



# TDEC Response to Comments on Proposed Revisions to the *Tennessee Rapid Assessment Method (TRAM) for Wetlands*

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## Preface

The Division received approximately 65 technical comments on the proposed revisions to the TRAM document during the public comment period (March 21 – May 23, 2025). Comments were specific, substantive, and knowledgeable, and the division greatly appreciates the time and effort that went into their formulation.

All comments received are provided below, organized by section of the Guidance Document.

Note: Comments formatted in *italics* represent direct quotations from the commenter. Non-italicized comments indicate that the comment was paraphrased for brevity or clarity, or represent clarifying insertions to a direct quotation.

## Introduction

1. **Comment:** *Include scientific citation for TRAM resource value scoring ranges/breakpoints; to dissuade perception of arbitrary scoring assignments, reference documentation/research/calibration report supporting the determination for each scoring range as qualifying a wetland feature within the corresponding resource value.*

**Response:** The authors of the TRAM used their experience and best professional judgement in creating breakpoints to represent the 3 broad categories of wetland value across a simple 100-point scale. Many years of use in wetlands assessment and permitting have tested the scoring breakpoints, and those breaks have never been an issue of contention among professionals. The division is not proposing to change the scoring scale or breakpoints in this revision. Multiple references are provided in Appendix E. The TRAM was adapted from the Ohio Rapid Assessment Method, which uses a similar scale and breakpoints.

2. **Comment:** *Page 1 – State “Exceptional Tennessee Waters” in the table with corresponding acronym, add (\*) in table to connect to notation regarding ETW below*

**Response:** This change will be made in the scoring table, as the first reference in the document to Exceptional TN Waters.

3. **Comment:** *last paragraph, link – Update link to open a functioning webpage.*

**Response:** The link will be updated.

4. **Comment:** *Ensure referenced appendices align with enclosures within those appendices (they currently do not).*

**Response:** The TRAM appendices have been re-ordered in this version. The references to appendices will be updated accordingly.

5. **Comment:** *Page 1 and Page 13 – Cite the rule/regulation that implements the requirement for a wetland delineation and TRAM determination to require concurrence from TDEC.*

**Response:** The requirement for the submittal of wetland quality information is set forth in both statute and rule, and the language of our ARAP General Permits makes clear how that information is necessary to applying both statute and rule. The TRAM is a scientific assessment tool that can be applied regardless of current rule or policy regarding jurisdictional status, etc. As seen in the last legislative session, changes to statute and resulting rules and policies can occur annually, which would require revising the TRAM also with every such change. Therefore, the division prefers to not specifically reference statutory or rule language in the TRAM.

6. **Comment:** *Please clarify whether the “trained wetland professional” referenced in the “Introduction” section (PDF Page 5) is the same as the “third-party wetland professional certification,” or if a “trained wetland professional” is independent of the certification requirement. Additional clarification on this terminology is recommended to be included in the “Glossary” section. Please also provide the specific credentials TDEC will require when analyzing the requirements and whether there will be state-level training conducted by TDEC for those interested in receiving the “trained wetland professional” designation.*

**Response:** The reference to “trained wetland professional” in the Introduction does not equate to “third party wetland professional” as defined in recent legislation. The term as used in the Introduction (“*In most instances, an assessment can be performed at the time of the wetland determination/delineation field visit by a trained wetland professional*”) is only meant to illustrate that someone of adequate training and experience should generally be able to conduct a TRAM during a single field visit, i.e. at the same time as the delineation. To avoid confusion the division will change the TRAM wording to “experienced wetland evaluator”. The division plans to create a state-level training class for 3d party professionals and division staff following issuance of the final version of the TRAM.

7. **Comment:** *Under the “Introduction” section (PDF Page 5), [our organization] recommends providing additional information related to submittal of wetland delineations, jurisdictional status, and TRAM determinations including but not limited to: general process for submitting these requests, information on “third party wetland professional certification” and “trained wetland professional,” timeline for review, and contact information.*

**Response:** The TRAM is a scientific assessment tool that can be applied regardless of current rule or policy regarding jurisdictional status, etc. As seen in the last legislative session, changes to statute and resulting rules and policies can occur annually, which would require revising the TRAM also with every such change. However, a brief paragraph on submittals to the division for approval will be added to the Introduction.

