Sinking Pond State Natural Area, Coffee County, Tennessee

Tennessee Wetland Program Plan

TN Department of Environment and Conservation

Tennessee Wetland Program Plan

2019-2025

Funded by a US EPA Wetland Program Development Grant CD OOD09413

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5-16-19
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Acknowledgements

The Tennessee Wetland Program Plan (TN WPP) is a visioning document designed to outline program goals and objectives the state of Tennessee would like to accomplish in the next six years. This is a voluntary plan built around the US EPA Core Element Framework (CEF) and funded by the USEPA Region 4 through a Wetland Program Development Grant facilitated by Diana Woods of the US EPA.

The TN WPP is the collaborative result of state and federal agencies, a wide array of stakeholders, non-governmental organizations, universities, and consultants. In 2014 TDEC's Division of Water Resources held a summit bringing together stakeholders from across the state to offer the citizens an opportunity to broadly outline the priorities of the TN WPP within the CEF. The results of that summit are presented here in this document.

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Volunteers from the summit who comprised the working groups that developed the outline for this document include, John McFadden, Tennessee Environmental Council; Sally Palmer, The Nature Conservancy; Mekayle Houghton, Cumberland River Compact; Sharon Kington; Dennis Gregg, Obed Watershed Community Association; Nick Biasini, Ducks Unlimited; Dana Wright, Tennessee Clean Water Network; Ben Brown, Rita Thompson, and Brandon Chance with TN Department of Transportation; Tom Roberts, Tennessee Tech University; the Nashville District US Army Corps of Engineers; Rob Todd, TN Wildlife Resources Agency (TWRA), and Robbie Sykes with the US Fish and Wildlife Service (USFWS).

Finally, TDEC would like to thank the numerous citizens, practitioners, and academics that came to discuss and provide suggestions during the 2014 summit.

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Executive Summary

2019-2025 Tennessee Wetland Program Plan

The Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources' Wetland Program Plan (TN WPP) is designed as an implementable and iterative document focused on building aquatic resource program capacity through action.

Tennessee has a wealth of water resources with over 60,000 miles of rivers and streams, more than 570,000 lake and reservoir acres and at least 787,000 acres of wetlands. Protection of these streams, rivers, reservoirs and wetlands requires efficient use of Tennessee's resources.

TN WPP Goals

- Establish a scientifically based monitoring and assessment strategy
- Encourage collaboration with potential partners
- Operate a strong regulatory program
- Promote volunteer restoration projects
- Develop defensible water quality standards for both streams and wetlands

The state of Tennessee considers stakeholder input to be a priority. Therefore, the Division of Water Resources (the Division or DWR) views the need for a Wetland Program Plan as an opportunity to collaborate with other stakeholder groups from private and public sectors to enhance the strength and stability of our program. In 2014, stakeholders from state and federal agencies, universities, and non-profits came together in a day-long summit to map out and prioritize actions for DWR based on EPA Core Elements. Stakeholders identified priorities from a predetermined list proposed by DWR. Each priority and action item connected to the US EPA Core Element Framework. In addition, volunteers formed working groups that built on our short term objectives by outlining specific actions and additional steps we might take to solidify our Core Element foundation.

This document reflects the progress the Division has made to reach the objectives of EPA Core Elements prior to this Plan and the priorities which are the action items of this Plan for the next six years.

Core Element 1: Monitoring and Assessment

Introduction

Monitoring is the systematic observation and recording of current and changing conditions, while assessment is the use of that data to evaluate water resources to support decision-making and planning processes. Wetlands and streams can be characterized both by their condition and by functions. Wetland and stream

Lacustrine fringe wetlands with American lotus Reelfoot Lake State Park, Lake County, Tennessee

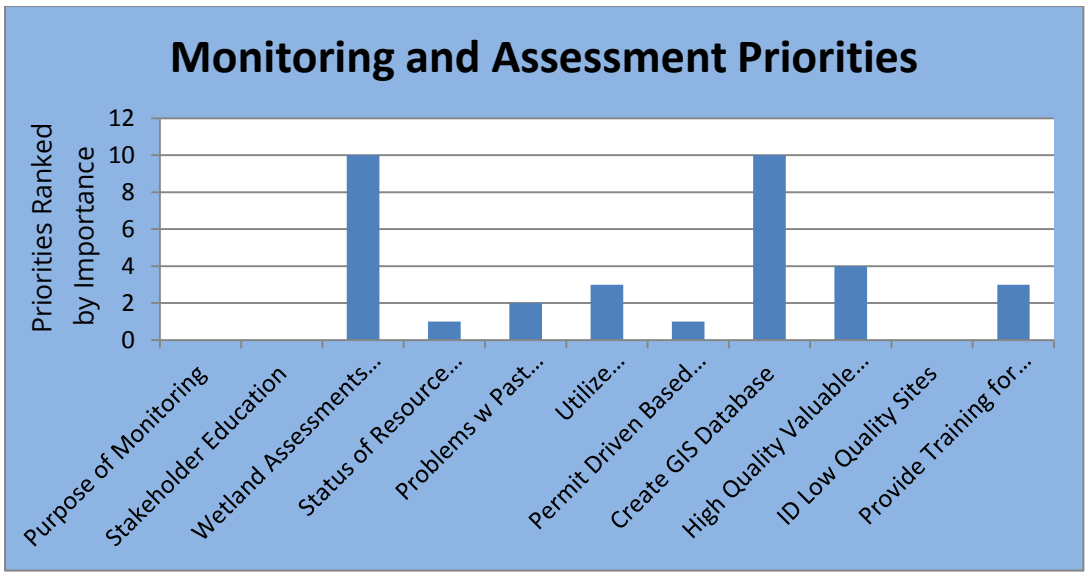
condition is the *current state* as compared to reference standards for physical, chemical, and biological characteristics of these features. Functions represent the *processes* that characterize wetland and stream ecosystems.

Goals

The Monitoring and Assessment Working Group evaluated the goals and objectives of the current grant and reflected on the progress reached over the last decade to map out objectives for streams and wetlands concerning monitoring and

assessment over the next six years. Strategic priorities for improving monitoring and assessment of wetlands focused on evaluating existing resources. The Division goals are to continue to build and refine our **wetlands identification, classification, and assessment** and **tracking methods**, maintain, enhance and develop our **database** capacity for delineated and reference wetland locations and data throughout Tennessee, and **establish baseline data and criteria for high quality and valuable wetland sites**. The primary purpose is to create a foundation and framework for future monitoring and assessment of wetlands. DWR staff will crosswalk these priorities with the CEF objectives to establish our proposed action items for the next 6years.

The Wetlands Working Group also evaluated the goals and objectives concerning streams and identified priorities for creating **functional assessments**, **enforcement and compliance** of impact and mitigation sites, and **solid success criteria**. These goals were accomplished in 2018. This has allowed DWR to refocus monitoring and assessment efforts on streams to validate the tools and success criteria developed during the 2013-2018 WPP cycle. Strategic priorities for improving monitoring and assessment of streams will be focused on validating newly developed tools and protocols. The primary purpose is to create a foundation and framework for future monitoring and assessment of the physical characteristics of streams to complement our water quality and biological monitoring. DWR staff will crosswalk these priorities with CEF objectives to establish our proposed action items for the next 6years.



