2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

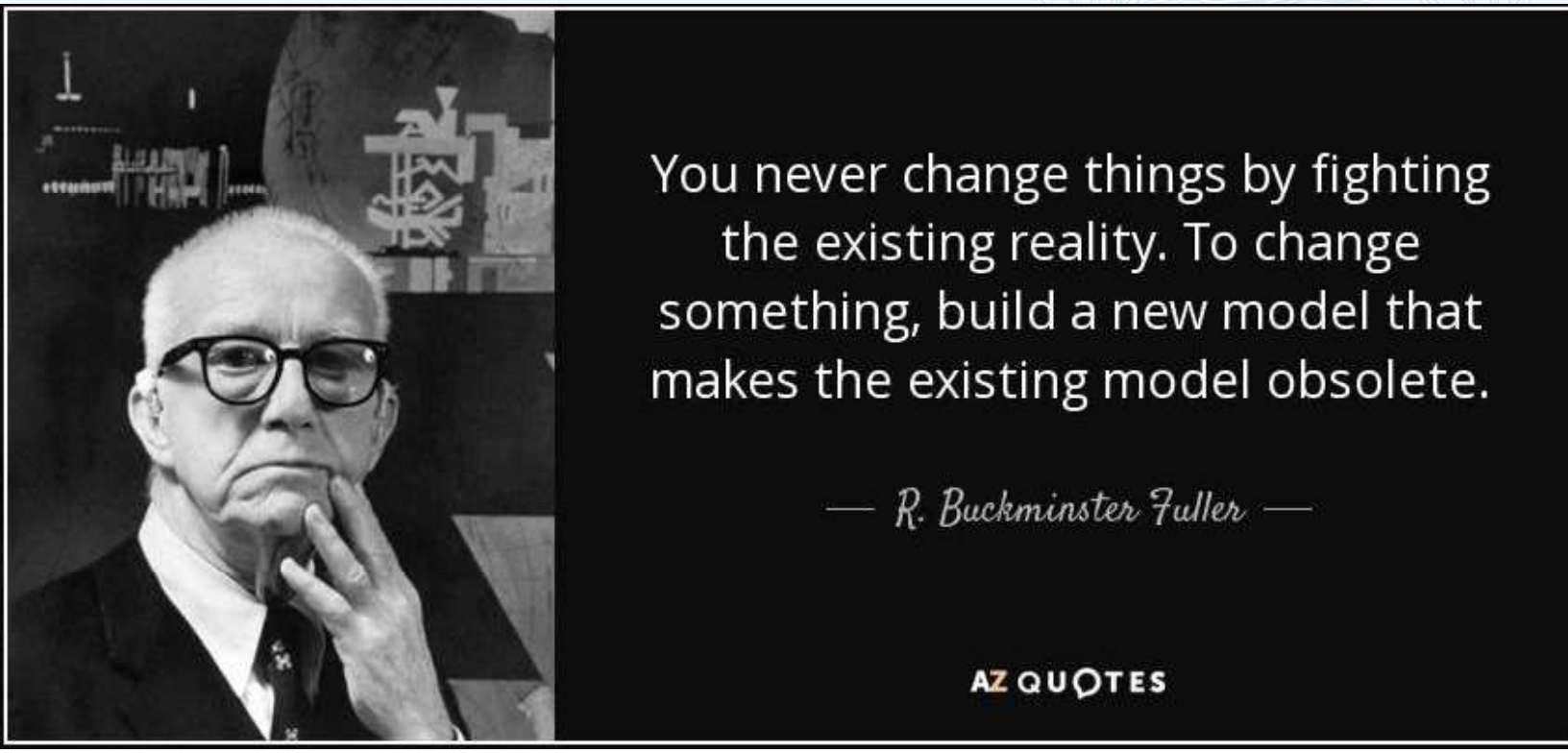
WELCOME

Opening General Session begins at 9 am

"The River Connects Us. Our Legacy Unites Us."

2025 DUCK RIVER SYMPOSIUM

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Commissioner
David Salyers, P.E., P.G.

Tennessee Department of
Environment & Conservation

2025 DUCK RIVER SYMPOSIUM

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Executive Order 108 & Duck River Watershed Planning Partnership

David W. Salyers, P.E., P.G.

Commissioner, TN Department of Environment & Conservation

December 8, 2025

"The River Connects Us. Our Legacy Unites Us."

David W. Salyers, P.E., P.G, TDEC Commissioner



David Salyers, P.E., P.G., was appointed Commissioner of the Tennessee Department of Environment and Conservation in January 2019 after serving more than 20 years as Executive Director with the West Tennessee River Basin Authority and previous work as an engineer in the private sector.

As TDEC Commissioner, he has led deployment of historic capital investment in the Tennessee State Park system and the establishment of 13 new state parks. He has also orchestrated more than $1.3 billion in investments in drinking and wastewater infrastructure in each of Tennessee's 95 counties on behalf of Gov. Bill Lee and the General Assembly.

Salyers has been focused on implementation of State Superfund site cleanups and accelerated reclamation through new programs for brownfield site cleanup and redevelopment resulting from the historic TN Rural Brownfield Reinvestment Act of 2023. He also served as chairperson for the Tennessee Nuclear Energy Advisory Council established by Executive Order 101 that helped facilitate Tennessee's place as the hub of an advanced nuclear revival for our nation.

Last November, Gov. Lee named Salyers the chairperson for the Duck River Watershed Planning Partnership established by Executive Order 108. This group is directed to develop and propose collaborative strategies that will ensure the long-term sustainability of the Duck River Watershed—balancing the needs of public water supply, economic development, and ecological conservation through coordinated planning, stakeholder engagement, and adaptive resource management.

A Kentucky native, Salyers earned a bachelor's degree from Murray State and a master's degrees in engineering from Missouri University of Science and Technology.

Leadership

“The power to convene is often greater than the power to legislate.”

Former TN Congressman Zach Wamp



Former U.S. Rep. Zach Wamp, left, who represented Chattanooga from 1995 to 2011, stands with his successor Rep. Chuck Fleischmann at the 30th Tennessee Valley Corridor National Summit at the Y-12 National Security Complex in Oak Ridge on May 30, 2025.

Leadership

Gov. Lee issued EO 108 because:

- Duck River is a true Tennessee treasure. One-of-a-kind reflection of our natural heritage – *authentically Tennessee*.
- Growing communities in the watershed depend on the river for their water supply.
- Communities and stakeholders have the interest, ability and opportunity to coordinate in a manner that provides near-term and long-term solutions to water supply challenges.
- Potential for a partnership effort to model the way for other regions of the state.



Leadership

Three (3) Major Elements of EO 108:

- Established the Duck River Watershed Planning Partnership (DRWPP) and provides directives for the DRWPP
- Established directives for TDEC, other agencies, and partners acting in the Duck River Watershed
- Application to statewide water management and other watersheds in Tennessee, with priority on *Regionalization*



Planning Partnership Members

Randall Braker, General Manager, Duck River Utility Commission

Sheila Butt, Mayor, Maury County

Josh Campbell, Biodiversity Chief, TN Wildlife Resources Agency

Dan Elbert, Field Supervisor, U.S. Fish & Wildlife Service

Jonathan Hardin, President & CEO, Columbia Power & Water System

Sen. Joey Hensley, M.D., District 28

Andy Holt, Commissioner, TN Department of Agriculture

Valerie McCormack, Chief, Planning Branch, U.S. Army Corps of Engineers – Nashville District

Rep. Pat Marsh, District 62

David Money, Executive Director, Duck River Development Agency

Justin Murdock, Ph.D., Director, Water Research Center, Tennessee Technological University

George Nolan, Director, Tennessee Office, Southern Environmental Law Center

David Salyers, P.E., Commissioner Tennessee Department of Environment & Conservation, Chairman

Grace Stranch, Executive Director, Harpeth Conservancy

Mark Thurman, Director of Conservation Collaboration, The Nature Conservancy-TN Chapter

Horace Tipton, Director of Conservation Policy, TN Wildlife Federation

Amanda Turk, Manager of Hydrologic Impacts and Risk Evaluation, TVA

Jimmy West, Special Projects Advisor, TN Economic & Community Development

Chris White, Director, Planning & Zoning, Bedford County

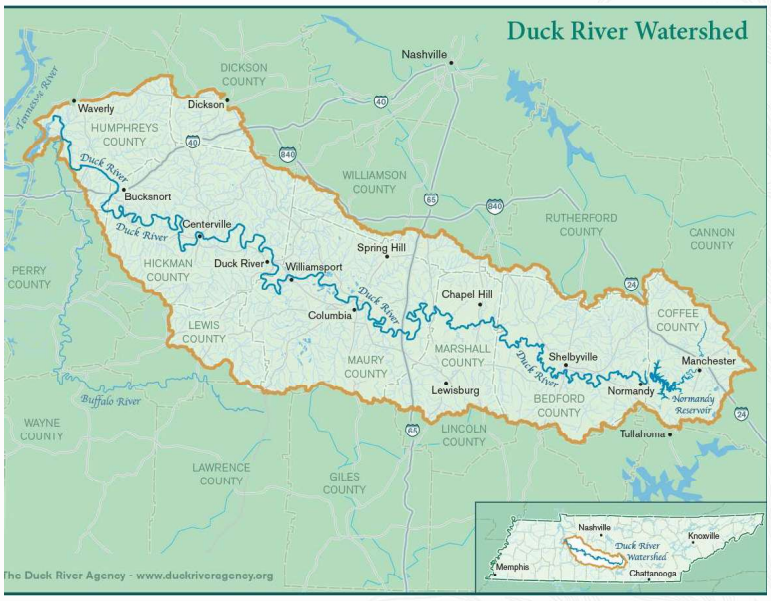
Planning Partnership Responsibilities

- Developing comprehensive watershed management recommendations that balance the needs of water users and economic growth against the need to protect the environmental integrity of the Duck River;
- Provide recommendations to the Governor, the DRA, TDEC, TWRA, and the Speakers of the Senate and House of Representatives on policies and actions to promote the sustainable use and conservation of water resources in the Duck River Watershed;
- Identifying opportunities for water system regionalization, drought resilience, habitat conservation, and water loss reduction; and
- Engaging with local communities, utilities, industries, and conservation organizations to ensure broad participation in watershed planning efforts.

Key Partner – Duck River Development Agency

The Duck River Watershed Planning Partnership is established to support the *Duck River Development Agency (DRA)* in furtherance of DRA's statutory mission by facilitating collaboration among stakeholders and developing strategies for the sustainable management of the Duck River Watershed.

www.DuckRiverAgency.org



Deliverables

- Comprehensive Watershed Management Recommendations
- Annual (Initial) Report & Recommendations submitted on Nov. 20, 2025
- Final Report & Recommendations will be submitted Nov. 2026
- *Partnership will expire on December 31, 2026*

Funding Support

- As the Duck River Watershed Planning Partnership was established to further the state's commitment to balancing economic growth, water resource management, and environmental and habitat conservation to ensure the long-term sustainability of Tennessee's watersheds, the State's FY26 budget included:
  - **$65M** toward realizing an effective regional water supply strategy for the Duck River Watershed
  - **$24.5M** for TDEC to support regional watershed planning. This needed funding will help preserve and protect the most ecologically diverse freshwater river in North America.

Partnership Activities

5 meetings and 2 workshops since March

Established three (3) work groups:

- **Drought Management** - Amanda Turk, chair
- **Regionalization** – Randal Braker, chair
- **Conservation, Water Loss Reduction, Education & Community Outreach** – Grace Stranch, chair

Conducted Duck River Community Survey

Resources and info shared at www.tn.gov/environment/duckriverpartnership.html





Initial Report & Recommendations

- Ideas and potential steps identified in Partnership's three work groups flowed to a consolidated set of **eighteen (18)** initial recommendations from the entire Partnership.
- Recommendations are presented in groups that reflect deployment and realization in the short-term (now to two years); medium-term (three to five years); and long-term (six years and longer). Partnership recommendations demonstrate a range of strategies and actionable next steps:
  - Enhancing interagency coordination and organization to enhance planning, readiness and responsiveness in drought conditions
  - Moving expeditiously on feasibility studies and design analyses for identified priority opportunities, including organization/governance forms and engineered solutions
  - Accelerating deployment of information resources and decision support tools for leaders, citizens, and stakeholders in the region.
  - Implementing effective water loss reduction strategies and water conservation practices, including leveraging community outreach, education channels and trusted source messaging.

Drought Management

Within two years:

- Revise and adopt a Duck River Regional Drought Management Plan including voluntary and mandatory water use restrictions based on drought level, monitoring for river flow and withdrawals, and voluntary conservation commitments.

- Tennessee Department of Environment and Conservation, TDEC, or the Governor's Office should establish a water monitoring council composed of members from state water, wildlife and emergency management agencies and the Tennessee Climate Office, which will coordinate with national weather, water and emergency management agencies to respond to drought and flood conditions.

- Develop a Duck River Dashboard that tracks current data from the Normandy Dam at TVA, U.S. Geological Survey stream gages, discharge monitoring and utilities (water withdrawals and returns).

Drought Management

Within five years:

- TDEC should update its statewide drought management plan rules to require utilities to have water shortage response plans — including water withdrawal and water use reductions — that are activated during periods of drought or low river flow.
- TDEC and the Duck River Development Agency should consider installing more gauges to measure flow, groundwater and water quality, potentially in partnership with the U.S. Geological Survey to better understand the relationship between groundwater and surface water during low-flow periods.

Within six years or more:

- Create off-stream storage ponds near water treatment plants to capture and store water during high-flow periods, providing an alternative supply during droughts.