8. **Comment:** *Page 2 (red text) states that the non-HGM TRAM should be used “when assessing emergent wetlands..., and wet meadows or ...”, then page 14 under Instructions for TRAM Assessment states that “Additionally, the non-HGM TRAM may be more appropriate than the HGM in the following scenarios ... 5. Wet meadows 6. Herbaceous wetlands not otherwise classified as active agriculture...” This is confusing to users as the Ground Vegetative Cover variable on page 11 of the Instructions for Measuring Variables in the Assessment Models provides guidance on collecting data for wetlands with “less than 20 percent tree and shrub canopy.” This could include many emergent wetlands creating ambiguity in the guidance. It is suggested that the preferred assessment*

*methodology, HGM or non-HGM, be clarified for herbaceous and emergent wetlands throughout the guidance.*

**Response:** The purpose of the TRAM is to assess the condition of a wetland as accurately as possible. Choosing the appropriate method is important. The variable under the HGM for herbaceous wetlands should only be used if the evaluator believes that it will accurately reflect its condition. This is important since the HGM is weighted towards forested wetlands and does not always reflect the true condition of an herbaceous wetland, if not, then the non-HGM should be used. By making changes explained in response to comments; the HGM and non-HGM are now interchangeable in terms of dominant stratum and all strata in the HGM TRAM scores are weighted equally. However, if a non-HGM TRAM assessment is submitted for a wetland that may be classified in one of the HGM classes, the division will accept the submission of the non-HGM TRAM in that situation, provided the assessment is representative and observations are documented appropriately.

## Instructions for Measuring Variables in the Assessment Models

9. **Comment:** *[Our organization] recommends defining or further referencing the “50/20 rule” in the event non-trained wetland professionals are using these assessments.*

**Response:** A specific reference to the Corps Wetland Delineation Manual for the 50/20 rule is already present in this section. The TRAM assumes a level of expertise and experience with wetland delineation.

10. **Comment:** *[Our organization] recommends providing general depths of O and A horizon soil layers to the "soil organic matter" definition to assist with user decision-making when determining the V8: Soil Organic Matter function.*

**Response:** This metric is intended to be a measure of the “intactness” or undisturbed nature of the soils. Because a wetland may be heavily disturbed, forming on top of fill material, or artificially constructed, the depths of a given horizon may vary considerably. For this metric, unless surficial disturbance of the O or A horizon through topsoil alteration or removal is evident, the score will be 1.0. For information on typical horizon depths by soil mapping unit in a given area, please refer to the following best available data resources:

NRCS Web Soil Survey (<https://websoilsurvey.nrcs.usda.gov/app/>) and

Official Series Descriptions (<https://www.nrcs.usda.gov/resources/data-and-reports/official-soil-series-descriptions-osd>)

11. **Comment:** *“Vegetation Composition and Diversity” assessment description (PDF Page 15) appears to have a typographical error, which the section likely meant to refer to two (2) groups instead of three (3).*

**Response:** The commenter is correct. This assessment description will be edited to reflect the changes in sections V7 of the HGM methods.

12. **Comment:** *Can TDEC clarify whether certain habitat types should be weighted when evaluating interspersions? Additional guidance on assessing this (PDF page 16) will assist with ensuring that habitat types correctly correspond to the degree of interspersions.*

**Response:** All wetland habitat types are weighted equally in the scoring of Interspersions, which is a measure of habitat heterogeneity. While some habitats may be considered more valuable or higher

functioning than others, those functions would be accounted for in other parts of the TRAM scoring.

## TRAM User Guide

13. **Comment:** *Page 13, #5... – Is the guidance that fringe wetlands around reservoirs are not generally considered indicative of low resource value? Is the guidance that fringe wetlands around reservoirs will require a non-HGM TRAM and that an HGM TRAM is not applicable to this resource? Suggest clarifying the guidance here*

**Response:** The draft language in #5 states that fringe wetlands around larger reservoirs *may* not be low-quality, meaning that they cannot be assumed to be low-quality without further investigation. Because the TRAM does not offer an HGM option for fringe wetlands, assessors will have to utilize the non-HGM scoring.

14. **Comment:** *Page 14, Instructions... – TDEC regularly and most commonly accepts non-HGM TRAM forms for all types of delineated wetland resources in support of an ARAP application to accommodate the Division’s review of existing circumstances or required mitigation; recommend this section be revised to reflect the Division’s existing use and acceptance of non-HGM TRAM as common practice verses case-by-case need for HGM TRAM.*

**Response:** The division agrees that non-HGM TRAM scores are the most common submittals. This is not considered inappropriate since most wetlands proposed for alteration are either already historically altered from their natural wetland type and/or the wetland does not fit into a single wetland type category. A clarifying statement will be added in this section.

15. **Comment:** *Regarding the proposed low-resource-value "off-ramp" guidance (TRAM User Guide, pp.13-14), we support this addition, but believe it could benefit from further refinement. To start, we suggest incorporating the acreage thresholds proposed in recent legislative updates directly into the TRAM scoring or screening framework, as this would help clarify eligibility...In general, guidance on how size, origin, and function interact would help ensure more consistent implementation.*

**Comment:** *...we anticipate that additional changes will be required in order to implement Public Chapter 437.*

**Response:** The TRAM is a scientific assessment tool that can be applied regardless of current rule or policy regarding acreage thresholds. As seen in the last legislative session, changes to statute and resulting rules can occur annually, which would require revising the TRAM also with each such change. For this reason the division prefers to not reference the acreage thresholds or permitting requirements directly in the TRAM.