Monitoring and Assessment Activities

The Division will strive to develop monitoring and assessment programs for wetlands and streams by defining and establishing methods and procedures to determine reference conditions, wetland and stream quality, track ecological and hydrological changes through time, and store data associated with field procedures. DWR staff will seek to establish baseline stream and wetland information and expand on aquatic resource reference data that includes resource extent, condition, function, temporal changes, relative resource value, and trends over time. In addition, other wetland monitoring and assessment techniques created, utilized, and tested by southeastern states within the same physiographic provinces as Tennessee will also be evaluated for use in expanding Tennessee's monitoring program.

Objective I: Develop a monitoring and assessment strategy consistent with *Elements of a State Water Monitoring and Assessment Program for Wetlands* (EPA, 2006) that states and tribes can use to manage wetlands according to their objectives.

Action: The primary goals for wetlands are baseline data collection, storage and analysis, and defining a methodology to inform a future monitoring strategy. The overarching theme is to collect baseline data in order to define "reference condition" in Tennessee from ecological, water quality, and landscape context perspectives for wetlands.

Action: The primary goals for streams are to integrate newly established morphological assessment methodologies into TN's Water Quality and Monitoring Program. Create an annual schedule of assessment, document the results, and update assessment protocols as needed.

Materials used for vegetation monitoring plot sampling

Specific Activities:

- Continue to participate in the EPA's National Wetland Condition Assessment in Tennessee to build equipment capacity, contribute to national wetland data to inform national standards, and learn nationally recognized methods to allow for comparable data to be collected through state efforts [2020]
- Identify high quality reference standard wetlands in conjunction with state, federal, and non-profit partners to use in an ecoregionally based sampling effort [2025]
- Work with partners to locate and document additional reference wetland sites to further calibrate and investigate established wetland assessment methods (e.g. TRAM, TVARAM, Floristic Quality Assessment) for efficacy and sensitivity to regional variation within the state [2020]
- Refine and promote Tennessee reference wetland site selection methodology and a process of reference site identification review to ensure repeatability [2025]

- Locate and collect intensive sampling data from permanent plots in target reference wetland types which will include both common and uncommon wetland communities to aid in reference standard development and encourage wetland species richness and ecological diversity which will correlate with ecological resiliency [2025]
- Identify other internal and external agencies to promote partnerships with to collect stream and wetland assessment data for mutual benefit [2025]
- Adopt a Tennessee wetlands natural community non-HGM classification system and associated reference site data through online publication [2019]
- Evaluate correlation between wetland soils, hydrology, vegetation and quality of condition to refine resource value assessments and mitigation success criteria and methods at reference sites [2025]
- Disseminate reference site data for streams and wetlands through the development of geospatial and/or online tools. [2022]
- Evaluate data sources for geospatial data and models to investigate a landscape scale evaluation and tracking of wetlands in Tennessee [2025]
- Facilitate a mutli-agency team to review existing databases, and investigate the potential for a centralized database of protected lands[2020]
- Facilitate a mutli-agency team to review existing databases, and investigate the potential for a centralized database of wetland features[2020]
- Promote investigations of pollinator assemblages in various wetland ecological systems and associations [2025]

National Wetland Condition Assessment monitoring Mississippi Valley Alluvial Plain, Shelby County, Tennessee

- Establish stream riparian vegetation monitoring and assessment protocol that will complement the TN Stream Quantification Tool (TN SQT) riparian vegetation parameter [2021]
- Obtain baseline data for stream riparian vegetation at established ecomorphological reference sites. [2022]
- Obtain bedform diversity reference data for bedrock channels and Highland Rim systems. [2021]
- Evaluate hydrology parameters and expand measurement methods in the TN SQT. [2020]
- Promote potentiometric surface mapping in reference stream valleys to gain a better understanding of groundwater hydrology contributions and implications for climate resiliency. [2025]
- Refine rapid ecomorphological monitoring methods for inclusion into established Water Quality Monitoring Program. [2022]
- Coordinate with DWR Watershed's unit to work on incorporating ecomorphological monitoring during assessment cycle [2023]
- Establish a formalized stream ecomorphological methodology for use in the Water Quality Monitoring Program that is a companion to the methods outlined in the TN SQT. [2024]

<u>Objective II:</u> Implement a sustainable monitoring program consistent with the streams and wetlands monitoring strategy

Action: The primary goal for wetlands in Tennessee will be to build a knowledge base, build a stakeholder and partner base, consistently store collected data for future use, and evaluate potential methods for efficacy and effort level in order to be prepared when a wetland monitoring program can be fully implemented.

Action: The primary goal for streams in Tennessee will be to develop a system for storing collected ecomorphological data for future use. Establish reference data sets for stream riparian vegetation and bedform of carbonate dominated channels and validation of the newly developed TN SQT assessment methods

and develop training. Establish additional ecomorphological reference sites and build a reference data set with partners throughout the state.

Specific Activities:

- Establish internal agency focused wetland trainings on wetland delineation skills, state regulations, and wetland resource value determination [2020]
- Continue to populate and enhance functionality of a database of reference wetland site data and location information in conjunction with national standards that will be useable by other agencies or entities that work with wetlands in Tennessee [2025]
- Continually identify sites and accept outside site suggestions that can be repeatedly sampled as part of State, Regional, and National monitoring networks [2025]

Pollinator on wetland dependent netted chain fern Hampton's Crossroads, White County, Tennessee

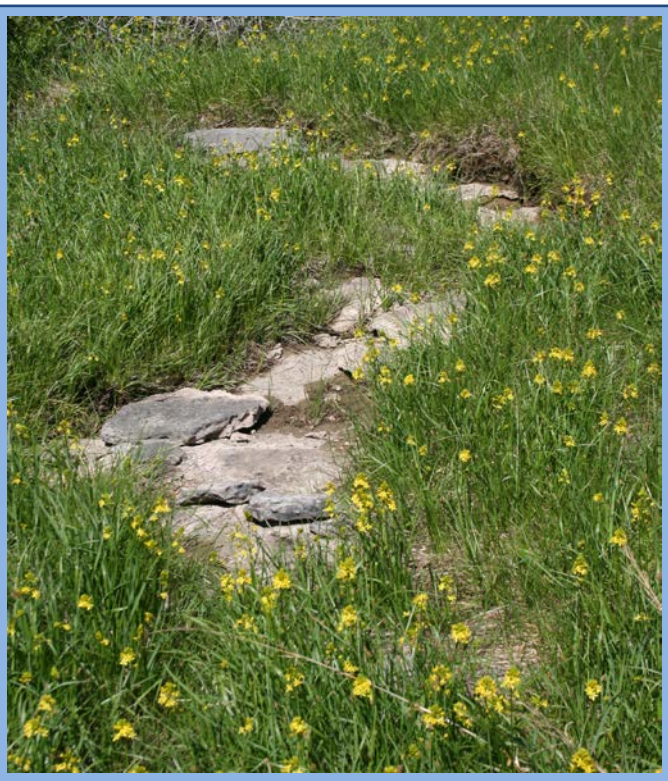
USFS Cherokee National Forest rare Southern Appalachian Seepage Wetland "Bioblitz" biological inventory with TDEC, Nature Conservancy, and TWRA Shady Valley, Johnson County, Tennessee

