025 Progress Run from CAST.

Remotely Sensed Data on Riparian Forest Cover: This data will be updated again in 2028 with Time 4 data (2025/2026 imagery).

C. Spatial Considerations

(7) What is the ideal level of spatial aggregation (e.g., watershed-wide, river basin, state, county, hydrologic unit code)? Watershed-wide and state.

(8) Is there geographic (GIS) data associated with this data set? If so, indicate its format (e.g., point, line polygon).

Reported Riparian Forest Buffer Plantings: BMP acres at the county scale are used, as reported to CAST via NEIEN.

Remotely Sensed Data on Riparian Forest Cover: Yes, the Land Use/Land Cover portion of this Indicator uses raster land use change data coupled with the polygon geographic boundaries of interest (state and Chesapeake Bay watershed boundaries and polygon).

(9) Are there geographic areas that are missing data? If so, list the areas. No; N/A

(10) Please submit any appropriate examples of how this information has been mapped or otherwise portrayed geographically in the past.

For 2023 Progress, we created a map showing buffer implementation by county that we posted to our Chesapeake Riparian Forest Buffer network website. This will be updated soon with the new 2024 Progress data.

D. Communicating the Data

(11) What is the target or threshold measured by this indicator? How was it established?

The current goal for riparian forest buffers in the 2014 Chesapeake Bay Agreement is: *Continually increase the capacity of forest buffers to provide water quality and habitat benefits throughout the watershed. Restore 900 miles per year of riparian forest buffer and conserve existing buffers until at least 70 percent of riparian areas throughout the watershed are forested.*

The target for this indicator was originally set to be 900 miles/year in 2007 as part of the Forest Conservation Directive. The 900 miles/year was agreed to by the states to be a "stretch" goal, but one that was necessary to reach water quality standards. The 900 miles/year goal was reaffirmed in the 2014 Chesapeake Bay Watershed Agreement. The 70 percent of buffered riparian area was also reaffirmed in the Agreement.

(12) What is the current status in relation to the target established in the outcome? Why? Would you define our outlook[1] toward <u>achieving the outcome</u> as on course, off course, uncertain, or completed? Upon what basis are you forecasting the outlook?

Reported Riparian Forest Buffer Plantings:

In 2024, 226.6 buffer miles were planted, achieving 25.2% of the annual goal of restoring 900 buffer miles. Since tracking began in 1996, the annual goal of 900 miles has only been met once, in 2002, and has not been reached since. Although progress toward this goal is currently off course, improvements have been made since 2019, with the rate of progress declining in 2024 after record increases in 2022 and 2023.

Remotely Sensed Data on Riparian Forest Cover:
According to the new 1:24k riparian layer and Land Use/Land Cover data, 69.96% of the riparian land area across the watershed is forested, leaving a gap of 1,753 acres to meet the goal of 70% forested riparian land area. However, there was a net loss of 41,941 acres of riparian forest between 2013/14 and 2021/22, so the outcome remains off course. While some states have already exceeded the 70% threshold, it's important to note that this goal was set as a minimum, and additional efforts are needed in these states to support riparian forest buffer conservation.

The data file provides supplementary information on riparian forest coverage for both a 35-foot buffer and a 300-foot buffer from streams. The partnership considers 35 feet as the minimum width required for a buffer, and 300 feet as the maximum width where trees are included in the buffer zone.

(13) Has a new goal, target, threshold or expected outcome been established since the last reporting period? Why?

No, the Bay Program has been working under the same goal (900 miles/year) since 2007. The 2007 Forest Conservation Directive from the Management Board, the 2010 Executive Order Strategy and the 2014 Chesapeake Bay Agreement all reaffirm this goal of 900 miles/year.

However, in 2019, the states established ambitious new goals for forest buffers in their Phase III Watershed Implementation Plans (WIPs). In total, the states put 202,964 acres of cumulative forest buffer implementation in their Phase III WIPs to achieve by 2025. To put this in context, as of 2024, states had reported a cumulative total of 76,296 acres of forest buffers. This reflects a gap of 126,668 acres or 10,450 miles (assuming an average 100 ft buffer width).

New targets will be set for annual forest buffer planting and riparian forest cover by the end of 2025 in the revised Watershed Agreement.

(14) Has the methodology of data collection or analysis changed since the last reporting period? How? Why?