16. **Comment:** *p. 13 – (6)(a) sets forth, as one of the scenarios that is generally indicative of low resource value, “wetlands that formed completely within upland areas solely as incidental features to a man-made alteration or land-use. These wetlands exist where no feature existed prior to the man-made alteration that formed them.” A standardized method of determining whether the feature existed prior to the man-made alteration that formed them is needed, as there is no prescribed way for this to be measured. Currently, consultants use Google maps and GIS to look at historical satellite pictures but those are rare snapshots in time and do not necessarily have a time or date stamp.*

**Response:** The commenter is correct that the determination of whether a feature existed prior to a man-made alteration can be difficult. However, a combination of existing soil maps, soil conditions, older aerials, knowledge of the history of the site, the new wetlands mapping tool, and general

topography should usually be sufficient to make this determination. Current Google maps and other services providing aerial photographs include dates.

17. **Comment:** *p. 14 – ...subdivision (6)(d) includes “tire ruts or puddles created by vehicles or machinery” in the non-exhaustive list of wetlands where no feature existed prior to the man-made alteration that formed them. Wetlands created by machinery needs additional wording to recognize mass grading and large-scale projects that have man-made alterations in areas not ‘close’ to the existing project. Using the term ‘tire ruts’ is too narrow of a term and opens the door for undue scrutiny and subjective opinions.*

**Response:** The terms “tire ruts and puddles” were used in direct response to examples used by the sponsors of the most recent wetlands legislation in committee sessions. However, item 6(d) will be edited to read “Tire ruts, puddles, and other small incidental depressions made by the use of vehicles or heavy machinery.”

18. **Comment:** *While not recommended by our organization...the elimination of the quantitative evaluation requirement for determining a low-resource value wetland must be further vetted... [our organization] requests additional training and/or a supplemental certification be required for professionals seeking to make a "low-resource value wetland" designation to prevent less-experienced practitioners from making a decision that could be a detrimental loss to moderate or high-quality resource value wetlands. While we understand that TDEC may offer a wetland professional certification similar to the Qualified Hydrologic Profession (QHP) certification, it is imperative that the criteria to designate a “low-resource value wetland” is fully understood.*

**Response:** The quantitative requirement for determining a low-resource value wetland has not been eliminated. The proposed new section of the TRAM User Guide is intended only to provide examples of low-resource value wetlands that may be so obvious that a quantitative assessment *may* not be required. The division retains the right of review and concurrence for these non-quantitative assessments, and the applicant must adequately demonstrate the rationale for such a determination. The Introduction states “*Wetland delineations, jurisdictional status, and TRAM determinations must be confirmed by TDEC prior to issuance of any related ARAP permits.*”

19. **Comment:** *In general, we appreciate TDEC’s efforts to improve and clarify the wetland assessment methodologies and attempt to create efficiencies in the determination of low resource value wetlands. However, we respectfully discourage the adoption of the proposed change to forgo quantitative assessments for these wetland types if they do not fit the criteria listed in #4 and #6. [Our organization] recommends this section be provided as a guide to determine artificial/man-made wetland status only, and highlight criteria that could visually verify presence of a low resource value wetland that must be further vetted through a quantitative assessment... To ensure practitioners conduct a quantitative assessment on all natural wetlands but provide clarity on forgoing these efforts for artificial wetlands, TDEC could indicate that “If a wetland matches criteria #4 and #6, then a quantitative assessment is not required.”*

**Comment:** [Our organization] recommends including a section on “Artificial” wetlands that would not require a quantitative assessment.

**Response:** The intent of this new section (composed prior to the introduction of the term ‘artificial wetland’ in statute this session) was to provide some examples of low-resource value wetlands that may be so obvious that a quantitative assessment *may* not be required. The text will be edited to ensure it is consistent with the new statute, including the definition of ‘artificial wetland’. See also response to Comment #17.

20. **Comment:** *6(a) - Overall, this section poses a bit of confusion as the proposed definition of a low-resource wetland is now any area that meets the six (6) criteria found on PDF Page 17 of the TRAM*

*User Guide section and any delineated wetland area that scores 44 or below on the TRAM. However, the six (6) scenarios that are presented indicate that further quantitative assessments are not typically required. A quantitative assessment should be required on wetlands that do not fit the criteria listed in #4 and #6 to verify the low-quality status and prevent the misclassification of other wetland resource conditions (i.e. moderate vs. high). [Our organization] recommends requiring the user to justify the selection of the criteria that would constitute a low-quality wetland through a quantitative assessment score.*

**Response:** The division must disagree. Requiring a quantitative assessment score in every case for features that appear to meet the criteria in items #4 and #6 would defeat the purpose of providing these items in the first place. These criteria are offered as possible examples of wetland features that would likely score <44 in a quantitative assessment. As an example, consider a rectangular stormwater basin, clearly constructed in the last decade. The basin was constructed adjacent to and connected to a jurisdictional stream, and therefore is subject to ARAP regulation. The basin has developed wetland soils and cattails, but soils maps show no hydric soils there historically, and maps do not indicate any such feature there prior to construction of the stormwater basin. In this case it is reasonably clear that the feature is recent, man-made, and can be considered low-quality.

