

Riparian Buffer Planting Survey123 Checklist User Guide



Summary: This checklist should be used by qualified and trained verifiers to assess implemented riparian buffer planting projects. See the [Verification Program Standard Operating Procedure \(SOP\)](#) for details on the verification process and to access the applications. Verification visits occur throughout the field season, however visiting riparian buffer planting projects in late spring is the best timing for accessing and locating planted vegetation. Prior to a visit, review project details including planting map, planting plan with planting density, species list, reports, and notes from prior verification visits. If possible, bring these documents to reference in the field. This user guide provides an overview of all the questions in the riparian buffer checklist and best practices on collecting data and images.

Checklist scoring: Verifiers are encouraged to use their experience and best judgment when scoring the project's condition. Each response has a numerical score associated with the response and those scores are given in this guide for reference, but not in the checklist itself. Based on the calculated score, a section "Grade" will indicate if that section of the project is Functional (4-2.5, meets requirements), Marginal (<2.5-.5, maintenance may be needed), Failed (<0.5-0, not functional, needs repairs, or does not exist). At the end, the checklist automatically calculates an average overall score. See Table 2 of the [Verification SOP](#) for additional information on scoring.

SURVEY QUESTIONS (* INDICATES REQUIRED FIELD)

Project Information

1. **Project ID*** Implementation Phase Watershed Projects Database ID (auto populated)
2. **Project Name*** (auto populated)
3. **Project Type*** (auto populated)
4. **Town(s)*** (auto populated)
5. **BMP ID*** (auto populated)
6. **BMP System Name*** (auto populated)
7. **Project Completion Date*** (auto populated)
8. **Select Clean Water Service Provider (CWSP)***
9. **Verifier Name(s)***
10. **Verifier Organization***
11. **Verification Date and Time*** (auto populated)
12. **Date of Last Rain Event** (optional, select the appropriate date)
13. **Are you able to locate the project area?***

Verifier note: If the project area cannot be located, select “No” and include any relevant information in the notes section that will appear. Then complete Question’s 14-16 to the best of your ability.

14. Project Location

Verifier note: if GPS location is enabled, use that to enter location info. Can also enter manually.

15. Capture / Browse to Photo

Verifier note: photo quality is best when taken with tablet/phone’s camera app and then uploaded to Survey123. Try to take a photo that shows the full extent of the practice (take multiple photos as needed). Best practice is to take the photo(s) from same location or using a landmark, such as a large tree or structure that is visible as the forest grows. Enter this information in the photo description question below. If helpful, mark photo point location using latitude/longitude (some phones/tablets automatically log location in image metadata).



Photo of buffer planting showing full extent of planting area

16. Photo Description*

Verifier note: write in details shown in photos and their locations.

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17. Record the buffer width in three sections of the river planting zone.*

Average Buffer Width (survey auto calculates, read-only)

Verifier note: select three locations distributed throughout the planting area to measure buffer width (ft) using a field tape measure. Best practice is to select the monitoring locations during the first verification visit and use those same during all subsequent visits for consistency and to monitor change over time. Measurements should be taken perpendicular to the streambank edge. Use planting map to determine initial planting zone and mark monitoring locations.



Verifier using field tape measure to measure buffer width.

18. Is the average buffer width at least 35 feet (edge of the bank to the edge of the buffer planting area) or the width specified in the plan?*

Responses	Buffer width is greater than 35 feet or greater than the amount specified in the plan.	Buffer width is about 35 feet or meets the width specified.	No, less than 35 feet, or less than the width specified.	Less than 10 feet or does not exist in some places.	No plantings appear to exist.
Checklist Score	4	3	2	1	0

Verifier note: a 35 ft buffer is the minimum planting width for a buffer project funded by the Clean Water Initiative Program. Check the planting plan for specific details.

19. What is the density of the surviving planted trees (300 stems/acre = approx. 1 tree every 12 feet)?*

Responses	Yes, noticeably more than 300 stems per acre.	Yes, about 300 stems per acre.	No less than 300 per acre.	Very sparse or there are large gaps between stems.	NA. No planted trees survived.
Checklist Score	4	3	2	1	0

Verifier note: This question is looking at the average density over the whole project area. A simple way to determine density of a planting is to measure the distance between a couple of trees counting steps or using the field measuring tape. 300 stems/acre is approx. 1 tree every 12 ft; 400 stems/acre is approx. 1 tree every 10 ft; 200 stems/acre is approx. 1 tree every 14 ft. 300 stems/acre is part of the definition of State-funded riparian buffer plantings. See the [Clean Water Initiative Project Types table](#) for more details.

20. Do the plantings appear healthy?*

Responses	90% or more of the plantings appear healthy.	Most plantings are healthy (approx. 70-89%).	About half of the plants appear healthy.	More than 50% of the plantings do not appear healthy.	N/A. No planted trees survived.
Checklist Score	4	3	2	1	0

Verifier note: the intent of this question is to look closely at planted vegetation, rather than other volunteer species that have established within the planting area. Healthy plants show signs of new growth and have leafed out. Plants that are unhealthy have discolored or small leaves, dead branches, and evidence of deer browse, voles, or disease.