Regionalization

Within two years:

- TDEC should commission a water needs analysis for the watershed, to be completed by August 30, 2026.
- TDEC should commission a regionalization feasibility study of water and wastewater utilities to be completed by August 30, 2026.
- TVA should evaluate raising the Normandy Dam winter pool up to 5 feet, retaining more water during winter months to reduce risk of low flows during the summer.
- TDEC should provide an analysis of a possible pipeline to the Tennessee River.

Regionalization

Within five years:

- Develop financial incentives for regionalization activities based on the findings of the regionalization feasibility study.

Within six years or more:

- TVA and TDEC should begin a feasibility study on raising the height of the Normandy Dam's summer pool up to five feet, informed by the findings of the water needs analysis.

Water Loss Reduction & Habitat Conservation

Within two years:

- Establish a water loss reduction program that works with utilities across the state to audit water loss and address issues found during these audits, with incentives for reducing loss.

Within five years:

- Provide incentives to private landowners who pursue conservation easements and/or practice sustainable agriculture that protects the river's habitat and water quality.
- Invest in groundwater recharge, green infrastructure and rainwater harvesting projects.
- Create a wetland restoration fund to restore and expand wetlands in the Duck River watershed.
- Encourage local governments to consider adopting overlays creating permanent development buffer zones on each riverbank.
- Develop a watershed-wide growth plan.
- Develop a water use efficiency plan to evaluate, promote and track efficiency practices.

Within six years or more:

- Promote water-efficient fixtures, smart irrigation, industrial reuse, green infrastructure, and other initiatives to reduce water use and demand.

Public Engagement

Within two years:

- Create and promote educational materials about the Duck River and watershed protection for multiple audiences, including recreational users, nonprofits, farmers and utilities.
- Create and promote a ready-to-use tool kit linking watershed issues like drought and land use to education and actionable steps.

Looking Forward

- Partnership developed a strong set of initial recommendations
- Evaluating Conveyance/Pipeline & Storage Alternatives
- TDEC's Comprehensive Water Withdrawal Permitting Pilot Project continues
- We're realizing real time benefits from activities now underway
  - TVA Normandy Dam Optimization is operational - *Estimation of 285 million gallons conserved in Normandy Reservoir from July 26 through Oct. 23*
  - DRUC installing a lower intake in Normandy
- We'll be developing 1) updated water needs projections and 2) Regionalization Study in the next 8 months
- We've kicked off development of a Habitat Conservation Plan
- Meaningful community engagement and watershed protection education is underway.

Questions?

Duck River
Watershed Planning Partnership

Where water,
community, and
conservation meet.



2025 DUCK RIVER SYMPOSIUM

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The Work Groups of Executive Order 108

"The River Connects Us. Our Legacy Unites Us."

Amanda Turk, P.E.



- Manager, Hydrologic Impacts and Risk Evaluation with Tennessee Valley Authority
- Chair of Drought Management Work Group
- akturk@tva.gov

Randal J Braker, P.E.



- General Manager of Duck River Utility Commission
- Chair of Regionalization Work Group

Grace Stranch, Esq.



- CEO, Harpeth Conservancy
- Chair of Conservation Work Group
- gracestranch@harpethriver.org

Elaine Boyd



- Senior Advisor, Tennessee Department of Environment and Conservation
- Chair of the Duck River Watershed Habitat Conservation Plan Steering Committee
- Elaine.Boyd@tn.gov

2025 DUCK RIVER SYMPOSIUM

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DRWPP
Drought Management Working Group

Amanda Turk, PE

"The River Connects Us. Our Legacy Unites Us."

Scope and Goals of the DMWG

Scope - EO 108 Section 2.h	Goals
• Drought Planning. TDEC, in collaboration with the DRA and with appropriate input from other stakeholders, is directed to develop a Comprehensive Regional Drought Management Plan for the Duck River Watershed. This plan shall provide clear guidance and strategies for water utilities within the region to enhance both drought resilience and water conservation efforts to protect existing uses in the Duck River. The plan shall undergo an iterative review every ten (10) years to ensure its effectiveness and adaptability to changing conditions and needs.	• Developing comprehensive drought management recommendations that balance the needs of water user and economic growth against the need to protect the environmental integrity of the Duck River by identifying opportunities for drought resilience and drought management. • It is not this team's goal to develop an actual Drought Management Plan, but to provide guidance and recommendations on what should be in a robust Drought Management Plan.

Drought Management Working Group Members

Federal

US Army Corps of Engineers®

TVA TENNESSEE VALLEY AUTHORITY

State

TENNESSEE GENERAL ASSEMBLY

TN Department of Agriculture

Tennessee Duck River Development Agency March 3, 1965

Conservation Organizations

SELC SOUTHERN ENVIRONMENTAL LAW CENTER

The Nature Conservancy®

TWF TENNESSEE WILDLIFE FEDERATION

Team Meetings

Team Meeting #1 – TVA Nashville Collaboration Center on 4/2/25

Team Meeting #2 – Immediately following DRWPP on 5/5/25

Webinar #1 – NC Drought Management Advisory Council on 5/15/25

Webinar #2 – Duck River Agency on 6/10/25

Webinar #3 – HEC RAS of the Duck River with USACE on 6/16/25

Team Meeting #3 – Ellington Ag Center on 8/1/25

Team Meeting #4 – Virtual on 9/15/25

Team Meeting #5 – Virtual on 10/7/25

DMWG – Report Recommendations

Duck River – Drought Management Recommendations

1. Revise the Duck River Regional Drought Management Plan – Short Term
2. Incorporate Comprehensive Drought Monitoring Analysis – Medium Term

Duck River – General Recommendations

1. Develop a Duck River Dashboard – Short Term

State-wide Recommendations

1. Create a state-wide Water Monitoring Council – Short Term
2. Update TDEC's rules for drought management plans state-wide – Medium Term

2025 DUCK RIVER SYMPOSIUM

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Duck River Watershed Planning Partnership

REGIONALIZATION WORKING GROUP

Recommendations

Randal Braker, PE

Duck River Utility Commission

"The River Connects Us. Our Legacy Unites Us."

Regionalization Working Group

Working Group Members

Sheila Butt
Jonathan Hardin
David Money
George Nolan
Jimmy West
Chris White

TDEC Support
Elaine Boyd
Stephanie Durman
April Grippo
David Owenby

Regionalization Working Group

Executive Order 108 tasked the Parnership with:

- Developing comprehensive watershed management recommendations that balance the needs of water users and economic growth against the need to protect the environmental integrity of the Duck River;
- Advising and providing recommendations to the Governor, the Duck River Agency, Tennessee Department of Environment and Conservation, Tennessee Wildlife Resources Agency, and the Speakers of the Senate and House of Representatives on policies and actions to promote the sustainable use and conservation of water resources in the Duck River Watershed;
- Identifying opportunities for water system regionalization, drought resilience, habitat conservation, and water loss reduction; and
- Engaging with local communities, utilities, industries, and conservation organizations to ensure broad participation in watershed planning efforts.

Regionalization Working Group

WORKING GROUP ACTIVITY

- Several Work Sessions.
- Reviewed previous Duck River Agency studies and reports on watershed planning, water supply, and regionalization.
- Met with utilities and community leaders.
- Engaged engineers and water resource experts.
- Developed short and long-term recommendations.

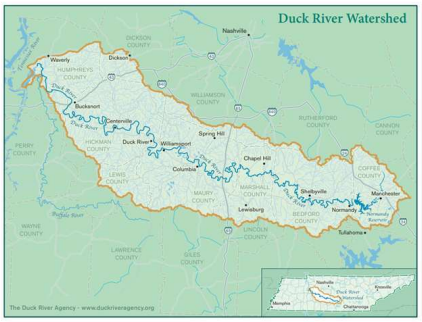
Regionalization Working Group

Recommendations:

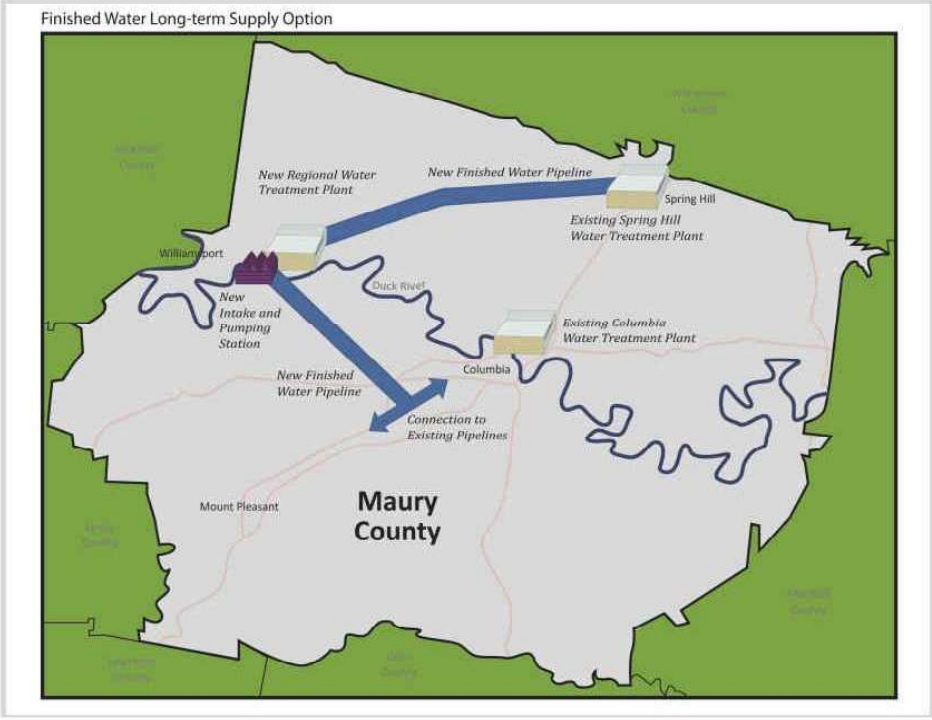
- Conduct a Basin-wide Regionalization Feasibility Study

Conduct a feasibility study on regionalization of water and wastewater utilities.

There are many forms of regionalization that could potentially benefit the watershed (i.e., interconnection, consolidation, and/or formation of a regional water authority) and many variables between water systems that should be analyzed (i.e. water loss and financial outlooks).



Example Regional Water Supply



Regionalization Working Group

Recommendations:

- Conduct a Basin-wide Regionalization Feasibility Study
- Develop Financial Incentives for Regionalization

Develop financial incentives for regionalization based upon the feasibility study.

Financial incentives may be an important component to encourage certain regionalization activities as potentially recommended by the regionalization study such as a Regional Water Authority, utility consolidation, or interconnection depending on regional circumstances.

Regionalization Working Group

Recommendations:

- Conduct a Basin-wide Regionalization Feasibility Study
- Develop Financial Incentives for Regionalization
- Conduct a Water Needs Analysis for the Entire Watershed

Conduct a needs analysis for the entirety of the watershed.

While individual water demand assessments exist throughout the watershed, many are outdated, and the methodology between the studies varies widely. Further, recent actions in the watershed have impacted water supply calculations (i.e. TVA's optimization of Normandy Reservoir releases). Compiling one assessment for the entire watershed would facilitate a collective understanding of current and future water demand and allow for informed decision-making to address that need.

Regionalization Working Group

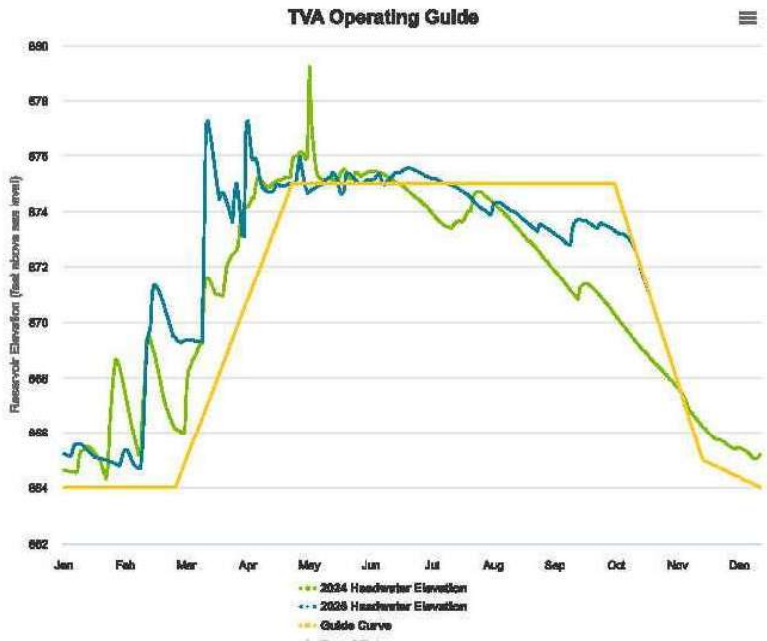
Recommendations:

- Conduct a Basin-wide Regionalization Feasibility Study
- Develop Financial Incentives for Regionalization
- Conduct a Water Needs Analysis for the Entire Watershed
- Raise the Winter Pool Level of Normandy Reservoir

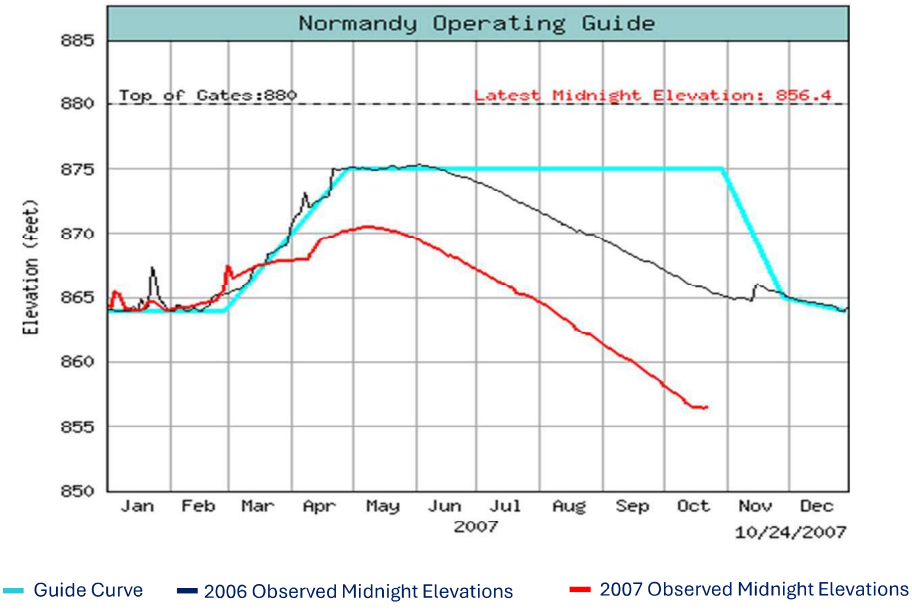
Ask TVA to evaluate raising the Normandy Dam Winter Pool up to 5 ft.