21. **Comment:** *While wetlands degraded from agricultural use are exempt, we request that TDEC clarifies in this section the window of time/trigger in which the exemption no longer applies, or at least point to a statute in which this is described. For example, would this change with a zonation adjustment? Many properties maintain in agriculture use until a developer is ready to pursue/create a master plan, which means wetlands could be impacted by multi-use development even if agriculture is no longer the intent of the property. Clarification on TDEC's rule interpretation related to exemption expiration and requirement of regulation would avoid confusion and provide further understanding into the process.*

**Response:** Item #1 in the User Guide is clear that the agricultural exemption applies to wetlands being utilized for *active* agricultural purposes, and if the land use of the wetlands (not the property overall) changes to non-agricultural, then the exemption no longer applies. The division would not base the application of the agricultural exemption on zoning designation alone. The commenter is correct that the agriculture exemption can be (and has been) used to avoid timely regulation. The general agricultural exemption is found in TCA 69-3-120(g):

*Nothing whatsoever in this part shall be so construed as applying to any agricultural or forestry activity or the activities necessary to the conduct and operations thereof or to any lands devoted to the production of any agricultural or forestry products, unless there is a point source discharge from a discernible, confined, and discrete water conveyance.*

22. **Comment:** *Items #2 and 3 - Wetland dominated by cattails (monoculture) and tall fescue (problematic vegetation) should not automatically constitute a "low-quality" wetland. There are significant hydrological contributions to overall watershed processes despite the presence of minimal vegetation.*

**Response:** The division agrees with the commenter that it is possible that wetland features as described in items #2 and 3 may not always be low-quality (such a feature may still be ETW, for example), but believes they would not often score >44 on a TRAM assessment. Paragraph 4 of the proposed TRAM User Guide language states "*The following scenarios are generally considered indicative of low resource value wetlands, for which further quantitative TRAM assessment is not typically required.*" Furthermore, item #3 states that "*Certain cattail-dominated wetlands may be of a size or location that warrants quantitative measurement with the TRAM to determine resource value*". Any determination of low-quality under Items #1-6 still requires concurrence from the division.

23. **Comment:** *Item #1 - [Our organization] disagrees that an agriculturally impacted wetland automatically be considered "low-quality." Future iterations to the TRAM should consider overall*

*watershed-scale benefits and contributions to watershed processes, despite the degraded condition. Various HGM functions to incorporate in the future could be floodwater storage, groundwater recharge/discharge, water quality improvement, and hydrologic connectivity. While a low-quality wetland rating is generally indicative of low presence of vegetation and habitat support, these features could score higher in sediment retention and moderately in floodwater storage, thereby still providing key watershed benefits.*

**Response:** The wording of item #1 is “*significantly degraded from past agricultural use*”, meaning degraded to the point where a TRAM score of >44 is unlikely, therefore the determination of low-quality is not based on “agriculturally impacted” nor is it automatic. The division agrees with the commenter on the importance of other watershed-scale benefits, but currently lacks the means to quantify or score some of those benefits mentioned (some are already considered in the non-HGM method). We note that wetlands of all quality levels share these watershed-scale benefits.

24. **Comment:** *[Our organization] recommends that ranges be provided for fringe wetlands if size is the determining factor for whether these are of low-quality (i.e., ponds vs. large reservoirs).*

**Response:** Size is not the determining factor. Low-quality fringe wetlands often form around the edges of artificial basins and ponds, and are offered here as examples of wetland features that may not require non-HGM scoring. As with all the items 1-6 in this section, professional judgement and appropriate documentation of determination of low-quality are required.

25. **Comment:** *The introductory section of the TRAM User Guide section (PDF Page 17) indicates that “The Division strongly recommends the submission of photos and other documentation as justification for a low-quality determination.” In order to avoid misconceptions or potential misclassification of wetland value types, [our organization] recommends that the Division requires the appropriate documentation to justify the low-quality designations.*

**Response:** The division agrees with the commenter. The wording will be changed to: “*The submission of photos and other documentation to the division is required as justification for a low-quality determination.*”

## Wetland Status Determinations

26. **Comment:** *Page 16 – Clarify what constitutes interspersions. Providing multiple examples of interspersions would provide clarity.*

**Response:** A definition for Interspersions has been added on page 12 under “Instructions for Measuring Variables...” Multiple graphic examples of interspersions can be found in Figure 1, part 6(b) of the Non-HGM TRAM Method.

27. **Comment:** *Recommend revising the non-HGM TRAM form Metric 5 to include all 13 items and qualifying any wetland as exceptional or to be reviewed for exceptional resource value should any one item be met in accordance with the assessment on Page 16; ensure capture of these ETW wetland resources using non-HGM TRAM.*

**Response:** Not all 13 items in the Wetlands Decision Table can be used by an applicant alone to determine ETW status; some of them require evaluation by TWRA or USF&W. A wetland that is determined to be ETW by any of these metrics would not require further quantitative scoring via the non-HGM method to evaluate it as High Quality. See also response to Comment #31. Please note that a wetland can be both ETW and score as low-quality on the TRAM.