- Refine the assignment of wetlands to a categorical scale such as "good", "fair", or "poor" to qualify wetland condition and assess the appropriate mitigation based on the condition and resource value determination [2025]
- Continue to participate in the EPA's National Wetland Condition Assessment and other state and federal wetland inventories to build data and capacity [2020]

- Encourage the consistent documentation of locational/spatial information for all wetlands delineated through permit applications and investigate geospatial methods for tracking wetland area along with location [2025]
- Evaluate and/or develop tools to quantify landscape condition including isolation, connectivity, forest cover, and land use category [2020]
- Investigate modeling of wetland locations and condition based existing geospatial datasets (e.g. Heritage species data, NRCS hydric soils, National Elevation Data or LiDAR, National Wetlands inventory data). Partner with other organizations to investigate modeling efforts [2025]
- Validate the TN Debit Tool functional loss ranges on impact sites through monitoring and assessment of permitted activities [2024]
- Validate functional lift of all known historic compensatory mitigation sites with the TN SQT [2025]
- Evaluate all ecoregion reference sites for ecomorphological functions using newly developed assessment methods [2025]
- Develop ecoregionally based reference data on bedform metrics in bedrock dominated channels [2023]
- Develop ecoregionally based reference data sets for riparian vegetation [2021]
- Develop ecoregionally based reference data sets for hydrology [2025]
- Train regulatory community on how to use the newly developed TN SQT for monitoring and assessment of impact sites and compensatory mitigation sites. [2020]
- Establish a georeferenced database of all ecomorphological reference sites [2021]
- Encourage the consistent documentation of locational/spatial information for all ecomorphological reference streams [2023]

<u>Objective III</u>: **Incorporate monitoring data into agency decision-making**

Action: The primary goal for streams and wetlands in Tennessee will be to identify aquatic resource stakeholders within and outside of TDEC and actively disseminate products, data, and information to those stakeholders through trainings, meetings and other appropriate venues to encourage the use of data for decision making, collaboration, consistency and sustainability as well as learn from other stream and



Nashville Basin Limestone Glade and Woodland wetland with state listed endangered Yellow Sunnybells Cedars of Lebanon State Park, Wilson County, Tennessee

wetland stakeholders to further refine TDEC methodology. TDEC will also begin to use available data to analyze gaps in stream and wetland protection in Tennessee.

<u>Specific Activities:</u>

- Establish internal agency focused wetland trainings on wetland delineation skills, state regulations, and wetland resource value determination [2020]
- Establish internal agency focused stream ecomorphological trainings to enhance skills, enforcement of state regulations, and stream resource value determinations [2019]
- Implement the use of assessment data to support regulatory permitting and mitigation decisions and continue the collection reference site data to support mitigation targets and inform the Interagency Review Team when reviewing projects [2019-2025]
- Investigate wetland and stream mitigation bank service area coverage gaps and solutions [2020]
- Evaluate data storage and processing methods for long term storage through existing databases and RDA's [2020]
- Refine the assignment of wetlands to a categorical scale such as "good", "fair", or "poor" to qualify wetland condition and assess the appropriate mitigation based on the condition and resource value determination [2025]

- Facilitate a multi-agency team to review existing databases, and investigate the potential for a centralized database of protected lands[2020]
- Facilitate a multi-agency team to review existing databases, and investigate the potential for a centralized database of wetland features[2020]
- Refine data storage and data dissemination of reference stream and wetland sites to correlate with Exceptional Tennessee Waters and enhance data collection capacity [2025]

Current Monitoring and Assessment Tools:

Wetland assessment is currently conducted by DWR in support of the Anti-degradation Rule (0400-40-03-.06). Applicants applying for coverage under an Aquatic Resource Alteration Permit (ARAP) to alter wetlands must submit a wetland delineation completed by a wetland scientist utilizing the Unites States Army Corps of Engineers 1987 Wetland Delineation Manual and the applicable Regional Supplement. The Division may then conduct an assessment of the wetlands resource using the Tennessee Rapid Assessment Methodology (TRAM) for wetlands that was developed and refined through past and current Wetland Program Development grants. This assessment is used as a rapid analogue to determine the condition of the resource relative to a reference standard. Information on the condition of the wetland is then used to evaluate a proposed impact justification and assess mitigation needs such as the priority of proximity. Wetland Program Development Grant funded training has provided cursory training to TDEC field office staff, who verify wetland delineations and are the first to observe field conditions at potential impact sites, in both wetland delineation methods and proper use of the TRAM. Due to high turnover and a predominance of stream ecology backgrounds additional more intensive trainings would be extremely valuable for wetland assessment moving forward.

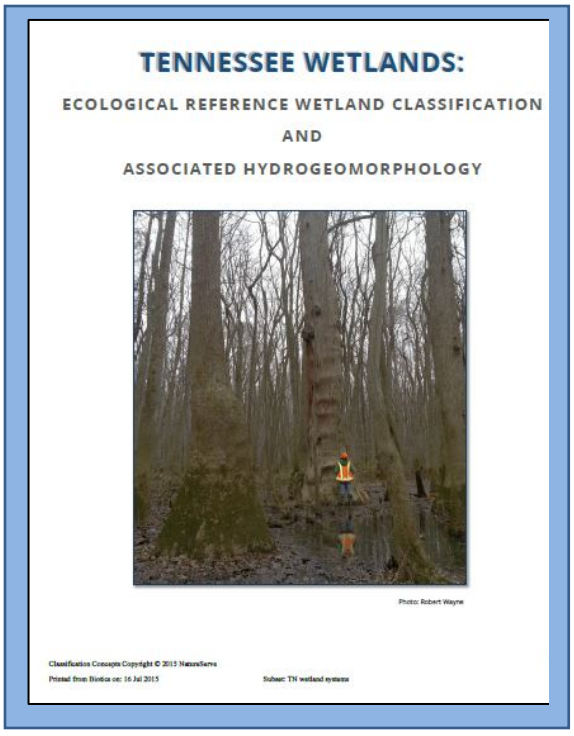
DWR is using the Tennessee Rapid Assessment Methodology (TRAM), developed through a Wetland Program Development Grant by Tennessee Technological University, to rapidly determine the condition of a wetland in the field based solely on hydrogeomorphic classification (Appendix 1 -TRAM Document). Classifying the wetland using the hydrogeomorphic (HGM) approach has the additional benefit of contributing to a thorough understanding of how landforms and hydrologic regimes interact to create and maintain wetlands, and to the functions the wetland performs. The procedure was designed to be used by regulatory personnel and wetland consultants in the Section 401/404 permitting process for regulated projects reflecting the wetland condition at the current point in time. Data from reference sites collected using standard HGM methods are used as the standard against which other wetlands are compared using this method which produces a quantitative score on a scale of 1-100, representing relative condition. The reference sites used to develop this protocol are currently located throughout central and western Tennessee. Most of the sites are located on public lands at places such as Arnold Air Force Base, Hatchie National Wildlife Refuge, Black Swamp Wildlife Management Area, and numerous state parks, natural areas, and wildlife management areas. The reference sites are few, are all forested wetlands, and these sites were not selected based on ecoregion. Despite the paucity of reference standard baseline data collection locations this assessment method has proven to be very rapid, effective and accurate but still only captures a broad overview. The TRAM has been proposed by the IRT and Army Corps of Engineers to use to determine functional lift and restoration targets, however, this method was not designed for this use and is meant to be a "snapshot" of current condition based on on-site and external influences and variables. This highlights the need for baseline data that can be used for restoration targets and assist with functional lift predictions for mitigation credit

National Wetland Condition Assessment soil sampling East Gulf Coastal Plain Northern Seepage Swamp, Henry County, Tennessee

generation. These data can be collected and analyzed with the help of stakeholder partners as part of the monitoring and assessment objectives of TDEC.