Storage in Normandy Dam is guided by two water levels to balance drought resilient capacity as well as flood storage, referred to as the Winter Pool (lower level to accommodate flood capacity needed during winter) and Summer Pool (higher level for more water availability in the summer). If the Winter Pool starts at a higher point, then there is less water needed to reach the Summer Pool, thereby reducing the risk of low flows and/ or the impacts of potential drought.

Normandy Reservoir Operating Guideline
As of November 2025



Normandy Reservoir Operating Guideline
As of October 24, 2007



Regionalization Working Group

Recommendations:

- Conduct a Basin-wide Regionalization Feasibility Study
- Develop Financial Incentives for Regionalization
- Conduct a Water Needs Analysis for the Entire Watershed
- Raise the Winter Pool Level of Normandy Reservoir
- Analyze Building a Pipeline to the Tennessee River

Ask TDEC to provide a thorough analysis of building a pipeline to the Tennessee River.

A pipeline to the Tennessee river would not only provide additional water supply to the Duck River, it also promotes water use efficiency at the utility level through indirect potable reuse.

Regionalization Working Group

New Downstream Intake Project

- First phase of pipeline to Tennessee River
- Downstream of the 100cfs flow-by constraint
- Near Maury/Hickman County Line
- Approximately 35 river miles, 20 land miles
- Removes reliance for water released from Normandy Reservoir - Which would improve drought resilience
- Supports projected future water supply needs
- CPWS has received permit for the withdrawal
- Increases indirect potable water reuse by up to 17 MGD

Regionalization Working Group

Recommendations:

- Conduct a Basin-wide Regionalization Feasibility Study
- Develop Financial Incentives for Regionalization
- Conduct a Water Needs Analysis for the Entire Watershed
- Raise the Winter Pool Level of Normandy Reservoir
- Analyze Building a Pipeline to the Tennessee River
- Begin Evaluation of Raising the Summer Pool of Normandy

Ask TVA and TDEC to work together to begin the process of evaluating the feasibility of raising the height of the Normandy Dam Summer Pool up to 5 ft.

Raising the Normandy Dam has been a project that has been discussed for several decades. Starting the next level of necessary studies now would move this project forward in understanding whether this concept is feasible. Raising the Normandy Dam would be impactful for the entire region adding additional capacity for all purposes.

Regionalization Working Group

QUESTIONS?
Please ask at the breaks.



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Secretary of State
Tre Hargett

STATE OF TENNESSEE

EXECUTIVE ORDER

BY THE GOVERNOR

No. 108

AN ORDER TO CONSERVE THE DUCK RIVER WATERSHED

WHEREAS, this Administration recognizes the importance of balancing economic growth, water resource management, and environmental and habitat conservation to ensure the long-term sustainability of our waters; and

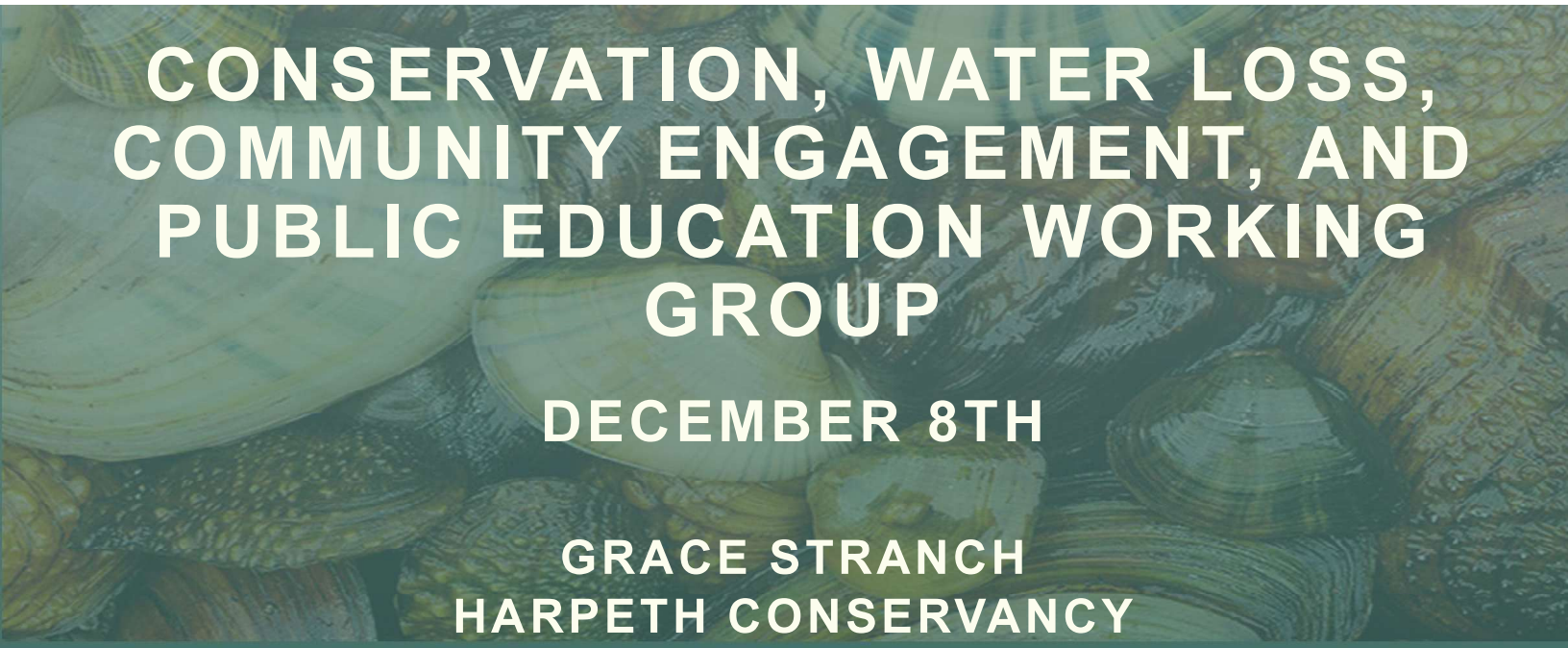
WHEREAS, Tennessee is home to some of the most ecologically diverse river systems in North America that serve as critical sources of drinking water, habitat, agricultural water supply, and recreation; and

WHEREAS, the Duck River is not only a scenic treasure winding 269 miles through Tennessee, but also it is North America's most biologically diverse freshwater river and is globally significant for its wildlife diversity; the Duck River is a critical part of Tennessee's outdoor recreation economy; and the Duck River is the sole water source for approximately 250,000 Tennesseans in an area of this State that is experiencing rapid growth and development; and

DUCK RIVER WATERSHED
PLANNING PARTNERSHIP







CONSERVATION, WATER LOSS, COMMUNITY ENGAGEMENT, AND PUBLIC EDUCATION WORKING GROUP

DECEMBER 8TH

GRACE STRANCH
HARPETH CONSERVANCY


DRWPP OFFICIAL MEMBERS
Josh Campbell
Dan Elbert
Sen. Joey Hensley
Prof. Justin Murdock
David Money



DRWPP STAFF SUPPORT

Elaine Boyd

Roger McCoy

J. Peter Murrey

David Owenby

Shaun Rainone

Chuck Yoest

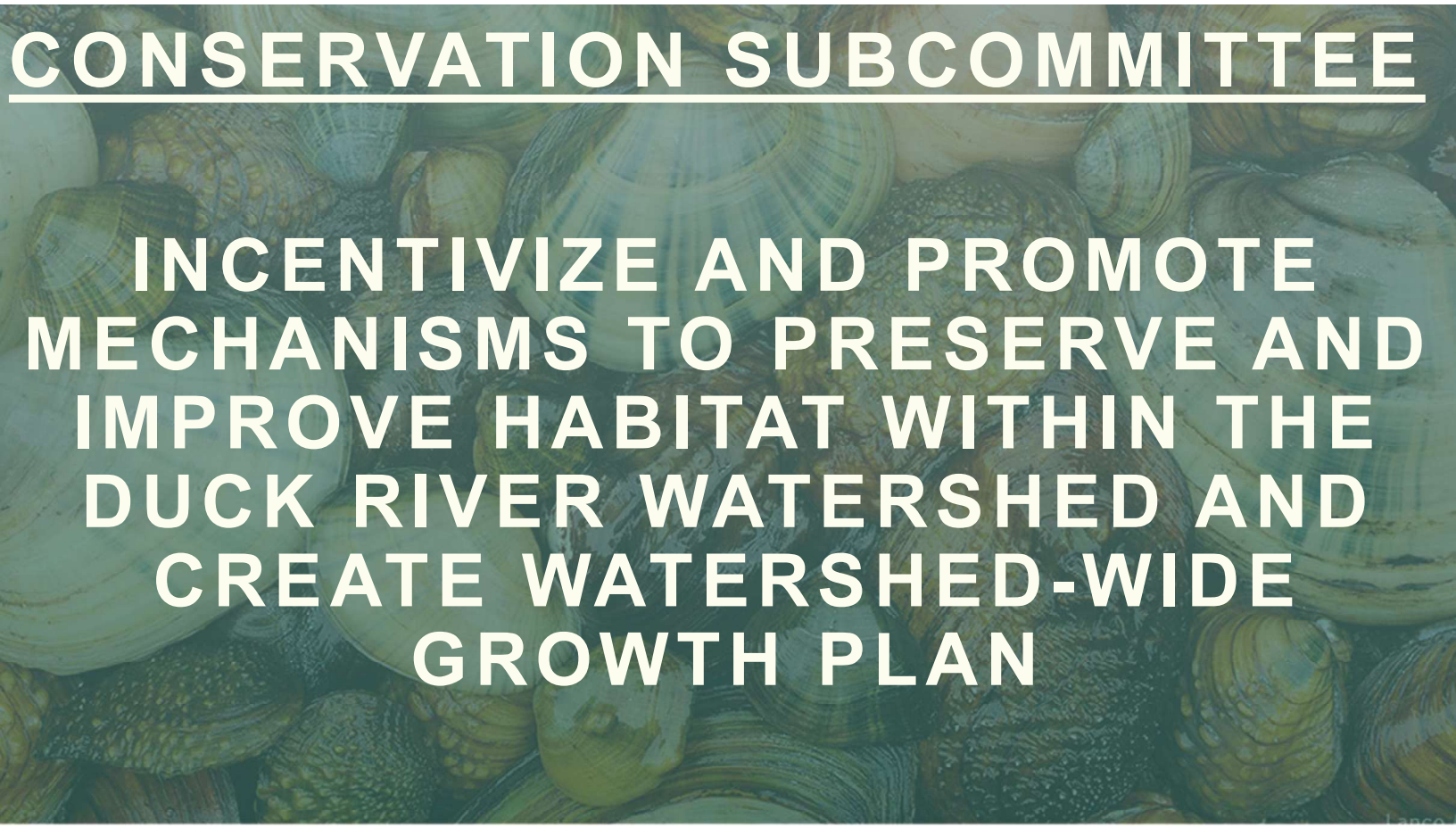
SURVEY ANALYTICS

- 824 participants
- Duck River Outdoor Festival and the Banana Pudding Festival
- Published in the Hickman County Times
- Distributed on social media, local officials, key influencers