## Exceptional Status Wetlands

28. **Comment:** *Page 17 – This is the only location where “Exceptional Status Wetlands” is used in the guidebook; should this instead reference “Exceptional Tennessee Waters - Wetlands” for consistency with ETW designation?*

**Response:** Both Exceptional TN Waters and Outstanding National Resource Waters are included under this section, thus the choice of “Exceptional Status Wetlands” as the header.

29. **Comment:** *Page 17, last paragraph, link – Update link to open a functioning webpage.*

**Response:** The link will be updated as suggested.

30. **Comment:** *...within the Exceptional Tennessee Waters (ETW) designation section, the criteria rely too heavily on the presence of threatened and endangered species. Many practitioners in the field are not equipped to confidently identify rare plant species. We suggest that the evaluation place greater emphasis on the presence of intact native vegetation instead.*

**Response:** The criteria for designating a state water as Exceptional Tennessee Water are set by rule in 0400-40-03-.06(4)(a) of the TDEC Water Quality Criteria, and those criteria cannot be changed without a rule change (items 1-6 of the Wetland Feature Decision Table). The presence of an ‘intact’ plant community/diversity as a factor to evaluate a wetland as ETW is included under items 8,9,10 and 13 in the Wetland Feature Decision Table.

31. **Comment:** *The board of water quality, oil and gas, does not have a rule specifically setting out the requirements for what constitutes outstanding quality or exceptional Tennessee ‘wetlands.’ As a result, the Department has often defaulted to the requirements generally applicable to exceptional Tennessee waters at Tenn Comp. R. & Regs. 0400-40-03-.06 (a)(7). The criteria at 0400-40-03-.06 were developed primarily to identify streams. The TRAM should identify the characteristics that make the wetlands outstanding or exceptional for each type of wetland (e.g., Riverine, forested, plains). The criteria should be submitted to the board for promulgation of a rule that establishes exceptional Tennessee waters criteria for wetlands as part of the antidegradation rule...Finally, when conducting the TRAM for any wetlands that TDEC considers “outstanding”, the regulatory criteria for each such wetland must be stated by identifying the specific criteria that it used to make that determination.*

**Response:** The characteristics that can be considered in designating a wetland as Exceptional Tennessee Waters are listed in the Wetlands Feature Decision Table on page 18 of the draft, though the commenter is correct that those criteria are not specific for each type of wetland, and the Table is explicit in noting that criteria other than those listed may also be considered. The criteria in rule cited by the commenter apply to all waters including wetlands. If any criteria specific to ETW wetlands are promulgated by the Board, the TRAM will be updated to reflect those changes at that time. The designation of any water, including a wetland, as Outstanding National Resource Waters requires approval from the Board, and cannot be made on the basis of a TRAM assessment.

32. **Comment:** *In identifying place-based criteria (e.g. a state or national park), consider that those government entities can control development of wetlands within those boundaries without the need for any classification, including not allowing any development no matter what characteristics the department considers high, medium or low based on TRAM. Generally, development of areas in lands unsuitable for mining have the designated development opportunities that are allowed in such areas, and do not need to be separately identified as exceptional for that reason.*

**Response:** The purpose of including public lands as a criterion for listing a state water as Exceptional Tennessee Waters is that public lands are publicly owned and therefore any permanent alteration of waters on those public lands, regardless of quality, should trigger public comment. Alterations to resources on public lands are almost always proposed by the government entities that manage those lands. The same concept of public comment applies to Lands Unsuitable for Mining, where (at a minimum) the Federal Office of Surface Mining must be allowed the opportunity to comment.

## Quantitative Rating – Value Added Section

No comments were received on this section of the TRAM.

## HGM Functional Assessments

33. **Comment:** *Currently this geometric mean approach calculations gives trees a lot more credit than other vegetation...More recent research...has shown the herbaceous vegetation can be as much or more effective at retaining nutrients and sediment than trees (young or old). The current equations appear to be giving significantly lower weight to non-tree areas. I would suggest adjusting the equations to provide a more equal weighting, with perhaps herbaceous vegetation having the highest value.*

**Comment:** *...we note that the model currently favors forested wetlands. While most wetlands in Tennessee are indeed forested, this weighting may under represent open wetland types, which are ecologically important and should be fairly scored.*

**Response:** The commenters are correct that forested wetlands generally score higher. The scientific foundation of the TRAM scoring is based upon comparison to specific reference wetlands that were forested. In this TRAM revision the HGM scoring under ‘Vegetative Composition and Diversity’ has been adjusted to weigh native vegetation equally (we have combined Groups 1 and 2 into a single category) so that the distinction is between ‘Native vs non-native’ species cover, but it is still weighted more towards a forested condition. In response to these comments, the division will change the divisors in the HGM Vegetation Composition and Diversity metric to equalize weighting of all native vegetation strata.