Previous Wetland Program Development Grants provided DWR with needed wetland identification and rapid assessment training to field staff, produced guidance and tracking for mitigation projects, created a database to track wetland permitting data, and developed a protocol for identification of as well as began documenting wetlands that qualify as Exceptional Tennessee Wetlands in accordance with TDEC rules.

TDEC seeks to further establish capacity, methods and procedures necessary to monitor, compile and analyze data on the current and target conditions of wetlands in Tennessee and, in so doing, expand the reference site calibration for the TRAM as well as determine appropriate conservation priority and restoration target data for the full diversity of wetland ecological types in Tennessee. Data collected will be used to calibrate the Tennessee wetland assessment of 303d waters and to determine what assessment methods are most appropriate for the various regulatory functions performed by TDEC. Establishment of a standardized ecological assessment methodology based on the NatureServe National Vegetation Classification System based dichotomous key to and descriptions of the *Reference Wetlands of Tennessee* 1st draft developed through the current Wetland Program Development Grant to complement the HGM methodology will aid in the collection of a robust and ecoregionally accurate data set as well as collaboration with and the contribution of other governmental and non-governmental organizations (Appendix 2 – TN Reference Wetlands key and ecological classification). When a wetlands assessment method has been accepted by TDEC and appropriately calibrated the Division will collect wetland monitoring data on an established schedule. Improved integration with other applicable programs



will provide more comprehensive water quality protection through monitoring and assessment along with regulation, restoration and protection, mapping, planning, and education/outreach.

TDEC intends to implement the three-tier framework for wetlands monitoring and assessment suggested by EPA concurrently and over time. These are described in the Core Element Framework as follows:

Level 1 or landscape assessments rely entirely on GIS data, utilizing landscape disturbance indices to assess wetland condition. This approach involves characterizing the lands that surround wetlands through the use of landscape metrics (e.g., percent forest cover and land use category). Assessment results can provide a coarse gauge of wetland condition within a watershed.

Level 2 or rapid assessments use relatively simple metrics to assess wetland condition. They are customarily based on the readily observable hydrogeomorphic and plant community attributes of wetlands. They also can employ the use of a "stressor checklist." Rapid assessment methods typically produce a single score that describes where a wetland generally falls along a gradient of human disturbance and with respect to ecological integrity.

Level 3 or intensive site assessments provide a more thorough and rigorous measure of wetland condition by gathering direct and detailed measurements of biological taxa and/or hydrogeomorphic functions. Two examples of the type of indicators that might be used in Level 3 assessment are plant composition/structure and soil organic matter content.

Monitoring well and IRIS tube soil hydrology study NRCS study site, Coffee County, Tennessee

Assessment activities at all three levels will be effectively integrated with other surface water monitoring efforts such as stream or habitat assessments, providing a more integrated understanding of watershed health and a foundation for developing more effective management approaches. TDEC's focus during the initial stages of developing a monitoring and assessment program is to set standards for assessment comparison by finding a robust set of reference locations and to collect baseline data through a combination of Level 2 and Level 3 assessments. Data collected in databases developed to store these data will be georeferenced and can be used to contribute to a broad Level 1 assessment in the future when the baseline data, software, and staff or contractors are available to TDEC through grants or collaborations. Also sampling and developing data storage methods will create a foundation for future assessment work as the program grows. Meanwhile, other programs such as the Tennessee Wildlife Resources Agency State Wildlife Action Plan analyses can be used as a surrogate for a Level 1 tier activities specific to wetlands and water resources. Evaluation of the potential data sources is part of the TDEC Level 1 objectives.

Core Element 2: Regulatory Tools

Introduction

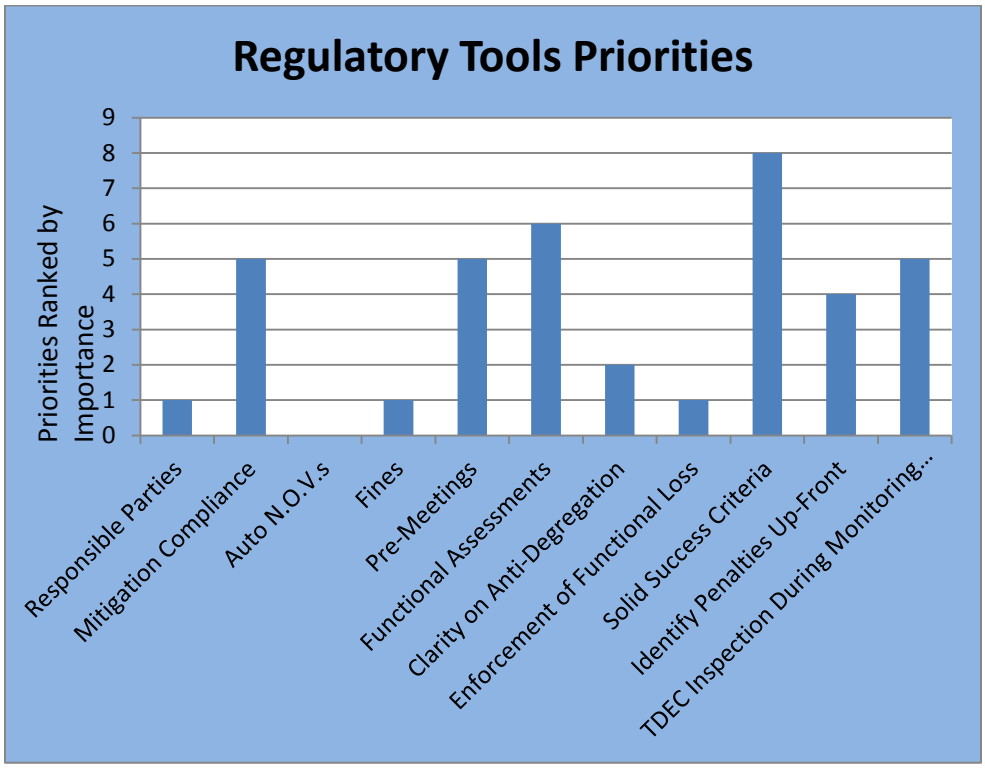
The Division has a long history of resource protection in the state. Throughout the past forty years the Division has worked to protect and ensure the future of water

resources in Tennessee. The Water Quality Control Act was the initial step in that protection. The purpose of the act is to recognize waters of the state held in public trust, exert legal authority over those waters, and restore and maintain those waters. Through the Act and supporting rules, TDEC takes an active role in regulating aquatic resource impacts. The Division manages and protects these resources, in part, through permitting (Aquatic Resource Alteration Permits and 401 Water Quality Certification). These regulatory tools give the state authority to require compensatory mitigation and ensure “no net loss” of resources and resource value occurs.Current and past EPA WPDG efforts have enabled the state to build on and broaden our regulatory scope. Recently the Division recognized the need for updated stream and wetland compensatory mitigation guidelines along with enforcement and compliance of mitigation sites. These program deficiencies are a central theme of our action steps for this Core Element.