CONSERVATION SUBCOMMITTEE

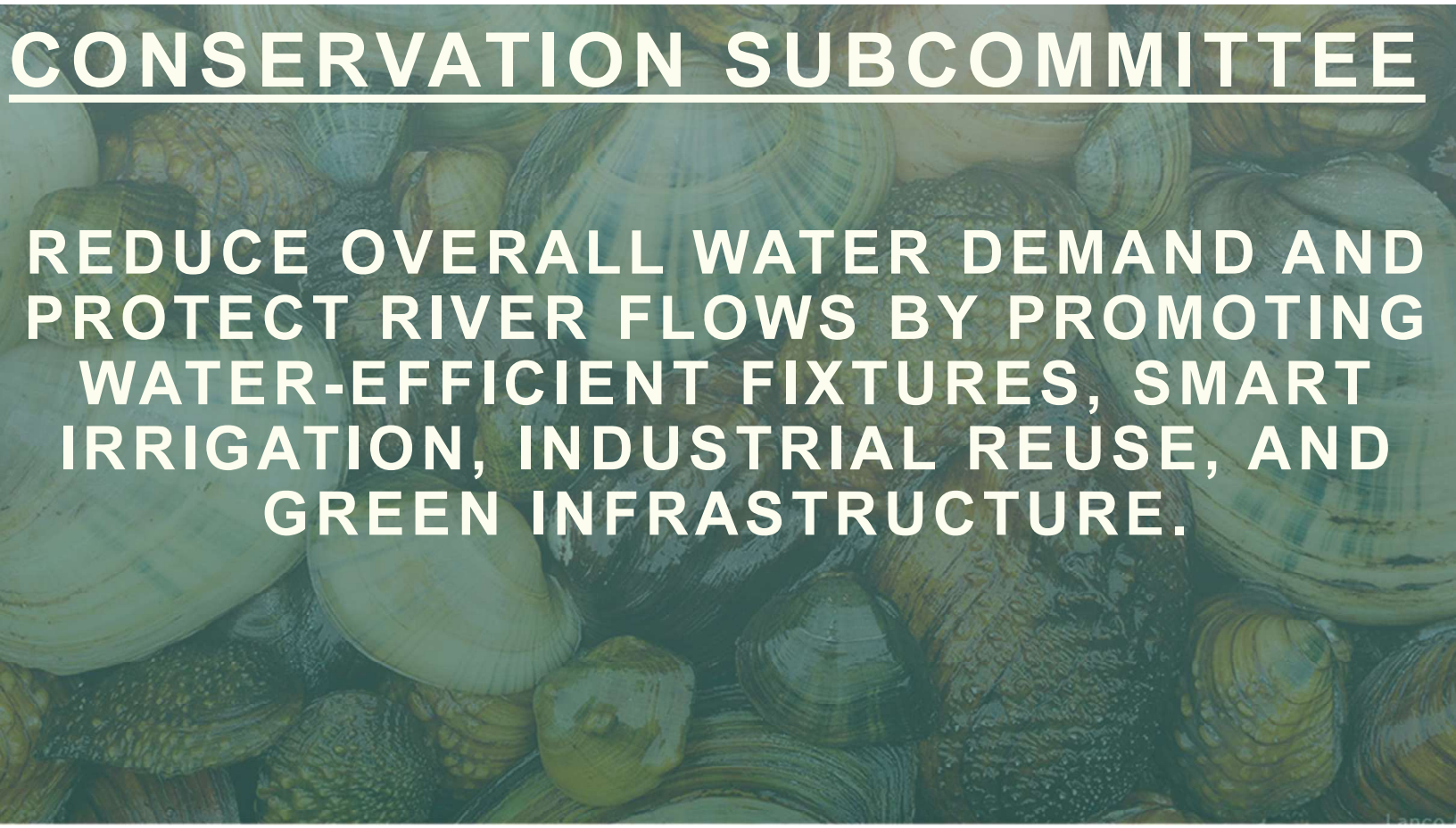
- August 12 and September 16
- October 23 Office Hours
- Over 40 participants
- Nine Recommendations



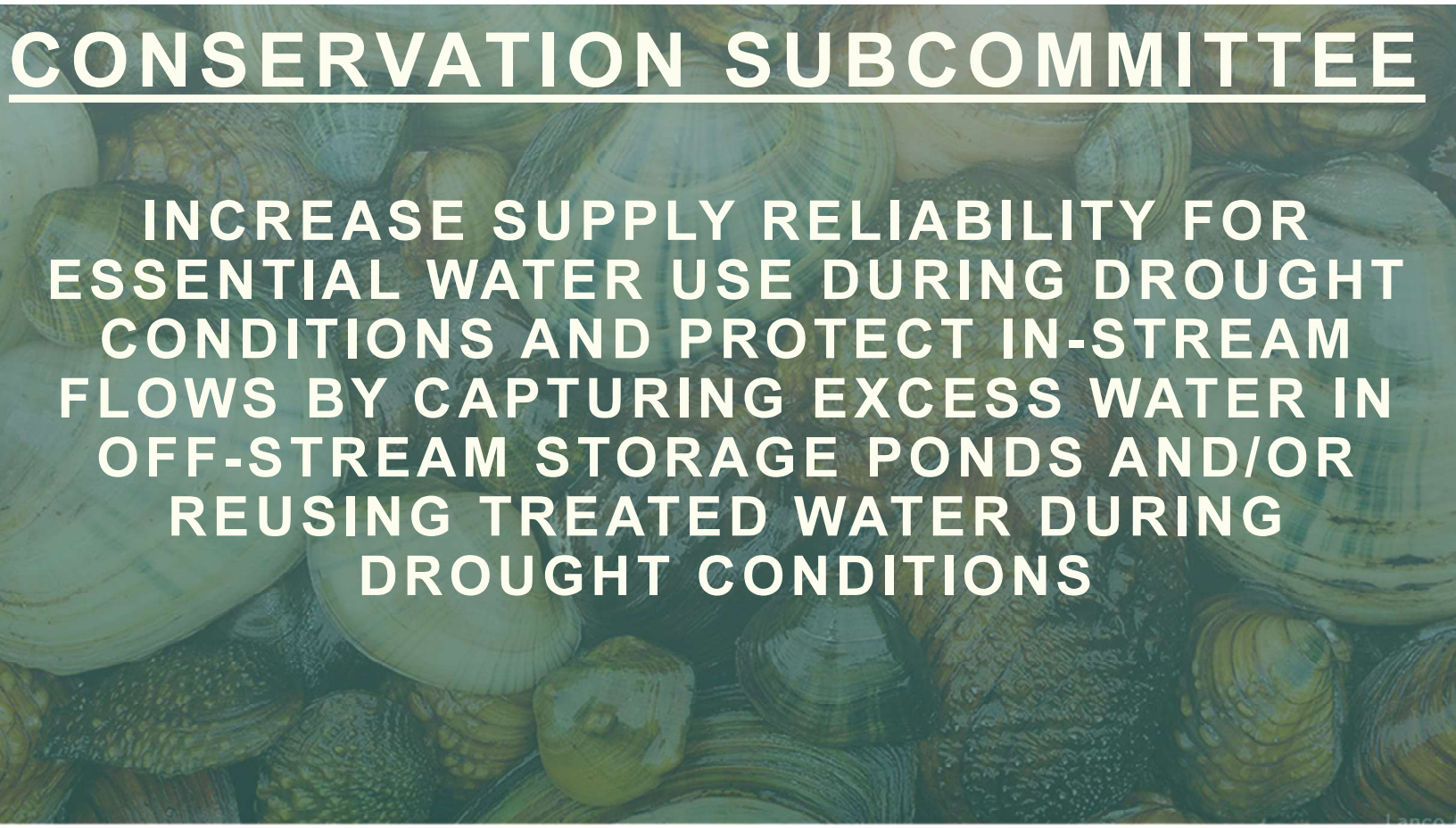
CONSERVATION SUBCOMMITTEE

INCENTIVIZE AND PROMOTE MECHANISMS TO PRESERVE AND IMPROVE HABITAT WITHIN THE DUCK RIVER WATERSHED AND CREATE WATERSHED-WIDE GROWTH PLAN

CONSERVATION SUBCOMMITTEE



REDUCE OVERALL WATER DEMAND AND PROTECT RIVER FLOWS BY PROMOTING WATER-EFFICIENT FIXTURES, SMART IRRIGATION, INDUSTRIAL REUSE, AND GREEN INFRASTRUCTURE.



CONSERVATION SUBCOMMITTEE

INCREASE SUPPLY RELIABILITY FOR ESSENTIAL WATER USE DURING DROUGHT CONDITIONS AND PROTECT IN-STREAM FLOWS BY CAPTURING EXCESS WATER IN OFF-STREAM STORAGE PONDS AND/OR REUSING TREATED WATER DURING DROUGHT CONDITIONS

CONSERVATION SUBCOMMITTEE



INCENTIVIZE AND PROMOTE MECHANISMS TO PRESERVE AND IMPROVE HABITAT WITHIN THE DUCK RIVER WATERSHED AND CREATE WATERSHED-WIDE GROWTH PLANS



WATER LOSS

- July 11th
- Over 10 participants
- Two Recommendations


WATER LOSS
Build a Water Loss Reduction Program with Incentivization that Works Directly with Utilities across Tennessee.


WATER LOSS
DEVELOP A WATER USE EFFICIENCY PLAN FOR THE DUCK RIVER WATERSHED

COMMUNITY ENGAGEMENT AND PUBLIC EDUCATION

- July 8th
- October 23 Office Hours
- Over 25 participants
- Ten Recommendations



COMMUNITY ENGAGEMENT AND PUBLIC EDUCATION

PROMOTE THE DUCK RIVER WATERSHED AND WATERSHED PROTECTION MEASURES


COMMUNITY ENGAGEMENT AND PUBLIC EDUCATION
ENSURE STRATEGIC MARKETING AND COMMUNICATIONS WITH REPRESENTATION FROM THE DUCK RIVER WATERSHED

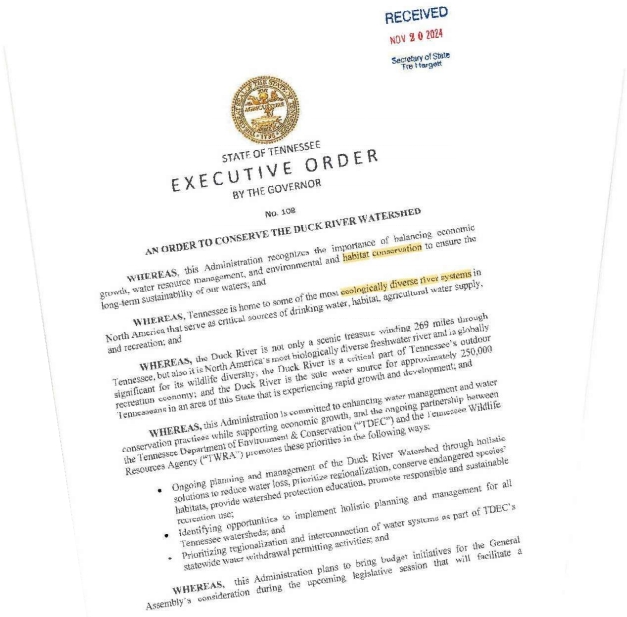


Duck River Symposium
Habitat Conservation Plan

December 9, 2025

Elaine Boyd, Senior Advisor, TDEC Bureau of Environment

Executive Order 108



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Tre Hargett

STATE OF TENNESSEE

EXECUTIVE ORDER

BY THE GOVERNOR

No. 108

AN ORDER TO CONSERVE THE DUCK RIVER WATERSHED

WHEREAS, this Administration recognizes the importance of balancing economic growth, water resource management, and environmental and habitat conservation to ensure the long-term sustainability of our waters; and

WHEREAS, Tennessee is home to some of the most ecologically diverse river systems in North America that serve as critical sources of drinking water, habitat, agricultural water supply, and recreation; and

WHEREAS, the Duck River is not only a scenic treasure winding 269 miles through Tennessee, but also it is North America's most biologically diverse freshwater river and is globally significant for its wildlife diversity; the Duck River is a critical part of Tennessee's outdoor recreation economy; and the Duck River is the sole water source for approximately 250,000 Tennesseans in an area of this State that is experiencing rapid growth and development; and

WHEREAS, this Administration is committed to enhancing water management and water conservation practices while supporting economic growth, and the ongoing partnership between the Tennessee Department of Environment & Conservation ("TDEC") and the Tennessee Wildlife Resources Agency ("TWRA") promotes these priorities in the following ways:

- Ongoing planning and management of the Duck River Watershed through holistic solutions to reduce water loss, prioritize regionalization, conserve endangered species' habitats, provide watershed protection education, promote responsible and sustainable recreation use;
- Identifying opportunities to implement holistic planning and management for all Tennessee watersheds; and
- Prioritizing regionalization and interconnection of water systems as part of TDEC's statewide water withdrawal permitting activities; and

WHEREAS, this Administration plans to bring budget initiatives for the General Assembly's consideration during the upcoming legislative session that will facilitate a

d. *Habitat Conservation Plan.* TDEC is directed to continue leading the development of a Habitat Conservation Plan ("HCP") for the Duck River Watershed to ensure compliance with the Endangered Species Act of 1973 ("ESA") in connection with future withdrawal permitting activities in the Duck River Watershed. Development of the HCP shall follow the process established under Section 10 of the ESA and involve all pertinent stakeholders.