In 2018, the Partnership transitioned to using Phase 6 of the Chesapeake Bay Watershed Model, known as the Chesapeake Assessment Scenario Tool (CAST). This transition impacted the data record for several indicators, including this one. See the following for more information: https://www.chesapeakebay.net/news/blog/updated_tools_help_address_pollution_and_plan_for_the_future.

With the transition to CAST and the implementation of Verification protocols in the model, many buffer acres started dropping out of the model at the end of their credit life (which was recently extended from 10 to 15 years) due to lack of verification. This resulted in the official progress runs showing a decrease in cumulative buffer implementation year over year. As we know that new buffers were in fact being planted, to capture these acres to track progress towards meeting the Agreement outcome, in 2018 (with the transition to Phase 6) we started using "no expiration" scenarios to calculate the new miles added each year. These scenarios were created for us by the CAST team and did not remove buffers that expired (for CAST accounting purposes) at the end of their credit life. Indicator numbers reported prior to 2018 were not affected by credit expiration and were therefore not impacted by the transition to the Phase 6 model or this change in methodology for the indicator.

(15) What is the long-term data trend (since the start of data collection)?

Reported Riparian Forest Buffer Plantings:
Between 1996 and 2024, a total of 10,914 miles of forest buffers have been planted. Of these, 4,022 miles were planted between 2010, when a new reporting baseline was established following the Executive Order, and 2024.

The initial goal of planting 2,010 miles of forest buffers by 2010 was achieved eight years early. By 2010, 73% of the subsequent goal of 10,000 miles had been met. Progress slowed starting in 2010, but steady increases were observed each year from 2019 to 2023, until the rate of increase declined in 2024.

Remotely Sensed Data on Riparian Forest Cover:
The total riparian forest buffer coverage across the watershed has decreased since 2013/2014. In 2013/2014, the riparian forest cover was at 70.86%, but by 2021/2022, it had fallen to 69.96%, representing a decline of 0.9%. Every jurisdiction except for D.C. experienced a reduction in riparian forest cover during this period, although some states, including Pennsylvania, Virginia, and West Virginia, remain above the 70% goal.

(16) What change(s) does the most recent data show compared to the last reporting period? To what do you attribute the change? Would you characterize that change in the recent progress[2] as an increase, decrease, no change, or completed for this outcome?

Reported Riparian Forest Buffer Plantings:
In the reporting year 2024, 226.6 miles of riparian forest buffers were planted in the Chesapeake Bay watershed. This data indicates a decrease in the planting rate compared to previous years, which had shown a steady increase since 2019.

The prior years' increase is likely attributed to catching up on previously unreported acres, particularly in Virginia, and heightened investments in flexible buffer programs, notably in Pennsylvania. While the Conservation Reserve Enhancement Program (CREP) remains essential and valuable, there is growing momentum to expand existing flexible buffer programs. The effectiveness of these programs is enhanced by features such as providing funding on a rolling basis rather than through an annual competitive grant process, making funds available quickly, offering buffers to both agricultural and non-agricultural landowners, providing maintenance, and minimizing or eliminating out-of-pocket costs for landowners.

In 2024, progress returned to closer to the average planting rates achieved since the signing of the 2014 Watershed Agreement following the large increases reported in 2022 and 2023 in PA and VA.

The progress reported by individual states in 2024 is as follows:
- Delaware: 0.16 miles (a 0.01-mile increase from 2023)
- Maryland: 25.01 miles (a 14.85-mile decrease from 2023)
- New York: 33.78 miles (a 12.43-mile increase from 2023)
- Pennsylvania: 111.17 miles (a 157.07-mile decrease from 2023)
- Virginia: 43.06 miles (a 254.72-mile decrease from 2023)
- West Virginia: 13.39 miles (a 0.27-mile increase from 2023)

Remotely Sensed Data on Riparian Forest Cover:
This is the second reporting period where we have expanded the indicator to include information on the forest coverage within riparian areas, assessing progress toward the goal of having 70% of riparian areas throughout the watershed forested. However, the 2024 edition of the Land Use/Land Cover data is not directly comparable to the 2022 edition used in the previous update of the forest buffer indicator due to changes in methodology.

Riparian forest cover continues to decline, with a loss of 18,033 acres in the first period (2013/14-2017/18) and 23,908 acres in the second period (2017/18-2021/22), totaling 41,941 acres lost across the watershed from 2013/14 to 2021/22. In contrast, 27,273 acres were planted between 2013 and 2022, indicating that riparian forest loss is outpacing gains from planting. With the planting rate declining in 2024 and losses exceeding gains from 2013 to 2022, overall progress for this outcome is decreasing. Further detailed analyses of riparian land use changes will be conducted to better understand the drivers of this loss.