Goals

The Regulatory Tools working group evaluated the goals and objectives of the current grants and reflected on the progress reached over twenty years to map out objectives for streams and wetlands concerning regulatory tools. The strategy for building on and refining our current regulatory tools focuses on compensatory mitigation for streams and wetlands. The working group placed the highest priority on improving compensatory mitigation by **developing solid, regionalized success**

criteria. These success criteria should be built into **functional assessments**. Finally, the working group ranked mitigation follow up as a priority. **Compliance on mitigation sites** was important, including developing protocols for **site inspections during the monitoring phase**. These priorities will be cross walked with Core Element objectives to establish our proposed action items for the next 6 years.



Definition of the jurisdictional scope of the program: The State's regulatory program has a dual implementation strategy. TDEC operates a CWA Sect. 401 Water Quality program that requires federal permits and licenses to receive certification from TDEC before receiving CWA Sect. 404 coverage and the state has developed laws requiring ARAP permits for impacts to aquatic resources. State regulatory tools concerning alterations to streams and wetlands often extend state review to resources and activities not regulated under the Clean Water Act. TDEC jurisdictional coverage of aquatic resources is clear and concisely outlined in these rules for both streams and wetlands.

Administration of regulatory activities: The Division outlines regulated activities, limitations for authorization, and regulatory requirements for permit coverage through a series of rules, policy, and guidance documents. These documents include Water Quality Criteria (designated uses, water quality standards, and anti-degradation), Aquatic Resource Alteration Permits (ARAP), and Stream Mitigation Guidelines. To identify regulated aquatic resources applicants are required to determine the jurisdictional status of a feature. For streams, applicants use the Hydrologic Determination methodology. For wetlands, they must submit a wetland delineation completed by a wetland scientist utilizing the United States Army Corps of Engineers 1987 Wetland Delineation Manual and the applicable Regional Supplement.

Wetland violation leading to successful corrective action Clifty Bog, White County, Tennessee

Currently stream and wetland impact data is stored in Waterlog, the Division's assessment tracking software. Sites for each impact to waters of the state (e.g. streams and wetlands) are documented and data on

hydrologic determinations for these resources are also documented. In 2015 the Division reissued our Aquatic Resource Alteration General Permits. These permits effectively outlined new thresholds for de minimis degradation. Coverage under a General Permit does not require mitigation. The Division also improved the language of specific permit conditions, added to the list of authorized activities, and coordinated with stakeholders on determination of these limitations.

Our Wetland Program Development Grant enabled the Division to critically evaluate our program requiring compensatory mitigation, guidance for mitigation,

Eastern Highland Rim Prairie and Barrens wetland May Prairie State Natural Area, Coffee County, Tennessee

assessments used to determine credits and debits, and how this aligned with our permitting rules. We have been working diligently to improve all aspects of compensatory mitigation. Over the past two years the Division has been working to create regulatory updates to compensatory mitigation. New thresholds have been established for when mitigation is needed and where mitigation should occur. The Division has recently issued guidance for cumulative impacts in a Common Plan of Development. An in-system mitigation policy has been developed. We have also been working closely with the IRT for multi-agency consensus on compensatory mitigation requirements and have begun to gather data for success criteria regionalization efforts.

Evaluation, inspection, and enforcement of regulatory activities to ensure environmental results: Our well-developed program works to re-evaluate process, limitations, agency coordination, guidance and regulation on a regular basis. We are currently in a cycle of regulatory update needs. TDEC plans to compose a comprehensive Application Guidance Document that details all of the current limits and procedures that have been updated in the past year. We are working to develop comprehensive policy documents that outline de minimis threshold limitations in special situations, clarify how Anti-degradation applies to stream and wetland impacts and modernize our compensatory mitigation guidelines. Finally, it is critical that the division make these documents accessible to the public, train TDEC employees on how to apply these regulatory tools, and officially implement them in the permitting process.

Follow-up for these regulations, enforcement, inspection, and compliance of sites, is also a focus of our regulatory program. The state has room to improve on the

overall effectiveness and public perception of our mitigation compliance requirements. We plan to focus on compliance monitoring and enforcement efforts to ensure site performance and bring underperforming sites into compliance. The division views this aspect of mitigation a critical piece of an effective mitigation program. Further, these efforts help to support the goal of "no net loss" of aquatic resources and deter permit violations from the added risk of enforcement.

Regulatory Tools

Objective I: **Clearly define the jurisdictional scope of the program**
Action: DWR has recently updated our application and permitting limitations. New guidance for the public, Division staff, and other agencies will provide clear guidance on how to identify jurisdictional waters, what activities require authorization, and thresholds for compensatory mitigation.

Schedule of Achievement: 2025

Specific Activities:
1. Develop an application guidance document that outlines specific regulated activities, including activities covered under general and individual permits, de minimis thresholds, Anti-degradation evaluations, and when compensatory mitigation is required. This document will be accessible online through TDEC's website [2020]
2. Release and implement updated stream mitigation guidelines [2019]

Objective II: **Administer regulatory activities efficiently and consistently**

Action: TDEC has recently re-evaluated the 401 regulatory processes and determined there was a high need for permit consistency. The division is working on formalizing a suite of policy documents that outlines a clear and effective set of criteria for review and assessing permits, determining cumulative impacts, requirements for compensatory mitigation, and when impacts are required to be offset in-system.

Schedule of Achievement: 2025

Specific Activities:

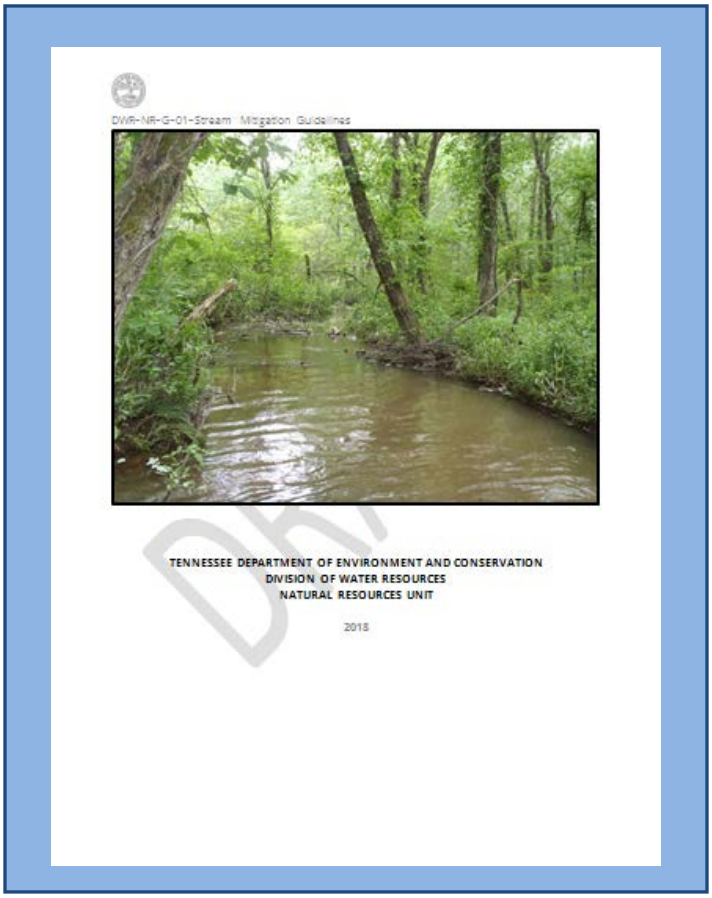
- Continue to evaluate and create policies in collaboration with federal agencies concerning authorized impacts that will provide regulatory consistency. [2025]
- Investigate a standardized and defensible water resource assessment unit and scale statewide for use in assessing cumulative impacts on a sub-watershed scale 9e.g. partnering with USGS to delineate HUC-14 scale waterbodies [2025]
- Establish internal agency focused wetland trainings on wetland delineation skills, state regulations, and wetland resource value determination [2020]