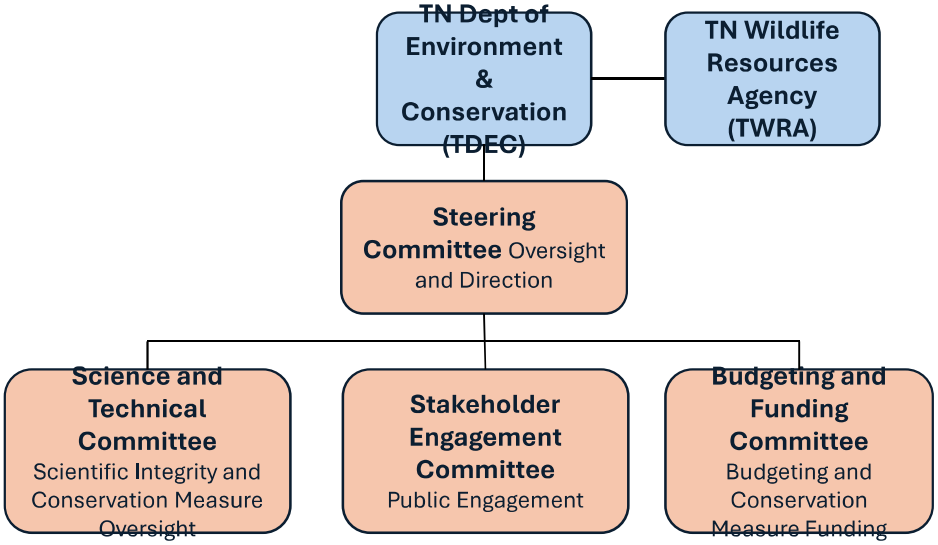
i. TDEC is directed to partner with TWRA, as TWRA administers an Endangered Species Program for the conservation of Endangered and Threatened fish and wildlife pursuant to Section 6(c) of the ESA through a Cooperative Agreement with the USFWS. TWRA's Endangered Species program is designed to assist resident Endangered and Threatened fish and wildlife through coordination and collaboration with the USFWS on planning, developing, and conducting programs to protect, manage and enhance all resident Endangered and Threatened fish and wildlife in this State. TWRA is responsible for carrying out the activities identified in this program for the benefit of the Endangered and Threatened fish and wildlife which are resident in this State.

ii. TDEC is further directed to partner with TWRA regarding TWRA's extensive freshwater mussel propagation program. A highlight of this program is the Cumberland River Aquatic Center located on the Cumberland River in Gallatin which propagates and rears at least 40,000 Endangered and Threatened freshwater mussels annually for reintroduction into Tennessee's rivers and streams.

iii. The final HCP shall include measures to avoid, minimize, and mitigate impacts to endangered mussel species.

iv. The final HCP should result in an "incidental take" permit issued by the USFWS, held by TDEC, and extended to permittees to facilitate future withdrawal permitting activities in compliance with the ESA.

DRW HCP Organizational Structure



DRW HCP Steering Committee

TDEC (Chair)
TWRA
Duck River Development Agency (DRA)
Tennessee Valley Authority (TVA)

Includes subcommittee chairs and representatives from the responsible state agencies and anticipated partners for HCP Implementation

DRW HCP Science and Technical Committee

TWRA (Chair)	
TDEC	TWRA
TVA	Harpeth Conservancy
Tennessee Wildlife Federation (TWF)	Tennessee Technological University
University of Tennessee	U.S. Fish and Wildlife Service (USFWS)
U.S. Geological Survey (USGS)	The Nature Conservancy (TNC)

Represents technical experts on the management of aquatic species and habitats of the Duck River

DRW HCP Stakeholder Engagement Committee

TDEC (Chair)	
TWRA	Tennessee Department of Agriculture
DRA	Tennessee Association of Utility Districts
TVA	TNC
Harpeth Conservancy	TWF
Southern Environmental Law Center	South Central Tennessee Development District
Shelbyville Power, Water, and Sewerage System	Duck River Utility Commission
Columbia Power & Water System	Higher Pursuits

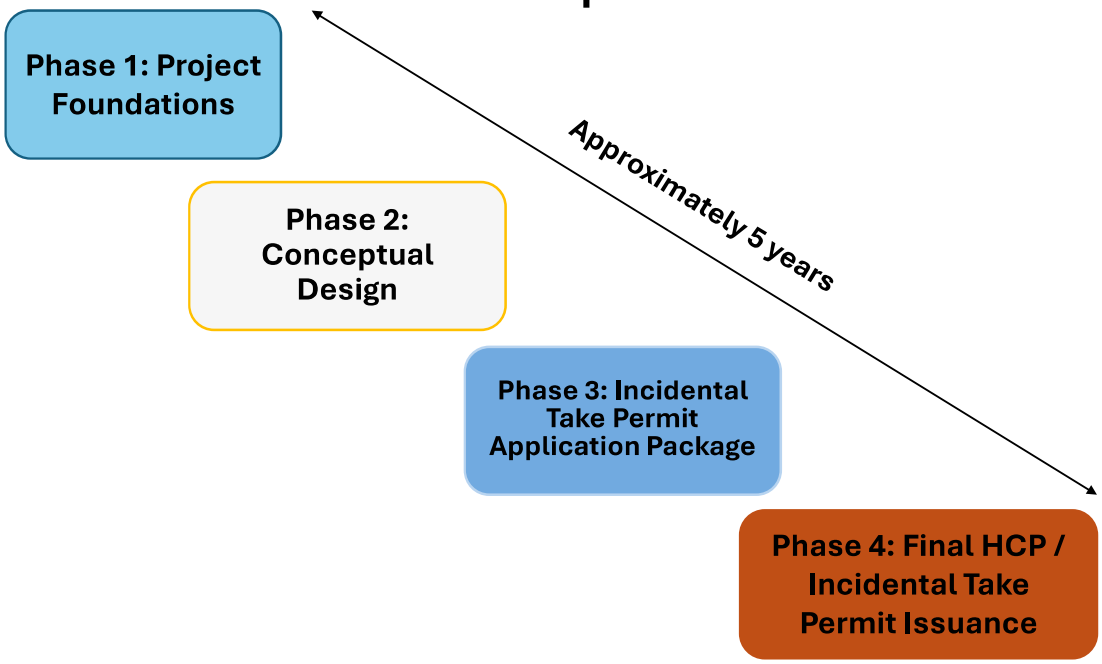
Represents users of DR aquatic resources, conservation interests, and entities regulated by TDEC water withdrawal permits

DRW HCP Budgeting and Funding Committee

TDEC (Chair)
TWRA
DRA
TVA
TNC

Includes entities with expertise implementing conservation programs and with public funding mechanisms

DRW HCP Development Process




Thank you!
Elaine Boyd
Elaine.Boyd@tn.gov

Morning Break

10:30 am to 11:00 am

Sponsored by Ramboll

"The River Connects Us. Our Legacy Unites Us."

2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

Pursuing Watershed Protection: A Panel Discussion

"The River Connects Us. Our Legacy Unites Us."

2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

Long-Term Water Supply Planning

"The River Connects Us. Our Legacy Unites Us."

Dan Allen, P.E.



- Assistant City Administrator, Spring Hill Water General Manager
- Former Alderman for City of Spring Hill
- Chair of the Duck River Agency Technical Committee

Miles Yaw, P.E.



- Lead Hydrologist for the Tennessee Valley Authority
- Responsible for technical oversight, management, and support of TVA's non-nuclear hydrology and hydraulics programs, as well as the coordination of agency level hydrologic issues and impacts

Long-Term Water Supply Planning: Preparing Communities for the Next Generation

Duck River Symposium – December 8th, 2022

WHY Planning Matters (City Perspective)



- Growth is Accelerating within the Basin
- Policy Needs to be Grounded in Realistic Capacity and Timelines
- Water Supply is not JUST Infrastructure – Land Use, Zoning, Economic Development, & Public Trust
- No Water, No _____

WHY Planning Matters (Utility Perspective)



- Planning Horizon Stretches 10-20 years
- Water plants and Workforce Systems do not scale quickly
- Deferred Decisions Become Emergencies
- Operators live with the consequences of underinvestment
- **Water is the quiet foundation that keeps communities growing safely**

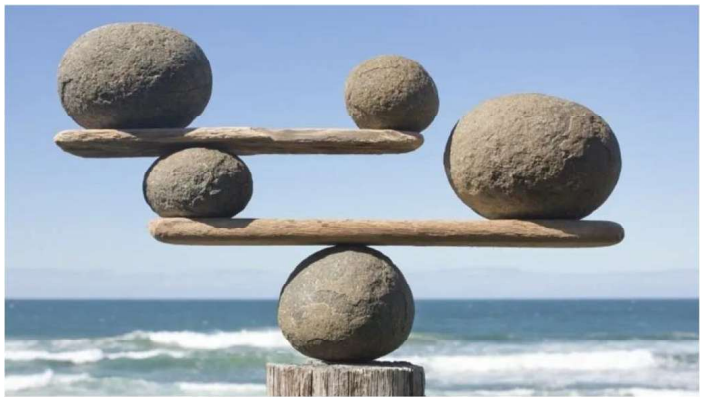
The Growth Reality in our Region

- Growth is happening all over the Duck River Basin
- More People = More Demand
- The Duck River is unique, important, regulated, and protected.
- Supply Planning is NOT Optional – It defines whether growth is **stable** or **chaotic**



Leadership is Stewardship, NOT Ownership.

The Balancing Act Utilities Perform Daily



- Ratepayer Impacts
- Infrastructure Needs
- Environmental Stewardship
- Workforce Capacity
- Regulatory Obligations

Lessons Learned from Spring Hill

- Start Early – Everything takes longer and costs more than expected.
- Collaboration is critical.
- Investments and rate impacts must be sequenced years ahead of growth.
- Data-Driven Capacity Modeling avoids overbuilding.
- Do not let growth manage you.
- You cannot solve a problem until you acknowledge you have one.
- Federal and State approvals take patience and persistence.



Excellence is not a goal; it's a daily habit.

The Executive Order – WHY it matters

- Reinforces long-term supply planning expectations
- Prioritizes watershed protection and regional coordination
- Encourages utilities to evaluate future supply and demand beyond traditional horizons
- Aligns City, County, and Utility decisions with statewide water security goals

The Financial Reality



- Water Projects are Expensive
- Delaying projects is more expensive
- Rate Adjustments are never popular
- Reliability is Priceless
- Transparency Strengthens Trust
- Grants and SRF programs help – but they don't replace long-term planning

Key Takeaways

- Long-Term Planning is essential for growing communities.
- Cities, Counties, and the State must work well together.
- The Executive Order strengthens opportunities for a regional planning framework.
- Water supply reliability is foundational to economic success.
- We don’t own the Duck. We are merely stewards. How we tend to it will be measured by our grandchildren.

TVA TENNESSEE VALLEY AUTHORITY

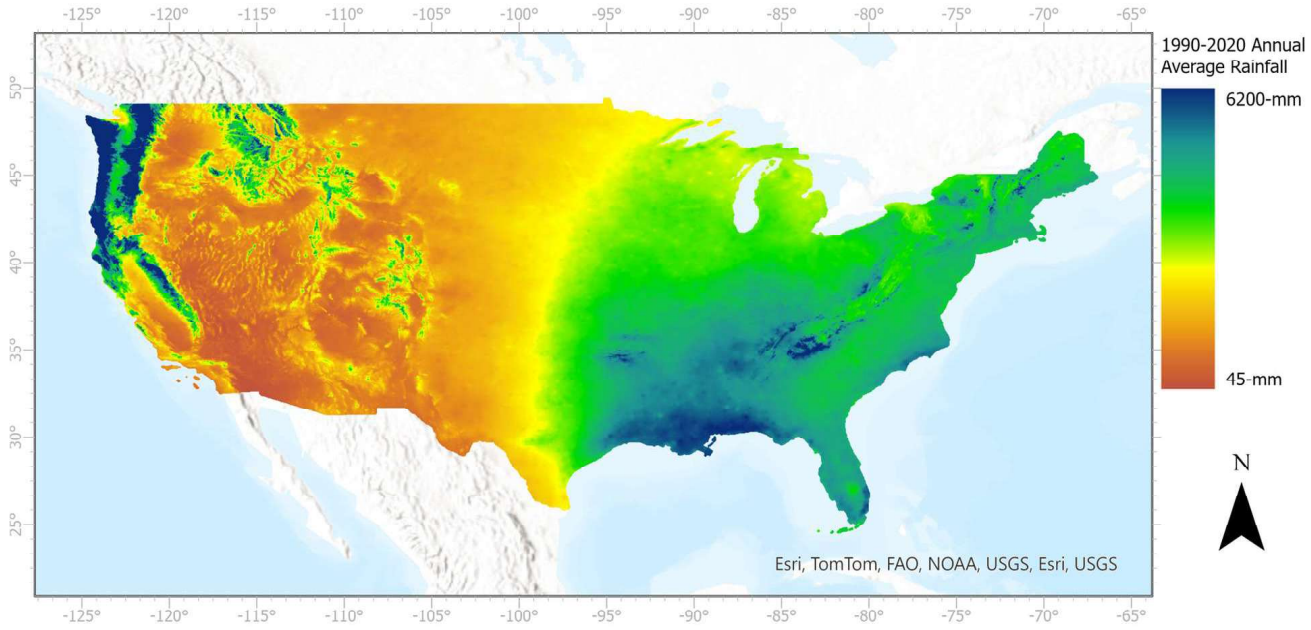
Water Supply and Flood Control in the Duck River Basin