(17) What is the key story told by this indicator?

We are making inadequate progress towards meeting our goals for buffers in the Agreement and the WIPs. In addition, the scale of buffer planting is inadequate to replace the loss of buffers throughout the watershed. Although some states have achieved 70% buffer coverage, the 70% target represents a floor, not a ceiling, for total buffer coverage. Progress towards increasing riparian forest cover and buffer plantings should be maintained. According to scientific research, riparian forest buffers are the most effective filters for nutrients and other pollutants carried by storm water runoff, and progress beyond 70% and 900miles/year will still incur water quality benefits. The ultimate goal is water quality improvements in the Chesapeake Bay Watershed because of the increase in riparian forest buffer miles.

Although riparian forest buffers are essential for a healthy Bay watershed, much more effort is needed. There isn't a single cause for slow progress toward the goal of this outcome, but contributing factors identified by the Forestry Workgroup include challenges associated with CREP, such as lower incentives paid to landowners and inconsistent program availability; inadequate recruitment and retention of technical assistance providers to help with outreach and education of landowners; and competing water quality practices. Conservation is also needed to combat the loss of forest buffers that are being seen throughout the watershed.

E. Adaptive Management

(18) What factors influence progress toward the goal, target, threshold or expected outcome?

These factors are technical or relate to management/leadership and were identified as high priority.
- Federal/state/local leadership place insufficient emphasis on RFB as a priority practice and allow less beneficial practices to successfully compete for riparian space.
- Technical assistance needs to be scaled up and valued by program leaders.
- Lack of interagency coordination and staff training at all levels of government.
- Lackluster incentives, and incentives that are not strategic and do not leverage resources wisely.
- Federal programs lack the flexibility states and landowners need.
- Outreach to landowners with riparian areas needs to stress the importance of RFB, new information, and improved incentives for the enrollment, re-enrollment, and permanent protection.
- Lack of information available to landowners and technical assistance providers.
- Complicated cost-share program application and implementation process accompanied by unclear communication.

- Lack of targeting riparian forest buffers to where they would provide the greatest benefits.
- Lack of focus on permanent protection of riparian forest buffers. They are often lost when agricultural lands are converted to development and small, linear easements are difficult to manage.

(19) What are the current gaps in existing management efforts?

The Management Strategy for the Forest Buffers Outcome includes a fuller discussion of gaps, which include:
- Landowners need clear messages on the best way to manage riparian areas.
- Need more technical assistance—if landowners are informed and incentivized, more will enroll in buffer programs.
- Outreach to landowners needs to improve/increase.
- Existing buffer practices need to be verified.
- Riparian forest buffer easement programs are not active in most states.
- Suburban areas need programs to protect and establish buffers.

For a full discussion of gaps and barriers, see Appendix A of the Management Strategy.

(20) What are the current overlaps in existing management efforts? N/A

(21) According to the management strategy written for the outcome associated with this indicator, how will we (a) assess our performance in making progress toward the goal, target, threshold or expected outcome, and (b) ensure the adaptive management of our work?

(a) The Logic & Action Plan will be the main tool for focusing collaboration across federal, state, local, and nongovernmental partners on the riparian forest buffer outcome. Assessment of progress will be aligned with the cycle of state reporting for two-year milestones for the TMDL, because riparian forest buffer data are critical to meeting these milestones.

(b) The partnership will use the following approaches to ensure adaptive management:
- Continue to work with leadership and partners to support the implementation of flexible buffer programs that complement CREP.
- Track progress toward the annual 900-mile goal, as well as identifying trends and priority areas.
- Use Chesapeake partners involved in related goals, i.e., conservation, brook trout, wetlands, healthy watersheds, and others, as an important source of mutual feedback on what works well and what does not.

- Throughout the year, the partnership's communication tools, including websites, webinars, and special announcements, will inform progress toward the RFB goal and highlight needs or opportunities for partnership members to engage.
- Monthly Forestry Workgroup meetings provide a regular venue for evaluating and adjusting particular strategies that support the annual 900-mile goal.
- Annual reporting by the partnership and its members of best practices, success stories and other qualitative and quantitative successes is another means to recognize the impacts of existing programs, reflect on and adapt existing and new strategies, and grow the capacity and stewardship required to increase the amount of riparian forest buffers in the watershed.