Action: State programs often work with local communities for economic development, improve system wide water and wastewater infrastructure, and address issues like flooding. Frequently, the permitting process becomes a regulatory hurdle for communities needing assistance. Lack of early coordination among agencies, programs and industry groups can slow down the process. The division aims to coordinate with state programs to ensure a streamlined permitting process for applicants and ensure appropriate protection of aquatic resources.

Schedule of Achievement: 2025

Specific Activities:

- Continue collaboration with State Revolving Fund, NPDES, and other units within TDEC to map out the roles and responsibilities of these units within the Division of Water Resources for permitting activities and coordinate with other agencies and departments including Economic and Community Development, National Resource Conservation Service, Tennessee Valley Authority, U.S Army Corps of Engineers and others. This coordination will improve the timelines and permitting process for applicants. [2023]



- Evaluate how projects move through the department and build a framework for a streamlined permitting process with transparency. This transparency will highlight what DWR programs are authorizing and how those activities have consideration for, and compliment the rules and guidance of all State of Tennessee programs. [2023]

Action: DWR will update our stream compensatory mitigation guidelines. Compensatory mitigation has been a requirement to offset losses of aquatic resources from permitting activity for nearly 20 years. The division established stream mitigation guidelines in 2004. Recent advancement in restoration science, the 2008 Federal Compensatory Mitigation rule and need for a significant improvement in success of mitigation sites highlights the needs for guideline updates.

Schedule of Achievement: 2019

Specific Activities:

- Investigate pre and post impact effects for specific categories of impacts to continue to validate the TN Debit Tool and establish no net resource loss thresholds [2025]
- Develop an application guidance document that establishes thresholds for appreciable loss of water resource value and *de minimis* degradation by activity. [2020]
- Continue to work with the TN IRT to implement financial assurance documentation on mitigation projects. [2025]
- Continue to work with the TN IRT to implement and enhance recently developed checklists and guidance for minimum requirements for review criteria concerning compensatory mitigation. [2025]
- Continue to work with the TN IRT to implement and enhance Stream and Wetland Mitigation Guidelines, incorporating documents developed with the IRT. [2025]
- Incorporate potential updates for reference standards in the TN SQT [2020]
- Develop specific criteria for Permittee Responsible Mitigation that is required at the state level only through the 2019 Stream Mitigation Guidelines [2019]
- Refine and regionalize mitigation performance standards and success criteria through stream and wetland reference site data collection and analysis [2020]
- Develop performance standards on compensatory mitigation sites for stream hydrology [2025]

Action: The division currently tracks all permits requiring coverage using an Oracle platform. We plan to improve our database format for inputting and tracking compensatory mitigation projects. These updates will enable real-time tracking and provide a broad view of historic activities.
Schedule of Achievement: 2020

Specific Activities:

- Develop a geospatial database cataloging protected lands including mitigation sites 2006- present [2020]
    - Continue to convert site information entered from Nov of 2014-present into a mitigation application on the Division's Oracle database.

This will allow for a comprehensive review of mitigation sites and monitoring requirements. [2019]

- Track historic sites to determine if condition and acreage associated with mitigation are successful; validate conditions using recent assessment methodology. Identify sites with inadequate property protection instruments to provide opportunity to external partners for long-term oversite or protection. [2021]

- Update Waterlog to improve state-facing and publicly accessible tracking system for impacts and mitigation. [2019]

<u>Objective III</u>: Evaluate Regulatory Activities to Ensure Environmental Results

Action: TDEC proposes to improve our evaluation of regulatory activities to ensure proper implementation of permit conditions and successful environmental results.

Cobalt crayfish in wetland Montgomery Bell State Park, Dickson County, Tennessee

Schedule of Achievement [2025]
<u>Specific Activities:</u>

- Continue to improve success criteria for compensatory mitigation sites using regionalized success criteria stratified by ecoregion and covering multiple stream functions [2020]
- Improve internal monitoring review consistency by generating functional oracle application to track pending report review. [2019]
- Design data management tool that will automatically track mitigation monitoring report due dates and issue auto-generated reminder emails to permittees for improved compliance tracking. [2020]
- Administer and regularly update publicly accessible tracking system for impacts and mitigation [2020]
- Investigate incorporating mitigation data into a public geospatial data viewer.

- Investigate the development of a public interface application which allows public involvement by reporting potential violations. [2020]
- Develop internal guidance document(s) to establish standard activity based mitigation success criteria and permit conditions [2021]
- Develop internal guidance document(s) to clarify processes in permittee responsible mitigation site inspection, permit compliance and enforcement actions. [2019]

Action: Implement enforcement and compliance mechanisms to evaluate mitigation and monitoring compliance, and administer an enforcement protocol to ensure appropriate aquatic resource protection.

Schedule of Achievement [2025]

Specific Activities:

- Train environmental field office staff of mitigation inspection methods for permittee responsible mitigation sites. [2019]
- Coordination with Environmental Field Offices to implement post-construction site monitoring inspection checklist. [2019]
- Conduct pilot projects for mitigation sites on year-one and final-year of monitoring to measure implementation and result of permits. [2021]
- Utilize monitoring and assessment data to examine which conditions or performance standards need additional focus during monitoring period to avoid enforcement actions. [2021]
- Schedule routine inspections and appropriate enforcement mechanisms to deter permit violations. Track number of mitigation sites visited, percent of monitoring reports reviewed and percent of monitoring reports submitted to prioritize enforcement actions and populate compliance status to ensure environmental results. [2021]
- Improve compliance and enforcement consistency by identifying defensible enforcement pathways and procedures, and coordination division's enforcement unit. [2020]
- Investigate new remote monitoring methods such as the use of unmanned aerial vehicle (UAVs) for mapping and data collection of mitigation sites. [2020]

Action: Ensure impact assessments and mitigation crediting lead to replacement of aquatic resources with similar structural, functional or condition attributes. The division has a goal of adopting and regionalizing functional assessments as part of our compensatory mitigation guidelines for streams and wetlands.