Miles Yaw, PE

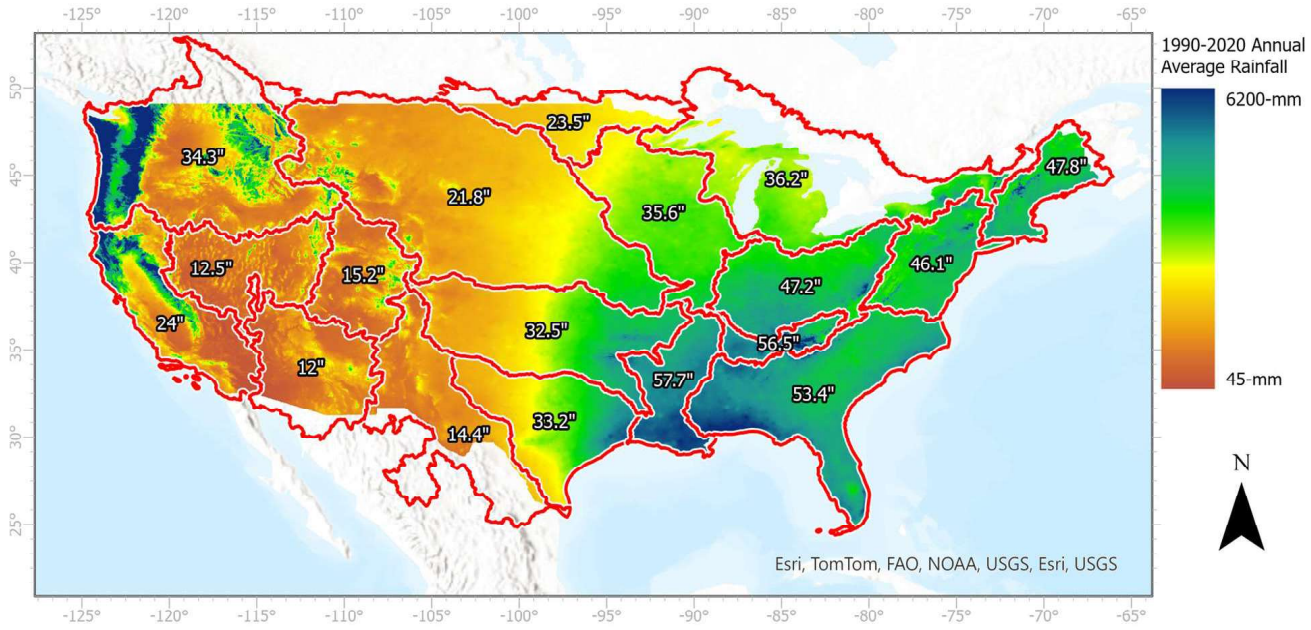
December 8, 2025



Abundant Waters

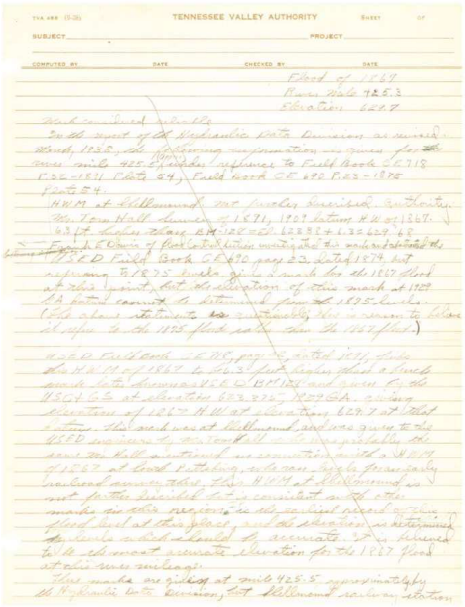


Abundant Waters





1867 flood


TENNESSEE VALLEY AUTHORITY

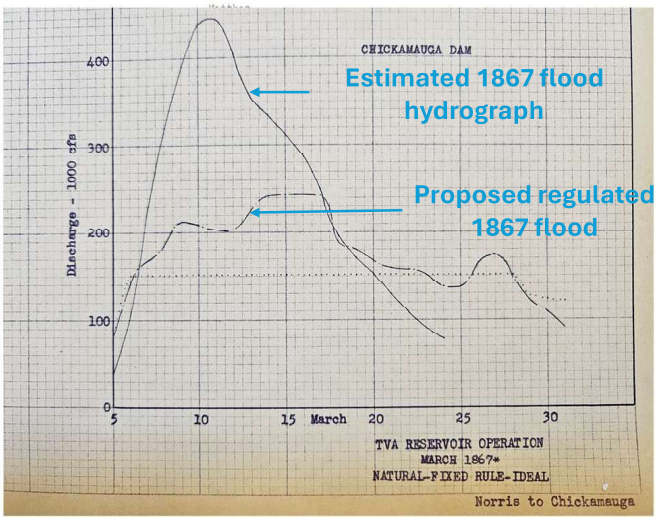
SUBJECT _____ PROJECT _____

COMPUTED BY _____ DATE _____ CHECKED BY _____ DATE _____

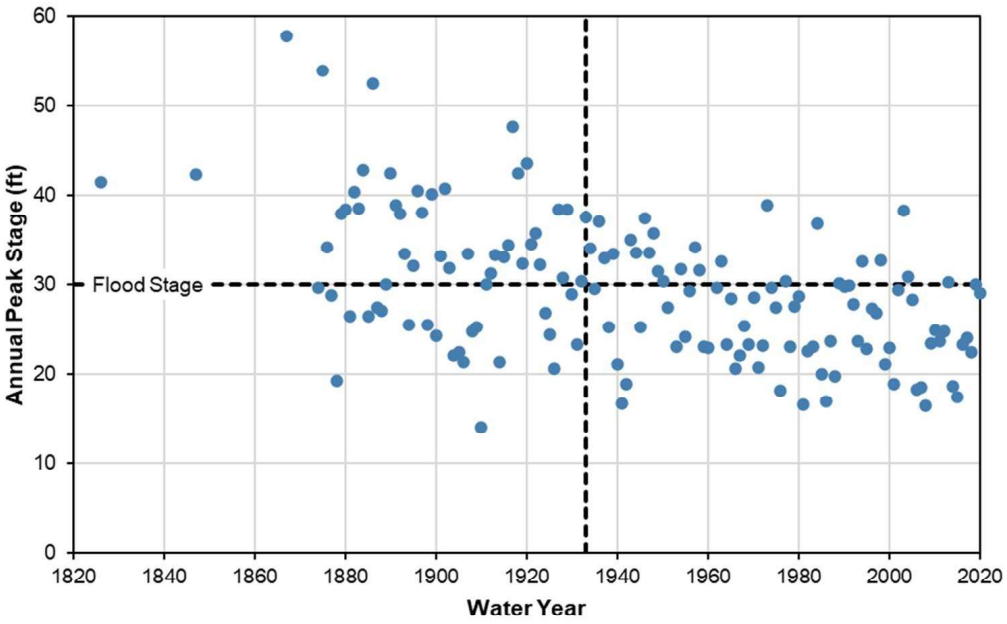
Flood of 1867
Mile 425.3
Elevation 624.7

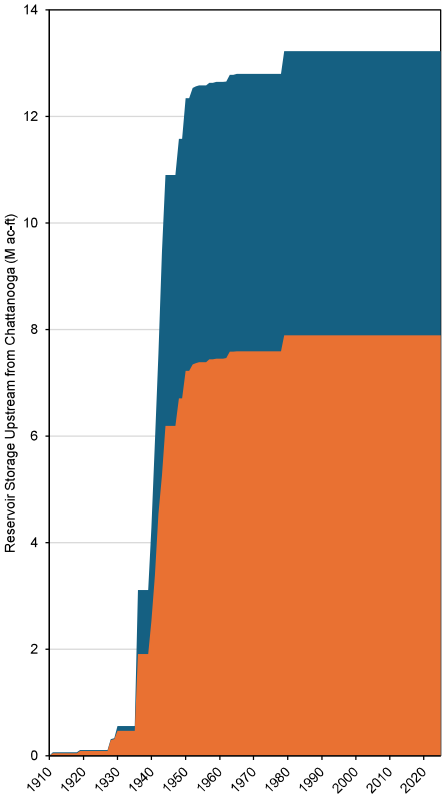
HIGH WATER MARKS - FLOOD OF 1867
LOWER TENNESSEE RIVER

River Mile	Elev. of Mark	Profile Elev.	Diff.	Class	References: U. S. Engineer Department TRS Profile	Flood Profile	Field Book CE	Hyd. Data Div. Gage History	Hyd. Data Div. HWM Report	Flood Control Section	Maps & Surveys	Miscellaneous
435.3	644.5	639.5	+5.0	4--			722		Middle			
435.3	639.7	639.5	+0.2	2-0		x	716		"			Matthes
435.6	639.7	639.8	-0.1	2-S		x	716		"			"
437.8	642.0	641.8	+0.2	1-S			46, 48, 50*		"			"
438.7	640.6	642.8	-2.2	2-0		x	716		"			
439.2	646.3	643.4	+2.9	2--		x	411-722		"			
441.8	644.8	646.4	-1.6	2-0		x	687-716		"			
442.5	646.0	647.5	-1.5	3--								
443.6	648.0	648.9	-0.9	3--								
443.8	648.1	649.2	-1.1	1-S	x	x	48, 50*-722					
444.8	650.8	650.8	0.0	2-0			716					
445.5	650.8	651.9	-1.1	3-0			411					
446.7	653.5	654.0	-0.5	3--								
446.7	654.3	654.0	+0.3	3--								
447.2	655.2	655.2	0.0	1-S	x	x	48*-719					
447.3	653.0	655.5	-2.5	2-0			716					
447.6	655.7	655.8	-0.1	2-S			719-710					
447.7	655.7	655.9	-0.2	1-S			719-720					
448.0	657.3	657.2	+0.1	2-0			411					
449.0	655.9	660.1	-4.2	2-0		x	411-719					
449.2	657.1	660.8	-3.7	2-0			716-720					
449.3	661.2	661.2	0.0	2-S	x		411					
450.9	668.6	668.7	-0.1	3-0			411-745					
451.4	670.6	670.7	-0.1	2-0		x	715-411					
451.8	671.4	671.5	-0.1	1-S	x	x	872-714					
452.3	673.2	672.5	+0.7	3--								



The Chattanooga Flood Problem





Six Key Benefits



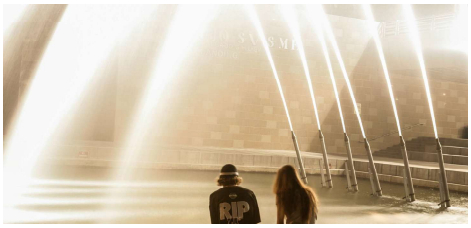
Flood Control



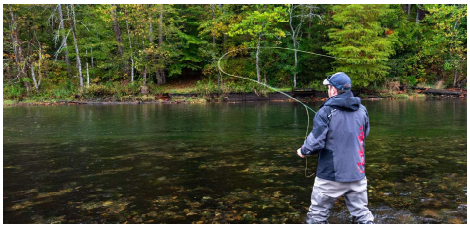
Navigation



Power Generation



Water Supply



Water Quality



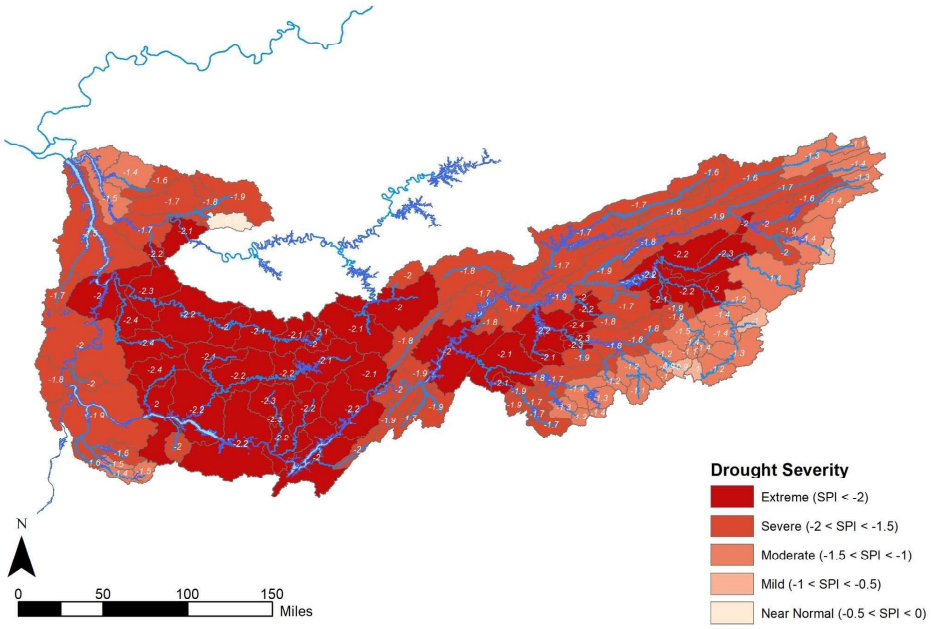
Recreation

Reservoir Operations Study EIS

Developed and continually reviewed collaboratively

Successful under very challenging hydrologic conditions

2007/08 Drought



Drought Severity at the end of WY2007 (AORC Rainfall MAP, 12-month SPI)