F. Analysis and Interpretation
Please provide appropriate references and location(s) of documentation if hard to find.

(22) What method is used to transform raw data into the information presented in this indicator? Please cite methods and/or modeling programs.

Reported Riparian Forest Buffer Plantings:
The planted forest buffer data is taken from the custom "no expiration" scenarios in CAST. As buffer numbers reported in CAST are cumulative, scenarios are created for the focal year and the preceding year to calculate the number of new buffers added for the focal year. These numbers are extracted from the Summary report in CAST, and numbers are summed from three forest buffer BMPs: Forest Buffer (Agriculture), Forest Buffer (Developed) and Forest Buffer- Streamside with Exclusion Fencing. The Narrow Forest Buffer BMP is not included.

Remotely Sensed Data on Riparian Forest Cover:
Total forested buffer area was determined by using a combination of the 1:24k riparian data along with forest cover data obtained with high resolution Land Use/Land Cover dataset (2024 ed.) to estimate total existing forested buffer coverage across the watershed.
- The 1:24k riparian data was created using a combination of the high-resolution Land Use/Land Cover, Chesapeake Bay shoreline data, and 1:24k hydrography data from the USGS Floodplain and Channel Evaluation Tool (FACET). FACET represents a high-density stream network that captures small streams and tributaries throughout the watershed that were not formerly captured using the 1:100k dataset. The dataset also captures channel-like features that may not contain an actual stream and therefore not require a forested buffer.
- The forest cover data were produced by the Chesapeake Bay Program USGS GIS Team using the 2024 edition of the Chesapeake Bay Land Use and Land Cover Database. These datasets utilize high resolution imagery from three time

periods: time 1 (2013 or 2014, depending on state), time 2 (2017 or 2018, depending on state), and time 3 (2021 or 2022, depending on the state). Forest Cover acres include all of the land use classes that have mature (>15 ft) tree canopy and an unmanaged understory (Forest and Forested, Other), clipped to the Chesapeake Bay watershed boundary. Please note that in these high-resolution land use/land cover datasets, losses of tree canopy are detected more readily/immediately, while gains occurring from new tree plantings can take 10-15 years to be reliably detected.

(23) Is the method used to transform raw data into the information presented in this indicator accepted as scientifically sound? Yes. If not, what are its limitations? N/A

(24) How well does the indicator represent the environmental condition being assessed?

BMP data submitted includes only acre measurements, so the Forestry Workgroup uses average reported buffer width data to calculate miles from the reported buffer acres in CAST. The BMP data also does not capture losses that occur through development, storms, pests/diseases, and natural mortality. The Land Use/Land Cover data does capture losses of forest buffers, but identification of forest buffer gains is delayed as newly planted sites reach maturity. Forest buffer gains can take 10-15 years to be reliably detected. Additionally, not all streams and channels in the 1:24K network have the hydrology needed to support a forest buffer or contain aquatic life that would benefit from a forest buffer.

(25) Are there established reference points, thresholds, ranges or values for this indicator that unambiguously reflect the desired state of the environment? N/A

(26) How far can the data be extrapolated? Have appropriate statistical methods been used to generalize or portray data beyond the time or spatial locations where measurements were made (e.g., statistical survey inference, no generalization is possible)? N/A

G. Quality
Please provide appropriate references and location(s) of documentation if hard to find.

(27) Were the data collected and processed according to a U.S. Environmental Protection Agency-approved Quality Assurance Project Plan? If so, please provide a link to the QAPP and indicate when the plan was last reviewed and approved. **If not, please complete questions 28-31.**

Reported Riparian Forest Buffer Plantings: Yes – beginning in 2014, reported data align with the riparian forest buffer BMP data submitted to CAST, covered by state QAPPs with EPA. However, these BMP data only include acre measurements, so

supplemental data on buffer width from state agencies are reported directly to the Forestry Workgroup from several states so that forest buffer miles can be calculated.

Remotely Sensed Data on Riparian Forest Cover: The Land Use/Land Cover Data is covered in Chesapeake Conservancy's QAPP with EPA for production of the datasets. The 1:24K Riparian Data is covered in the GIS team QAPP.

Land Use/Land Cover QAPP Contact: John Wolf, JWolf@chesapeakebay.net, (410) 267-5739

(28) *If applicable:* Are the sampling, analytical and data processing procedures accepted as scientifically and technically valid? Yes.