Schedule of Achievement [2025]

Specific Activities:

- Continue to participate in the EPA's National Wetland Condition Assessment in Tennessee to build equipment capacity, contribute to national wetland data to inform national standards, and learn nationally recognized methods to allow for comparable data to be collected through state efforts [2020]
- Identify high quality reference standard wetlands in conjunction with state, federal, and non-profit partners to use in an ecoregionally based sampling effort [2025]
- Work with partners to locate and document additional reference wetland sites to further calibrate and investigate established wetland assessment methods (e.g. TRAM, TVARAM, Floristic Quality Assessment) for efficacy and sensitivity to regional variation within the state [2020]
- Refine and promote Tennessee reference wetland site selection methodology and a process of reference site identification review to ensure repeatability [2025]
- Work with the IRT to investigate methodologies to determine wetland and site restoration potential [2025]
- Regionalize additional functional assessment parameters based on available data and needs; this will be an iterative process as statewide data becomes available. [2019-2025]]

- Analyze data collected at ecomorphological reference sites for habitat, macroinvertebrates, and physiochemical field parameters. Determine what parameters may correlate. [2020]
- Develop database of baseline data on stream ecomorphological reference sites to inform and improve success criteria for compensatory mitigation. [2020]
- Locate and collect intensive sampling data from permanent plots in target reference wetland types which will include both common and uncommon wetland communities to aid in reference standard development and encourage wetland species richness and ecological diversity

Action: Measure environmental results.

Schedule of Achievement [2025]

Specific Activities:

- Validate stream ecomorphological sampling methodology for evaluation of sites for ecological success. [2019-2025]
- Start tracking of sites monitored and establish level of compliance. [2019]
- Develop a mechanism to track increases/decreases of monitored sites compliance levels over time, i.e. are more sites or less sites in compliance over time [2020]
- Improve TDEC's enforcement of aquatic resource protections; create a framework of action steps for permit writers to take when a violation may have occurred. [2020]
- Establish a dedicated position or 50% time of employee dedicated to enforcement and compliance of permittee responsible mitigation projects [2023]
    - Outline prioritized sites
    - Develop E & C site visit forms
    - Establish protocols
    - Establish benchmarks for quantity of sites visited annually
    - Establish bench marks for EFOs that is dedicated to enforcement and compliance inspections on minor mitigation projects
    - Establish baseline timeframes for project compliance

Core Element 3: Volunteer Restoration and Protection

Introduction

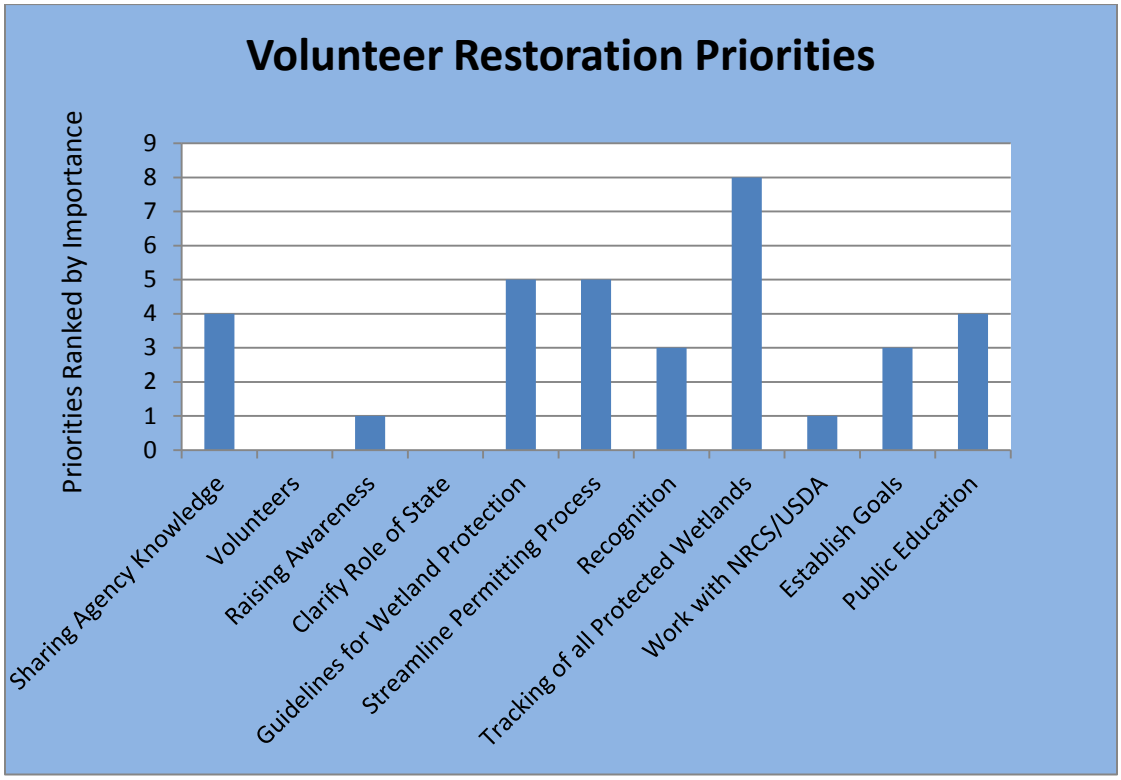
The EPA definition of wetland restoration is the manipulation of a degraded wetland to improve the physical, chemical and/or biological characteristics such that the system may return to its natural functions. These systems help limit flooding in communities, contribute to and moderate groundwater for base flow, help control erosion, and assimilate nutrients. Voluntary efforts to restore and protection these important resources are those that the division promotes outside of statutes or regulations. These volunteer protection, re-establishment, and rehabilitation sites help stem the loss of aquatic ecosystems and create a gain in natural spaces. These efforts are also beneficial in developing public/private partnerships with agencies that share mission goals of resource conservation. Wetland protection can aid in state education and outreach goals on the benefits of wetlands. Volunteer efforts to protect natural wetland systems have the added benefit of providing critical habitat and breeding grounds for fish, birds, amphibians, and a host of other organisms. Proper wetland restoration can return targeted plant communities to historic ranges. These efforts can in the protection of state species listed as threatened, endangered, and deemed-in-need of management.

TWRA and TDEC Division of Natural Areas joint Mill Creek crayfish stream survey with volunteer partners Nashville, Davidson County, Tennessee

Goals

The division proposes to clearly and consistently define volunteer restoration and protection goals throughout the state and track the progress of these resources over time. We plan to create a distinct policy of protection and restoration for Tennessee wetlands. TDEC plans to accomplish this through agency partners will collaborate with TDEC to

develop guidance, **GIS overlays**, and **priority areas for wetland protection**.



Volunteer Wetland Restoration and Protection

<u>Objective I:</u> Clearly and consistently define restoration and protection goals throughout state or tribal territory.

Actions: Establish goals that are consistent or compatible across relevant agencies.
Schedule of Achievement [2025]

<u>Specific Activities:</u>

- Develop multi-agency body to coordinate protection efforts. [2023]
- Develop an official volunteer protection of wetlands mission statement that is vetted with TDEC policy office and is distributed to other agencies for comment. [2020]

- Connect volunteer protection webpage with other agencies that have programs that promote the protection, conservation and restoration of wetlands. [2019]
- Partner with universities to gather information on wetland locations, classification, and biological data [2025]

Lakewood wetland mitigation site and city greenway Cumberland River floodplain, Davidson County, Tennessee

Action: Consider watershed planning, wildlife habitat, and other objectives when selecting restoration/protection sites.