34. **Comment:** *Vegetative Composition and Diversity - ...interspersion could also be incorporated into this metric, because habitat diversity is shown to improve and stabilize water quality improvement.*

**Response:** The HGM scoring uses Vegetative Composition and Diversity as a measure of habitat diversity. If there are multiple wetland habitats present and they are large enough, the assessor should score each wetland type separately. The non-HGM scoring uses Interspersion as a measure of habitat diversity and is best utilized when the different wetland habitat types are too small or too intermingled to score separately.

35. **Comment:** *p. 27 – Section V7 regarding Vegetation Composition and Diversity (COMP) divides the species into two groups instead of the three groups in the prior version of the T-RAM. The second group includes plants from the “weedy species list” which is very vague and undefined. There are numerous (hundreds or thousands) of weedy types of vegetation that are standard. Clarity is needed here to better understand what vegetation falls into Group II.*

**Response:** The intent is to reduce the 3 current vegetative groups down to 2 vegetative groups, which are 1) native and 2) non-native. The number of plant species that can potentially fall into either group is irrelevant. A certain level of botanical expertise is integral to completing an HGM Functional Assessment, which is intended and appropriate. Links to authoritative resources on native plants and invasives will be inserted in the TRAM.

36. **Comment:** *Please provide the supporting Excel spreadsheet that assists with the calculation of wetland functions for each of the Hydrogeomorphic Method (HGM) classes.*

**Response:** If the commenter is referring to a fillable spreadsheet that automatically calculates values, the division has not developed one, though we agree it would be useful. Most private firms have developed their own. If and when the division creates such a spreadsheet it will be made available on-line.

37. **Comment:** *Forms in Appendix A under V7: Vegetation Composition and Diversity (COMP): Group 1 refer to "Native Species List" for Riverine and Seasonally Inundated Depressions, but refer to "Reference Standard" for Flat and Slope wetlands. No clarification for these differing terms, differences between these lists, or source for this information is provided in the form or in the Instructions for Measuring Variables in the Assessment Models under Vegetation Composition and Diversity on page 11. Clarification is needed on why Group 1 is calculated using different lists, as well as source information on completing these lists. Additionally, without further guidance the forms lead to the assumption that all dominant plant species not classified as invasive, exotic, crop, or weedy will be assigned to Group 1.*

**Response:** This was an editing mistake and has been addressed in the final version of the 2025 TRAM. The commentor is correct, all native species should be listed in Group 1 and all non-native species should be listed in Group 2.

## Appendix B - Glossary

38. **Comment:** *Lawn, monoculture, and puddle are not regulatory terms and seemingly added to provide clarity on examples of low water wetland features. Please confirm.*

**Response:** The commenter is correct. These are common-use terms added to the User Guide as a quick-reference 'off-ramp' for some features that may not require quantitative TRAM scoring in order for the division to accept them as low resource value features.

39. **Comment:** *the term "manmade", as used in the definition of "incidental and accidental feature" should be further clarified These terms should be further defined in rule subsequent to the recent statutory change, and the TRAM should be further revised once these rules are in place.*

**Response:** This definition was written prior to the recent statutory change. The definition and the wording in item #6 of the TRAM User Guide section will be edited to ensure consistency with the new statutory language.

40. **Comment:** *"Puddle" was included as a new definition in the "Glossary" section, which references "an area holding water." Since "an area holding water" within a wetland shall be considered part of the wetland, [our organization] recommends further defining this as well as a general size range for a "puddle." Some of the terminology is misleading and may lead to overseeing "puddles" that may in reality be a part of a wetland. Further recommendation on the definition of a "puddle" includes: "An area less than 1 square meter and less than 5 centimeters deep holding water as a result of recent*

*precipitation (i.e., within seven days) or irrigation collecting in a depressional or disturbed location, and that lacks the soil or vegetation indicators necessary to meet wetland criteria.”*

**Response:** The suggested definition language is much appreciated. The definition of puddle will be amended to read: *“A small, shallow area, generally less than a few square meters in extent, holding water as a result of recent precipitation or irrigation collecting in a depressional or disturbed location. This depressional or disturbed area must be resultant from vehicle or other human activity or animal traffic and not otherwise a wetland. An area holding water within a wetland shall be considered part of the wetland.”* See also response to Comment #38.

41. **Comment:** *Clarification on the definition of “Subindex Values” would be helpful in the “Glossary” section.*

**Response:** The boxes marked for subindex in the HGM score sheets are merely intended for your convenience in calculations. They are not intended to introduce a new piece of terminology.

## Appendix D – Wetland Assessment Areas

42. **Comment:** *TERA recommends providing additional information/guidance for determining a “representative area” to ensure consistency on Wetland Assessment Area (WAA) segmentation (i.e., based on size, landscape position, vegetation community structure, drainage area, etc.).*

**Response:** Guidance on establishing Wetland Assessment Areas and numerous examples are provided in Appendix D of the TRAM. The division welcomes any specific clarifying language on “representative area”. When in doubt about a representative area, an assessor may contact division staff to confer.