(29) *If applicable:* What documentation describes the sampling and analytical procedures used?

The reported Riparian Forest Buffer planting data is submitted by the states into NEIEN and progress is tracked using CAST.

(30) *If applicable:* To what extent are procedures for quality assurance and quality control of the data documented and accessible?

We also review information posted to CAST for progress to the TMDL.

(31) Are descriptions of the study design clear, complete and sufficient to enable the study to be reproduced?

Reported Riparian Forest Buffer Plantings: Verified data can be used to determine miles of restored riparian forest buffers.

Remotely Sensed Data on Riparian Forest Cover: For the Land Use/Land Cover Data, proprietary software, eCognition, and proprietary rulesets implemented with this software were used by the University of Vermont Spatial Analysis Laboratory to classify aerial imagery into land cover data. The code used to translate land cover to land use, developed by the Chesapeake Conservancy and USGS is open source and will be published by USGS along with two scientific papers outlining the methods. Use of ancillary data will be documented but not available for download because some of it is proprietary.

For the 1:24k Riparian Data, some processing steps are executed using proprietary ArcGIS Pro tools but are documented for reproducibility. All input datasets are available online and linked in the metadata.

(32) Were the sampling, analytical and data processing procedures performed consistently throughout the data record? N/A

(33) If data sets from two or more sources have been merged, are the sampling designs, methods and results comparable? If not, what are the limitations?

Reported Riparian Forest Buffer Plantings: Yes (States' data are merged in CAST). Submission criteria have been set and agreed to by State agencies and CBP.

Remotely Sensed Data on Riparian Forest Cover: N/A for the Land Use/Land Cover data or the 1:24K riparian data.

(34) Are levels of uncertainty available for the indicator and/or the underlying data set? If so, do the uncertainty and variability impact the conclusions drawn from the data or the utility of the indicator?

Reported Riparian Forest Buffer plantings: N/A

Remotely Sensed Data on Riparian Forest Cover: According to a recent accuracy assessment, the overall land cover accuracy for the 2021/22 map is 95% for an aggregate 5-class land cover within a 3x3-meter window. The accuracy of detecting land cover change from no land cover change in a 3x3-meter window is 86%. A more detailed report on the land cover and change accuracy is expected in 2026

(35) For chemical data reporting: How are data below the MDL reported (i.e., reported as 0, censored, or as < MDL)? If parameter substitutions are made (e.g., using orthophosphate instead of total phosphorus), how are data normalized? How does this impact the indicator? N/A

(36) Are there noteworthy limitations or gaps in the data record?

The Forest Buffer BMP data are only as good as what was originally submitted by the States and may not capture all forest buffer planting in the state. The Land Use/Land Cover data also may not accurately pick up newly planted forest buffer sites if the site is still maturing and has not developed a complete tree canopy. These gains can take 10-15 years to be reliably detected.

H. Additional Information (*Optional*)

(37) Please provide any further information you believe is necessary to aid in communication and prevent any potential misrepresentation of this indicator.

This information passes through many hands before being merged into the annual cumulative miles. Human error enters into this type of record. The data are

compiled and released with utmost attention to accuracy and validation of locations and extents of restored riparian forest buffers.

Although some states have achieved >70% riparian forest buffer coverage, the target represents a floor, not a ceiling, and there is still work to be done to achieve water quality goals. Additionally, the end goal for riparian forest buffer coverage is not 100%, as not all riparian areas adjacent to the 1:24k stream network will be suitable for buffer restoration. Some of the channels identified in the 1:24k stream network are not streams supporting aquatic life and therefore might not benefit in the same way from having a forested buffer (grass buffers may suffice in some cases). At the same time, site conditions, including local hydrology, may not be conducive for forest buffer establishment in all places.

[1]*Outlook:* Outlook is the forecasted trajectory for whether the Chesapeake Bay Program is on course to achieving the outcome. An outcome's outlook may be on course, off course, uncertain, or completed. This information will be incorporated into the outcome's progress page. An outcome's course outlook is reviewed and updated during the outcome's Strategy Review System (SRS) Quarterly Progress Meeting in addition to when recent progress is assessed.

[2]*Recent Progress:* Recent Progress describes the change in the indicator based on the most recent data collected since the last reporting period. The recent progress icon will reflect this change as an increase, decrease, no change, or completed, depending upon this progress. This information will be discussed at the outcome's Strategy Review System (SRS) Quarterly Progress Meeting.