90% or more of the plantings appear healthy.



More than 50% of plantings do not appear healthy.

21. Are some species doing better (or more poorly) than others? (optional)

Verifier note: Notable observations about species survival can be entered here. The intent of the question is to gather data regarding which species are thriving/surviving or not successful, so lessons learned can be shared for future plantings.

22. Are trees and shrubs (volunteer and planted) evenly distributed and thriving throughout the planting area? *

Responses	90% or more of trees or shrubs are thriving within the area specified for planting.	Trees or shrubs are present, but some are doing better than others. 70-89% of the area is thriving.	Few living trees or shrubs, grasses are predominant. Half of the area is thriving.	Area contains sparse stable vegetation. Less than half of the area is thriving.	Large patches of bare soil or large eroding areas are present.
Checklist Score	4	3	2	1	0

Verifier note: for this question, assess all vegetation in the planting area, whether it was planted there or has established as a volunteer species. Do any areas need to be replanted with woody vegetation?

23. What is the extent of human activities in the buffer (e.g., mowing, parking lots, roads, lawns, crops, trails)?*

Responses	More than 90% of the buffer area intact. No human impacts.	70-90% of contract area intact. Minimal human impacts.	50-70% of contract area intact. Significant human impacts.	Less than 50% of contract area intact.	Entire area has been mowed or planted with crops or has other development.
Checklist Score	4	3	2	1	0

Verifier note: look for signs of human activity that has impacted any aspect of the buffer area. If there are signs of impact, assess the percentage of the buffer that has been impacted. In question 26, indicate any disturbance that has occurred.

24. Indicate if you see any of the following invasive species:*

Verifier note: note the presence and abundance of invasive species that you identify.

Species Name	Link to Fact Sheet
Bindweed (<i>Persicaria perfoliata</i>)	https://vtinvasives.org/invasive/mile-a-minute-vine
Burning Bush (<i>Euonymus alatus</i>)	https://vtinvasives.org/invasive/burning-bush-or-winged-euonymus
Common Buckthorn (<i>Rhamnus cathartica</i>)	https://vtinvasives.org/invasive/buckthorn-common
Common Reed (<i>Phragmites australis</i>)	https://vtinvasives.org/invasive/common-reed#:~:text=Ecological%20Threat&text=It%20provides%20poor%20quality%20habitat,death%20of%20nearby%20native%20plants
Garlic Mustard (<i>Alliaria petiolata</i>)	https://www.vtinvasives.org/invasive/garlic-mustard
Glossy Buckthorn (<i>Frangula alnus</i>)	https://www.vtinvasives.org/invasive/buckthorn-glossy
Honeysuckle (<i>Lonicera</i> sp.)	https://www.vtinvasives.org/invasive/honeysuckles-shrub
Japanese Barberry (<i>Berberis thunbergii</i>)	https://vtinvasives.org/invasive/barberry-japanese
Japanese Knotweed (<i>Fallopia japonica</i>)	https://vtinvasives.org/invasive/knotweed-japanese
Multiflora Rose (<i>Rosa multiflora</i>)	https://vtinvasives.org/invasive/multiflora-rose
Purple Loosestrife (<i>Lythrum salicaria</i>)	https://vtinvasives.org/invasive/loosestrife-purple
Reed Canary Grass (<i>Phalaris arundinacea</i>)	https://www.vtinvasives.org/invasive/reed-canary-grass
Wild Chevril (<i>Anthriscus sylvestris</i>)	https://vtinvasives.org/invasive/wild-chervil
Wild Parsnip (<i>Pastinaca sativa</i>)	https://vtinvasives.org/invasive/wild-parsnip

Verifier note: [12 Invasive Plants Commonly Found in Vermont](#), compiled by VT Dept. of Forests, Parks & Rec. is a resource that can be used to ID invasive species and be printed for use in the field. Optionally and if interested, verifiers can take part in mapping invasives: [Mapping for Healthy Forests: Vermont - iNaturalist](#).

25. Capture / Browse to Invasive Photo

Verifier note: multiple photos can be attached. Photo quality is best when taken with phone camera app and then uploaded to Survey123.

26. Photo Description

Verifier note: describe approximate location of where each photo is taken from and anything notable.

27. Is there evidence of wildlife impact to the buffer plantings (e.g., deer or beaver browse, vole girdling)?*

Verifier note: if there are wildlife impacts to the buffer planting, describe and take photos. Intent of this question is to highlight if any wildlife prevention is needed for future maintenance of this project.

28. Capture/Browse to Wildlife Impact Photo

Verifier note: multiple photos can be attached. Photo quality is best when taken with phone camera app and then uploaded to Survey123.

29. Photo Description

Verifier note: describe approximate location of where each photo is taken from and anything notable.

30. Indicate if there are any maintenance needs or other follow up notes (e.g., removing sheltering tubes, watering, mowing, replanting woody vegetation, installing beaver protection).

Verifier note: any clear maintenance tasks should be listed. If maintenance activity is unknown, explain issue and need for follow up. Is it an urgent need?

31. Enter any other comments not covered already in this checklist (optional).