Schedule of Achievement [2025]

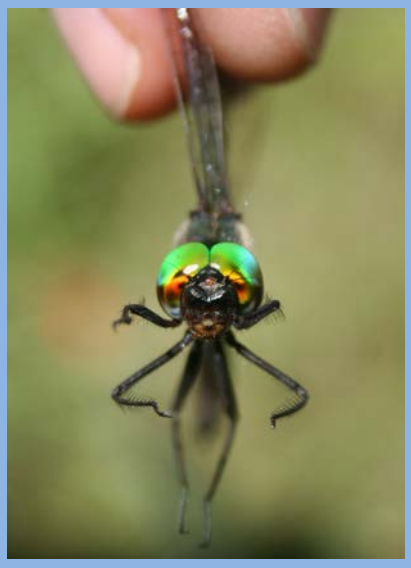
Specific Activities:

- Create a prioritized list of vulnerable or important wetland ecological systems and specific sites through interagency collaboration. [2025]
- Gather data with the intent of establishing GIS layer representing prioritized areas. This information could be used in the regulatory process. [2020]
- Implement consideration of watershed planning, wildlife habitat, resource rarity and other objectives when reviewing sites [2025]

Core Element 4: Water Quality Standards

Introduction

In the state of Tennessee the Water Quality Control Act, T.C.A., § 69-3-101, et seq., makes it the duty of the Board of Water Quality, Oil and Gas to study and investigate all problems concerned with the pollution of the Waters of the State and with its prevention, abatement, and control; and to establish such standards of quality for any Waters of the State in relation to their reasonable and necessary use as the Board shall deem to be in the public interest; and establish general policies relating to pollution as the Board shall deem necessary to accomplish the purposes of the Act. The Water Quality Criteria general considerations and criteria shall be used to determine the permissible conditions of waters with respect to pollution and preventative or corrective measures required to control pollution in various waters or in different sections of the same waters. These standards provide a scientific basis for the division's regulatory tools, monitoring, assessments and restoration potential relating to stream functions. Tennessee is required to have specific water quality standards and designated uses for all classes as part of the criteria for streams. The division does not have specific water quality standards for wetlands. The state considers wetlands as waters of the state. However, the division has not adopted an official definition for wetlands. The state also lacks wetland use classifications for surface waters.

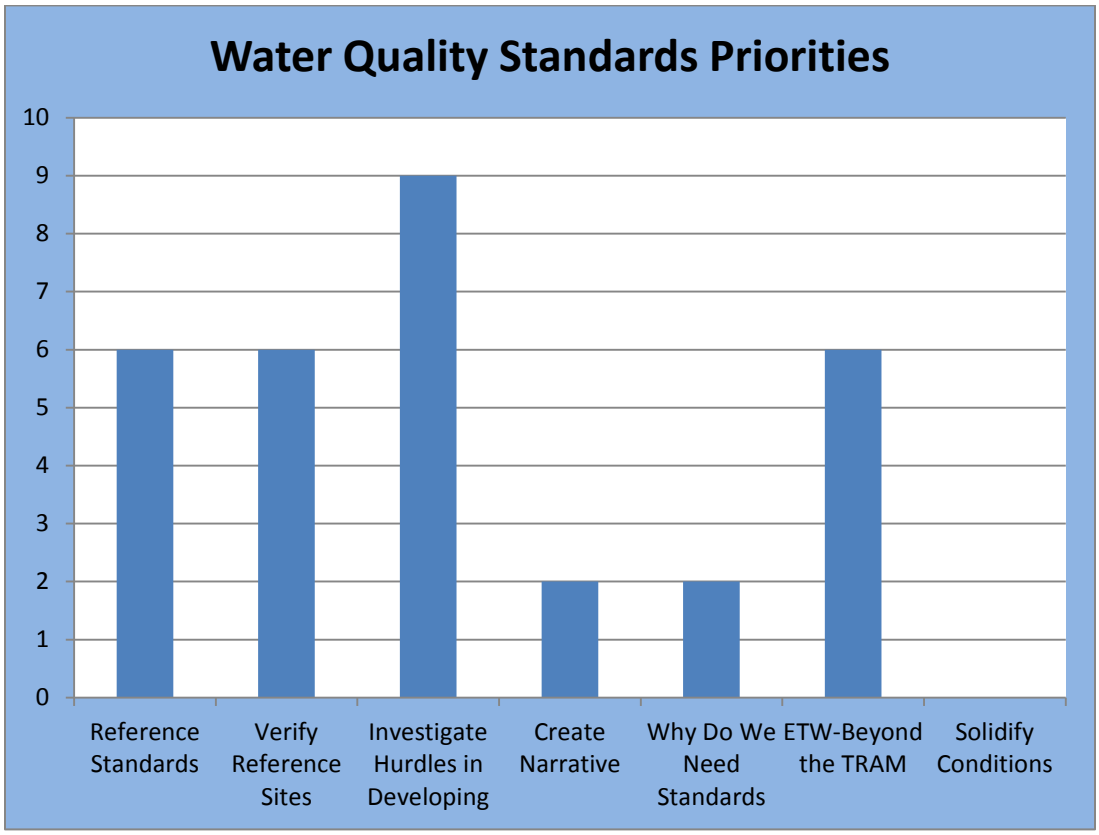


Dragonfly in headwater wetland Big South Fork National Recreation Area, Pickett County, Tennessee

Goals

The division views these numeric criteria as integral to water quality based pollution control. Therefore, through support from the EPA, DWR is prepared to better define wetland specific standards for the state of Tennessee through the collection of

baseline data. TDEC will work to adapt and adopt definitions and, potentially, use classifications and insert them into the state Water Quality Criteria during the next triennial review period. The working group prioritized working on understanding the **hurdles for establishing criteria**, **reference reach data, and defining Exceptional Tennessee Waters.**



Water Quality Standards for Wetlands

Objective I:

Ensure that wetlands are treated as waters within the state and tribal water quality programs. Actions related to rule changes would be presented for Board consideration at the next triennial review of Water Quality Standards.

Action: Enhance capacity for adopting new state definition of wetlands

Schedule of Achievement [2025]

Specific Activities:

- TDEC will work with the Board to propose a narrative definition, congruent with the federal definition, of wetlands which is as follows: *Wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.* [2021]
- TDEC will identify TDEC rules where wetlands are and are not mentioned and provide recommendations to leadership as to how wetlands can be included in Tennessee regulatory water quality standards. [2020]
- TDEC proposes to investigate qualifiers for classified uses that outline wetland functions as a narrative in our water quality standards. These functions may be, but are not limited to:[2021]
    - Groundwater Recharge/Discharge
    - Flood Flow Alteration
    - Sediment Stabilization
    - Sediment/Toxin Retention
    - Nutrient Removal/Transformation
    - Ecological Diversity/Abundance
    - Recreation
- Investigate possible qualitative narrative criteria that describes the condition/function that must be achieved to support a designated use(s).This narrative criteria may be determined through the calibration of rapid assessment scores for wetlands to a categorical scale such as "good", "fair", or "poor" to indicate their condition and assist with use support [2020]
- Continue to document and establish reference wetland sites and store reference wetland data for use in the development of wetland criteria [2020]
- Collaborate to collect baseline data to provide a scientific basis for numeric criteria based specific values for chemical, physical, and biological wetland parameters through participation in the National Wetland Condition Assessment and other grant funded partnerships. [2025]