Reservoir Operations Study EIS

Developed and continually reviewed collaboratively

Successful under very challenging hydrologic conditions

2007/08 Drought



Drought impacts at Douglas Lake

Reservoir Operations Study EIS

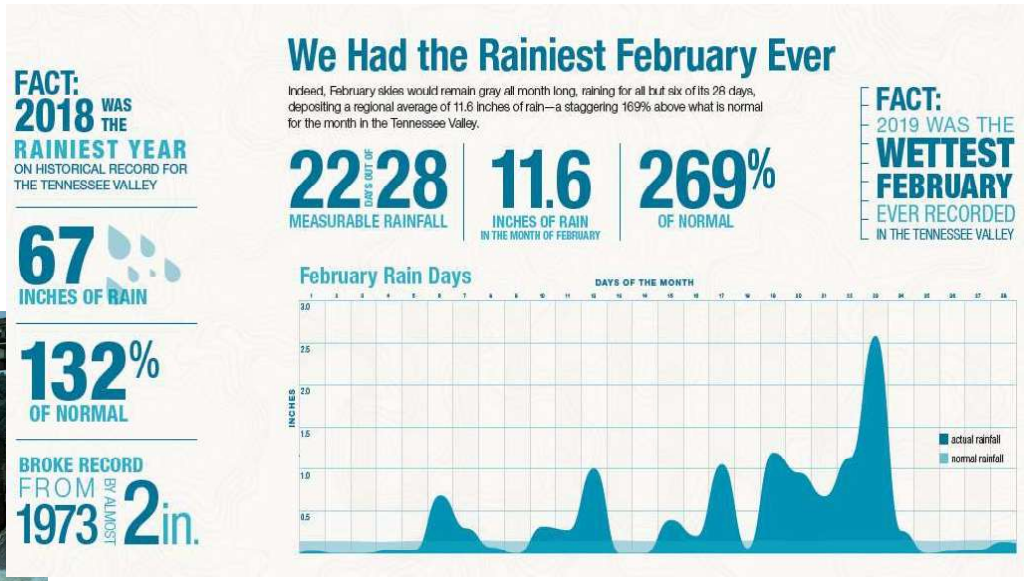
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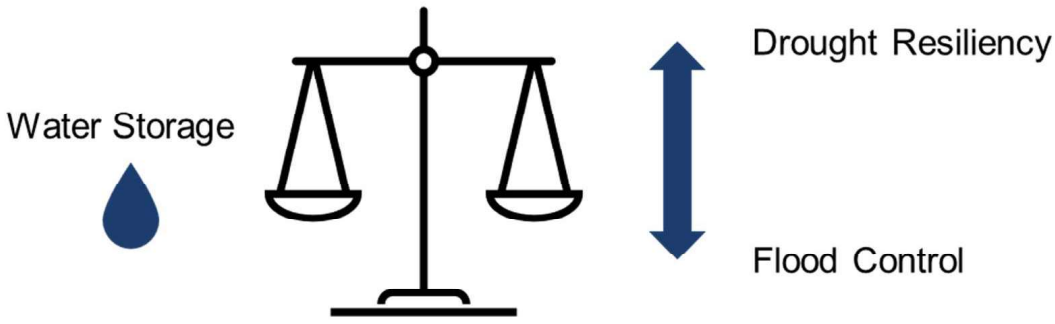
2007/08 Drought

2018-2020 Flooding





Managing the Water requires Tradeoffs



Water Supply

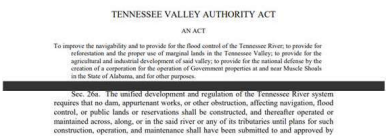
Water Supply Planning

Planning water supplies for 5.2M people requires TVA to:

Collaborate with States and Stakeholders

TENNESSEE VALLEY WATER PARTNERSHIP

Exercise Section 26a Jurisdiction for certain Withdrawals

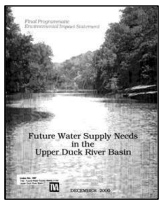

TENNESSEE VALLEY AUTHORITY ACT

AN ACT

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

Sec. 26a. The unified development and regulation of the Tennessee River system requires that no dam, appurtenant works, or other obstruction, affecting navigation, flood control, or public lands or reservations shall be constructed, and thereafter operated or maintained across, along, or in the said river or any of its tributaries until plans for such construction, operation, and maintenance shall have been submitted to and approved by

Practice Environmental Stewardship



Implement Periodic Reviews



1976 Normandy Dam Closed

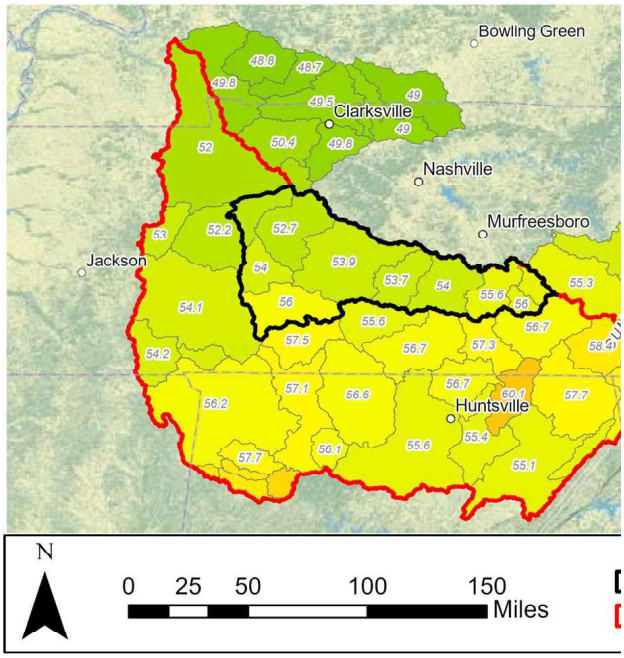
2000 Duck River Water Supply EIS

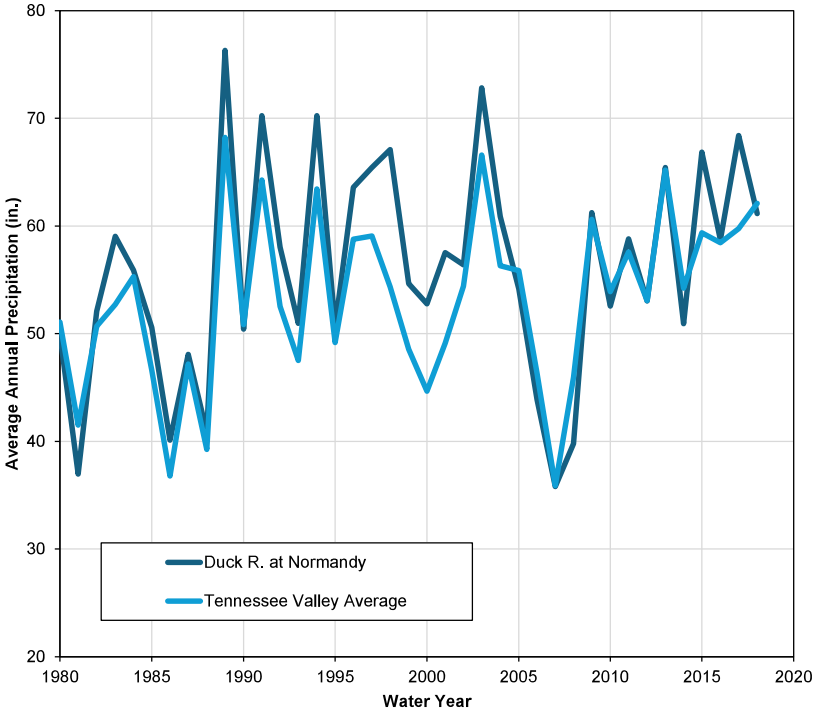
2004 River Operations EIS (ROS)

2024 EO 108 DRWPP

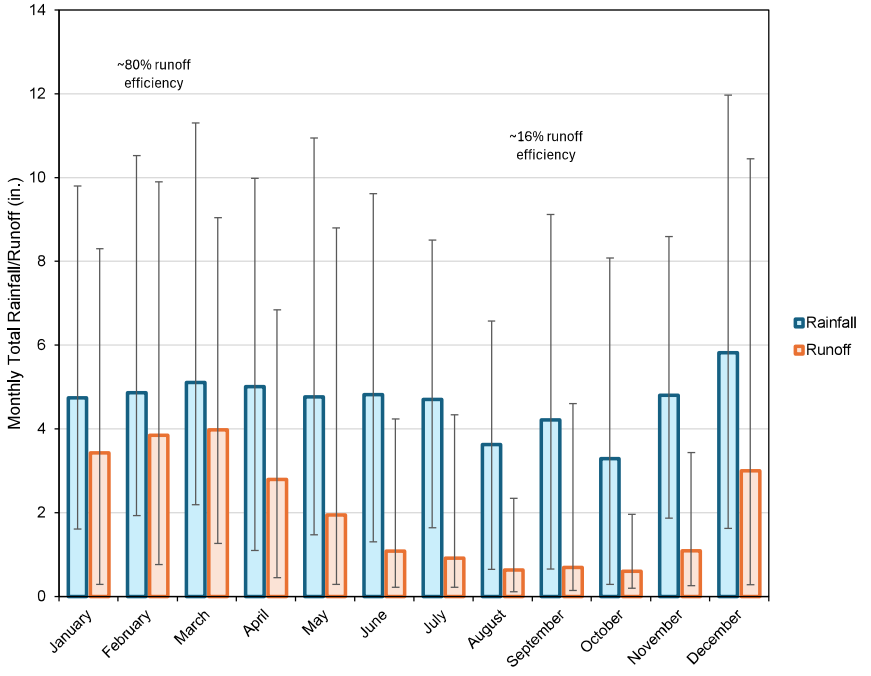
2025 Optimization EA

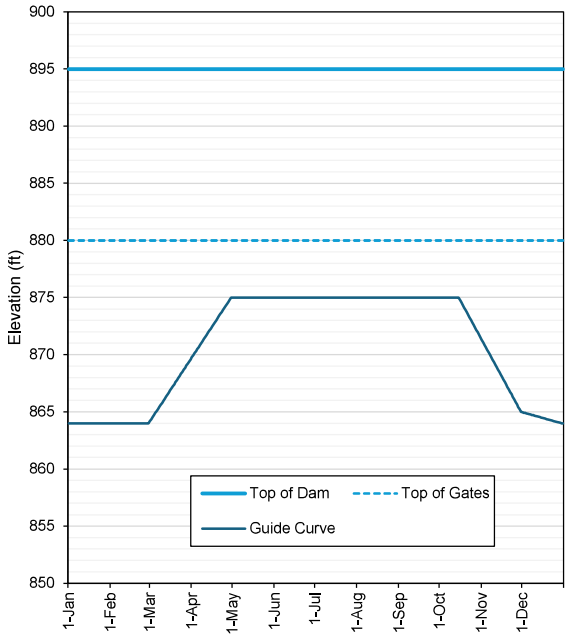
More Hydrology!





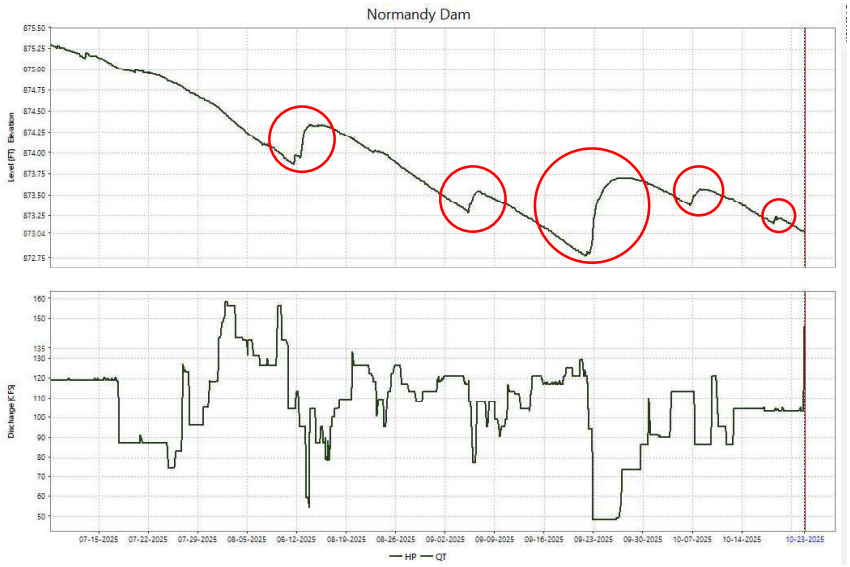
Seasonality Matters





Optimization of Normandy Reservoir Releases

- ~18 hour lag time from Normandy to Shelbyville
- Previous instream flow target at Shelbyville
  - Seasonal 155/120 cfs, instantaneous minimum
- New target
  - Seasonal 155/120 cfs, weekly average
  - Seasonal 135/100 cfs, instantaneous minimum
  - Allows for flexibility responding to local runoff
  - Conserves water
  - 1 cfs for 38 hours is 1 million gallons!



Dendrochronology

Using tree ring data to evaluate water reliability during droughts

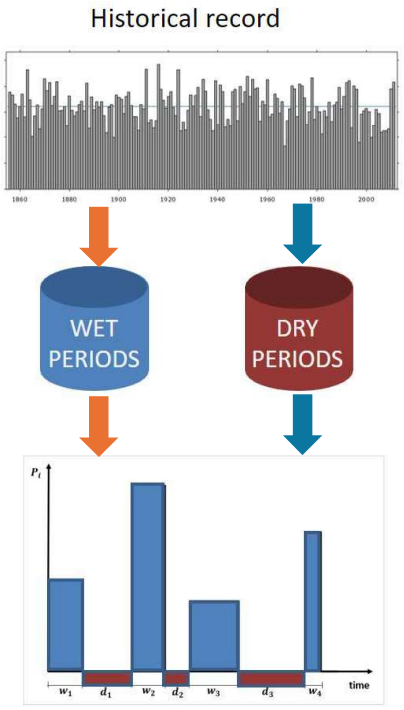
How reliable is our water supply?

Use an Alternating Renewal method to synthesize long term hydrology (1000 years).

The problem?

It's limited by the characteristics of the period of record.

It's ignorant to climatology.



Dendrochronology

Using tree ring data to evaluate water reliability during droughts

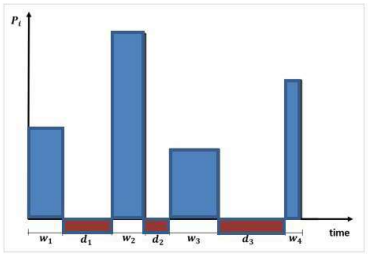
How reliable is our water supply?