## Appendix E – Non-HGM TRAM Method

43. **Comment:** *Metric 4b. Habitat development. This metric is subjective as written and should be revised to reduce subjectivity and provide clearer guidance on what constitutes each score category (“poor,” “good,” etc.).*

**Response:** The header instructions state that Metric 4b presumes knowledge of reference wetland types and ranges of quality. If the practitioner/evaluator lacks this specific ecological knowledge or familiarity, an off ramp is provided to select ‘good’ or ‘moderately good’ for five and four points, respectfully. The division sees no further issue with this metric.

44. **Comment:** *Does scoring for metric 6a only apply to wetland areas >0.25 acres (with an area of at least 0.1 hectares)? If so, it should be clearly stated in the user guide and on the metric scoring sheet. If this approach has been revised/amended, it should be stated in the user guide.*

**Response:** No, Metric 6a can be applied to any size wetland.

45. **Comment:** *Metric 6b should provide a more detailed description of what constitutes “interspersed”*

**Response:** The definition for Interspersion can be found at the end of the ‘Instructions for Measuring Variables...’ section. A reference to that definition be added to the 6b section of the non-HGM method for convenience. Further clarification will be addressed in future training courses.

46. **Comment:** *Regarding the interspersion metric (p.12), the current number of scoring categories appears excessive. Wetlands in Tennessee typically do not show the same fine-scale habitat partitioning seen in other northern states, and reducing this variable to three categories would likely yield sufficient resolution.*

**Response:** It is the experience of the division that the current 6 categories enable evaluators to consider a wider variety of options and select that which most closely represents the condition of the wetland. Having more options in the scoring creates more opportunity for consistency and accuracy by not forcing scoring to either extreme.

47. **Comment:** *Provide a key for interspersion diagram on Figure 1. It is unclear in Figure 1 what represents species composition vs strata class. The figure is unclear without a key, and while additional description was added in the user guide on page 16, a key would provide clarity and reduce subjectivity.*

**Response:** A key for the colors/hatchings used in the Figure 1 diagrams will be added as suggested.

48. **Comment:** *The scoring matrix for low/moderate/excellent should be included on the NON-HGM TRAM Summary Worksheet.*

**Response:** The overall scoring matrix will be added to the end of the non-HGM summary score sheet as suggested.

49. **Comment:** *Please provide reasoning for not revising the non-HGM vegetation analysis. Currently, biodiversity is measured as low-moderate-high, with no calculations or constants applied. Vegetative diversity is reported within the wetland delineation forms with species lists; however, there is no additional justification for this in the TRAM. Because restoration decisions are also being driven by the TRAM, practitioners need to ensure at least the same level of data is collected to measure “quality” or “restoration potential.” For specific HGM wetland assessment, vegetation is now focused on invasive versus native using a ‘quality index’ to estimate the Suitability Index (SI). Seemingly this is a measure of species composition (native versus non-native) and diversity. However, non-HGM focuses on a broader range of metrics, including extent (coverage of area by vegetative type), diversity (low-moderate-high), invasives (% of area), and vegetative microtopography (standing dead trees, vegetated hummock tussocks, etc.) with interspersion as part of the vegetative assessment. The non-HGM vegetative assessment is extensive and reports on a number of vegetative descriptors in a rapid method. Please explain why the HGM vegetative assessment does not follow the non-HGM assessment. Alternatively, if the specific HGM is the preferred method for TDEC, why not adopt the metrics into the non-HGM assessments?*

**Response:** The HGM is based on reference wetlands (non-HGM is not) which are forested and in later successional stages. This variable for vegetation composition and diversity is an indicator of forest maturity, successional stage, community structure, habitat support and disturbance. It may be possible that some of the non-HGM metrics can be incorporated into the HGM in future revisions. If the evaluator believes that the diversity of the wetland under HGM does not accurately reflect the condition of the wetland then the non-HGM should be applied.

## References

50. **Comment:** *References – include citations to these references within the guidance document to allow for a user to follow the source supporting statements made in the guidance*

**Response:** All references are included in Appendix E; some citations are included in the Introduction section. The division is reluctant to lengthen the document and make it less readable by including frequent citations, and many sections of the document would require multiple citations per paragraph or metric. The TRAM is intended as a manual for practical field implementation, not as a scientific paper.

## Miscellaneous/General Comments

51. **Comment:** *... flood impacts are only tangentially incorporated as a resource value in the TRAM, being based on wetland size. Recent research in watershed hydrologic modeling shows that wetland location in the watershed is also key for a wetland's importance to mitigate flooding, with upland geographically isolated slope wetlands providing some of the greatest peak flood mitigation value.*

**Response:** In the non-HGM method under Hydrology (Metric 3b – Connectivity) more points are awarded if the wetland is located advantageously on the landscape to intercept and hold floodwaters and associated pollutants. The division welcomes any specific suggestions for strengthening this metric or otherwise better incorporate this valuable aspect of wetlands into the TRAM scoring.