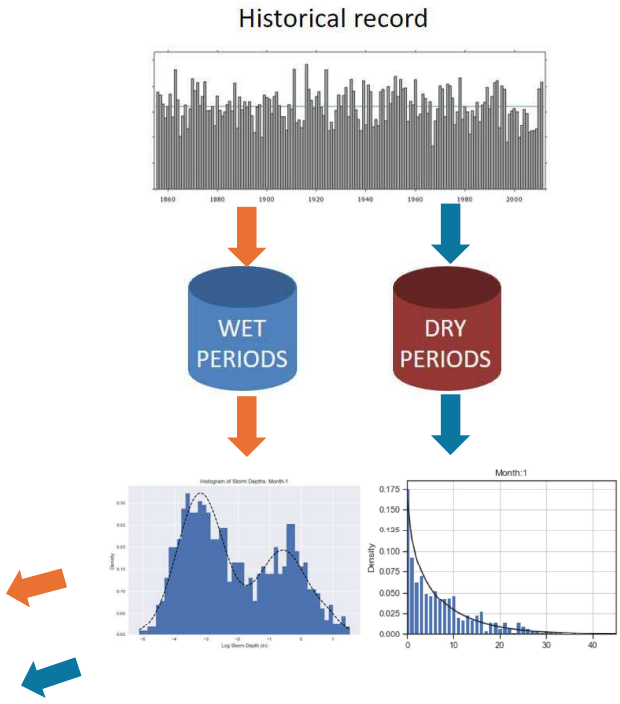
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Dendrochronology

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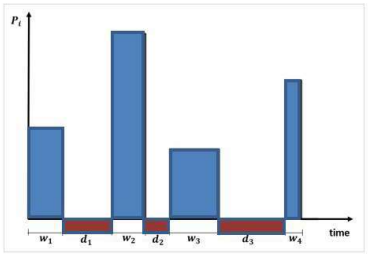
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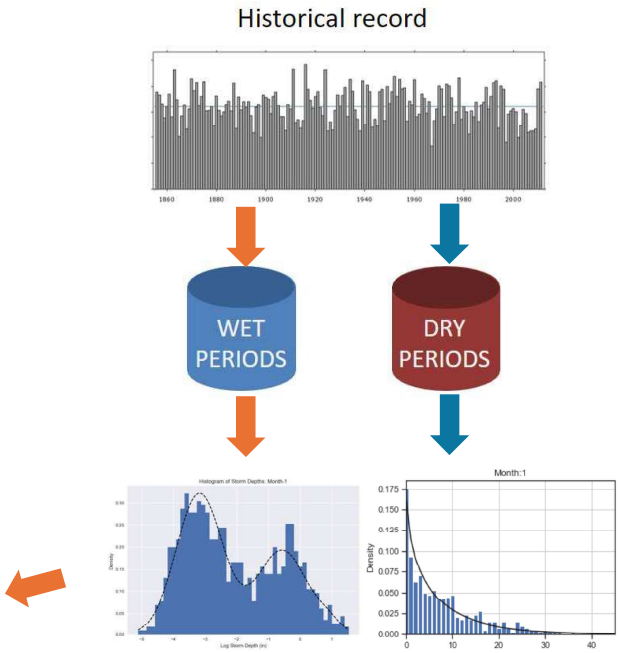
Use an Alternating Renewal method to synthesize long term hydrology (1000 years).

The problem?

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It's ignorant to cl



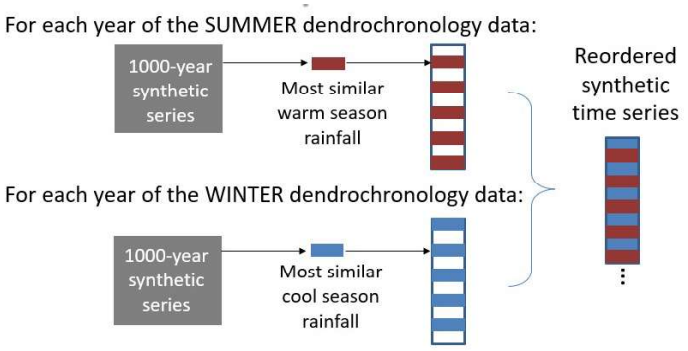


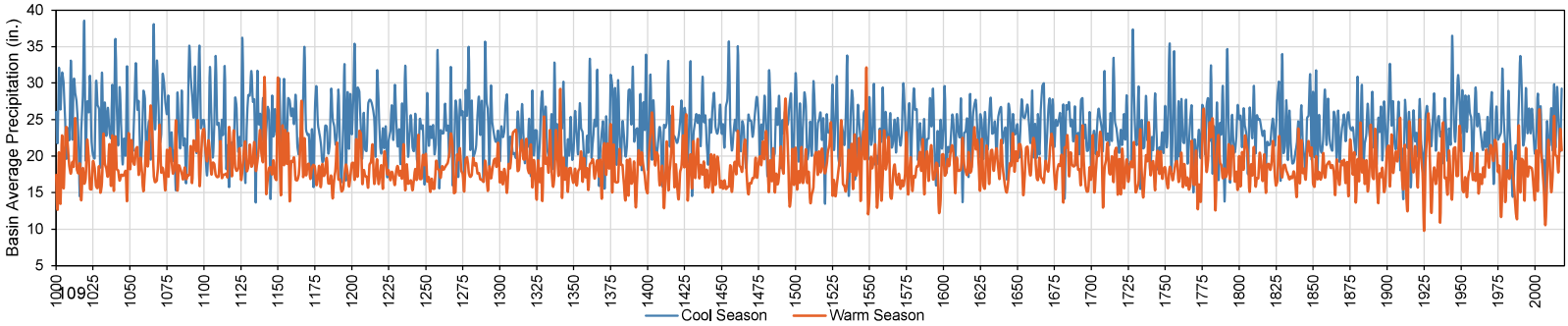
Dendrochronology

Using tree ring data to evaluate water reliability during droughts

Tree ring data allows for a longterm reconstruction of historical climatology (warr on precipitation)



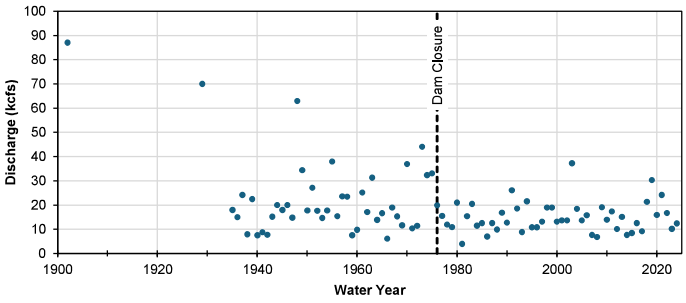




Flood Control

Flood History at Shelbyville

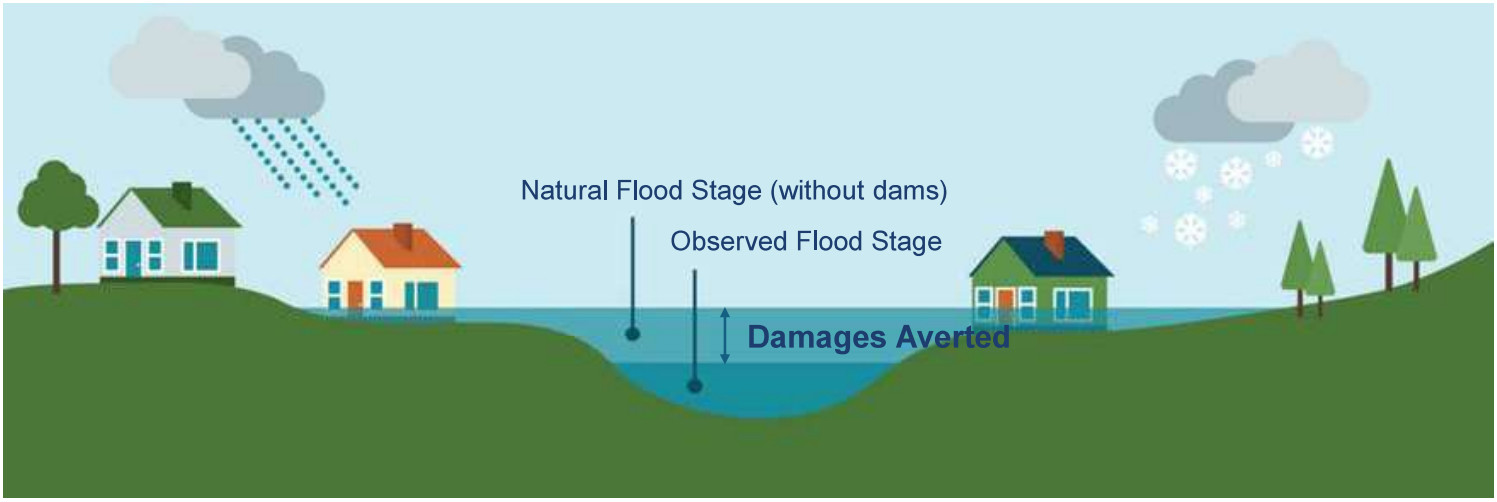
- 66 observed floods between 1887 and 1968
- Every single one between November and May
- Some major floods (flood stage is WSEL 719)
  - April 1902 – 87kcfs, WSEL 737.4
  - March 1929 – 70kcfs, WSEL 735.2
  - February 1948 – 63kcfs WSEL 734.6





Shelbyville, TN, 2/14/1948

Flood Risk

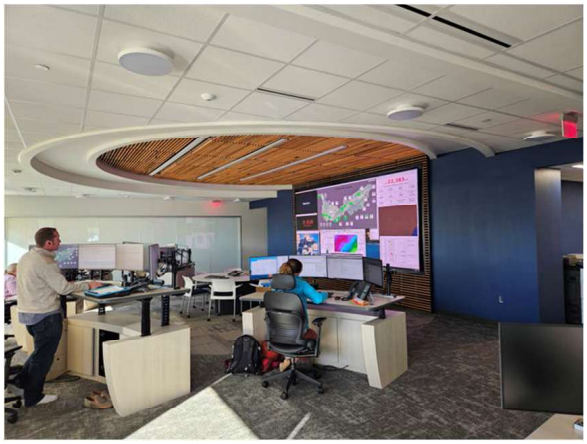


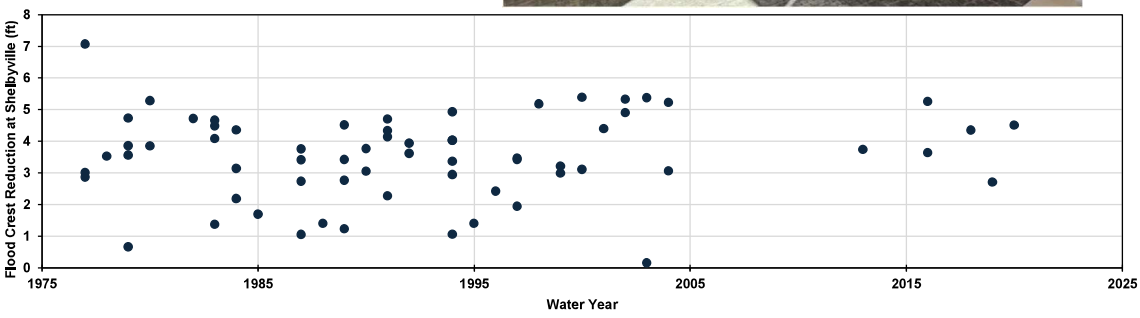
Adapted from National Levee Safety Guidelines

Flood Damages Averted: the difference in estimated direct economic damages between the observed regulated flood and the natural, unregulated flood; i.e., how bad it was vs. how bad it could have been

Flood Control Benefits at Shelbyville

- 1976-2025: $30M in damages averted at Shelbyville
- Biggest reductions by stage:
  - Apr. 1977 – 7.1’
  - Mar. 2000 – 5.4’
  - Feb. 2003 – 5.4
- Biggest reductions by $$$:
  - Jan. 2002 - $4.9M
  - Dec. 1990 - $2.8M
  - Mar. 1980 – $2.1M





Lunch Break

12:00 pm to 1:30 pm

Sponsored by Duck River Agency

"The River Connects Us. Our Legacy Unites Us."

2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

Smart Water Use & Management: A Panel Discussion

"The River Connects Us. Our Legacy Unites Us."

Chris Leauber



- Executive Director, Water & Wastewater Authority of Wilson County, TN
- National leader in water loss with the American Water Works Association
- cleauber@wwawc.com

April Grippo



- Director of Water Resources with the Tennessee Department of Environment and Conservation
- Leads 400 engineers and scientists in drinking water, wastewater, natural resources, and emergency response programs

Jonathan Hardin



- President and CEO of Columbia Power & Water Systems
- Background includes environmental engineering for large projects in support of municipal water and wastewater operations

David Money



- Executive Director of the Duck River Agency
- Previously worked for the TN Department of Environment and Conservation

2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

Smart Water Use & Management: A Panel Discussion

"The River Connects Us. Our Legacy Unites Us."

2025 DUCK RIVER SYMPOSIUM

December 8 • Henry Horton State Park

A look back at Helene & how emergency planning is changing

"The River Connects Us. Our Legacy Unites Us."

Afternoon Break

2:30 pm to 3:00 pm

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2025 DUCK RIVER SYMPOSIUM

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Water & Economics

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Dan Allen, P.E.



- Assistant City Administrator, Spring Hill Water General Manager
- Former Alderman for City of Spring Hill
- Chair of the Duck River Agency Technical Committee

Jimmy West



- Senior Advisor of Capital Projects, Tennessee Department of Economic & Community Development
- Prior experience in private sector

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Source: Wikipedia

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Networking Reception

3:45 pm to 5:00 pm

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