52. **Comment:** *...the TRAM gives lower scores to wetlands in watersheds with more development. For water quality improvement, these wetlands are likely providing the most benefit per acre because they are receiving and processing more pollutants.*

**Response:** The commenter is correct that both the HGM and non-HGM methods score wetlands lower if they have less buffer around them, are more physically disturbed, and have more altered hydrologic regimes – all likely features of a wetland located in a watershed with more development. Metric 5 of the non-HGM method awards points for a wetland that “...is a buffer for a headwater stream or...contributes significantly to the water quality of a 303(d)-listed stream and/or surface or groundwater”. The division welcomes any specific suggestions as to how to strengthen this metric or otherwise better incorporate this valuable aspect of wetlands into the TRAM scoring.

53. **Comment:** *smaller, more shallower wetlands are more efficient per acre at improving water quality than larger deeper wetlands. Although all are still effective at doing so. It will take much thought about how to best incorporate these aspects into the calculations, but it could be done without making them too obtuse.*

**Response:** We agree with the commenter on the efficiency per acre of water quality treatment functions. As the commenter suggests, this will require more study in order to quantify into a scalable metric and implement in the TRAM. The division would welcome any research and specific recommendations in this area.

54. **Comment:** *wetland resource values can vary considerably from east to west in the state. The TRAM does approach different wetland types differently, which is great. But it would be good to think about how score thresholds differentiating resource quality may not be equal in west, middle, and east Tennessee. Particularly, when it comes to the importance of trees in a wetland.*

**Response:** The TRAM provides some general scoring differences between west, middle, and east TN wetlands based on acreage (see the ‘Value Added’ section), and items 8-12 in the ‘Wetland Feature

Decision Table' allow the division to score a wetland higher due to additional factors such as rare wetland types or significant ecological value. The division currently lacks the level of reference data by wetland type or ecological subregion to regionalize the scoring accurately but welcomes all such data and suggestions for better regionalization. See also response to Comment #33.

55. **Comment:** *If only one thing could be considered, I feel the most crucial aspect is setting accurate threshold TRAM Score Ranges separating the Resource Value Determination levels. Appropriate thresholds can help buffer against mildly inaccurate quantification of wetland functions (FCs). It is difficult to tell how these thresholds were set.*

**Response:** Please see response to Comment #1.

56. **Comment:** *Recommend formatting the TRAM form into a fillable form in which the Wetland Name (e.g. W001, W002, etc.) auto populates on each page.*

**Response:** The division has not developed a fillable form, though we agree it would be useful. Most private firms have developed their own. If and when the division creates such a form it will be made available on-line. The division can provide the original Word document upon request if you wish to create a fillable form.

57. **Comment:** *Consider adding a link to the TRAM user guide on the top of the TRAM form for easy reference*

**Response:** A link will be provided as suggested.

58. **Comment:** *While we appreciate the Department's effort to improve the T-RAM, due to the complexity of the process it is difficult to determine the impact of the changes without actual results-based testing.*

**Response:** The revisions proposed mostly consist of convenient 'off-ramp' language, clarifications, and minor re-ordering of the document. There have been some revisions to the HGM Vegetation Composition and Diversity metrics, but no substantive changes to the non-HGM scoring. The division therefore does not anticipate the proposed changes to significantly affect the TRAM scoring or the resulting assessment of a wetland feature. The division will closely monitor future submittals to evaluate the effects of these changes, if any.

59. **Comment:** *Please provide clarification on TDEC's interpretation of the TRAM resource value requirements for preservation treatment. In general, we have had practitioners receive feedback on wetlands qualifying for preservation but not applicable for Exceptional Tennessee Water (ETW) status. Further understanding into the preservation vs. ETW determination process and how this relates to resource value status will be helpful in future decision-making for both impact and mitigation projects.*

**Response:** The use of preservation is a permitting and mitigation function, not a function of a TRAM assessment. While clarification on the use of preservation in mitigation planning may be needed, it is not appropriate to address in the TRAM.

60. **Comment:** *[Our organization] recommends TDEC provide a training on use and implementation of TRAM, including a certification process similar to the Hydrologic Determination Training.*

**Response:** The division agrees with the commenter. A training course will be created for use of the TRAM, and made available for agencies, TDEC staff, and the public sector. The division does not plan to make this course a 'certification' requirement at this time.

## Comments Expressing General Support

61. **Comment:** *The current updates from the 2017 version are good, and I see no issues with these minimal updates and clarifications. They generally improve interpretation and use of the TRAM.*
62. **Comment:** *Generally, the non-HGM TRAM scoring system is functioning well and continues to be a helpful tool in our assessments.*
63. **Comment:** *Regarding the proposed low-resource-value "off-ramp" guidance (TRAM User Guide, pp.13-14), we support this addition...*
64. **Comment:** *We appreciate TDEC's efforts to balance the need to appropriately evaluate and regulate Waters of the State with the need for a predictable, timely permitting process*