APPENDIX G

OPEN HOUSES

Tennessee Duck River Development Agency

210 East Depot Street • Shelbyville, TN 37160 • O (931)684-7820 • F (931)685-0949 • www.duckriveragency.org

Media Release: Duck River Comprehensive Regional Water Supply Plan

The Tennessee Duck River Development Agency (DRA) has undertaken a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson Counties to meet future water demands and address concerns with possible water shortages brought on by drought conditions. The goal is to develop a plan with a 50-year projection and a 100-year planning horizon that will provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects. The plan will include specific recommendations, including budgets and implementation timelines, on water supply and water management projects.

The first step in the Comprehensive Regional Water Supply Plan is the assessment of the need for additional water supply. The Needs Analysis combines an assessment of the available supply from Normandy Reservoir and the Duck River, with a projection of water demands for domestic, commercial, industrial, and agricultural purposes. Water demands are being projected using studies by USGS, and population projections developed by the University of Tennessee Center for Business and Economic Research (CBER).

The Comprehensive Study is being conducted using a uniquely open process, with extensive opportunities for input from the public, elected officials, and governmental agencies through the use of public workshops and informational meetings, routine updates via our web-site, agency briefings and press coverage. Six public workshops and nine public meetings provide extensive opportunities for public participation. Among the many stakeholders are the public water systems, represented by the Duck River Agency Technical Advisory Committee (DRATAC), and the DRA's Water Resources Council, which includes over 25 governmental and non-governmental agencies.

Phase 1 is coming to a completion and the Duck River Agency is inviting the public to review the Needs Analysis. Public Open Houses will be conducted from 4:00pm to 7:00pm on the following dates at the 3 listed locations:

- September 22, Henry Horton State Park, Conference Room C
- September 23, Manchester City Hall, Board Room
- September 24, Maury County Court House, Commission Meeting Room

More information: www.duckriveragency.org
Contact information: Doug Murphy (931)684-7820 or doug@duckriveragency.org

Tennessee Duck River Development Agency

Comprehensive Regional Water Supply Plan

Extensive Public Involvement

The Comprehensive Regional Water Supply Plan is being conducted using a uniquely open process, with extensive opportunities for input from the public, elected officials, and governmental agencies through the use of public workshops and informational meetings, routine updates via our website, agency briefings and press coverage. The DRA is conducting six public workshops and nine public meetings to obtain input from the public. Among the many stakeholders are the public water systems, represented by the Duck River Agency Technical Advisory Committee (DRATAC), and the DRA's Water Resources Council, which includes over 25 governmental and non-governmental organizations.

What Are The Next Steps?

DRA is accepting input on the draft Needs Assessment at the public meetings scheduled in late September 2009. Comments can also be sent to Doug Murphy (see contact information on back of brochure).

In the near term, the Strategic Planning Team will:

- Refine the Needs Assessment
- Develop alternatives that address the water supply needs
- Plan for Workshop No. 3, where the draft list of alternatives will be discussed

The Duck River Agency is moving forward aggressively to complete the Comprehensive Regional Water Supply Plan by the summer of 2010.

More Information

For information on the Study Approach, a listing of Stakeholder agencies, workshop materials and more, please visit the project website at:
www.duckriveragency.org



For more information, please call or e-mail:

DOUG MURPHY
Executive Director

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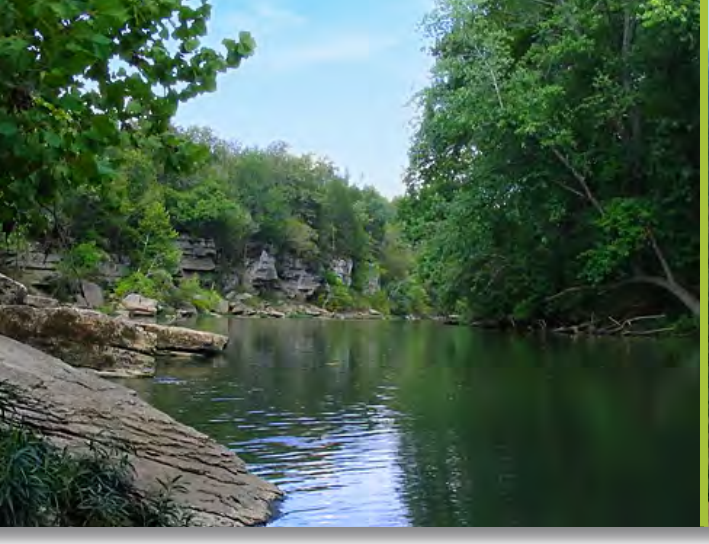





Introduction

The Tennessee Duck River Development Agency (DRA) has undertaken a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties to meet future water demands and address concerns with possible water shortages brought on by drought conditions. The goal is to develop a plan with a 50-year projection and a 100-year planning horizon that will provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects if necessary. The plan will include specific recommendations, including budgets and implementation timelines, for water supply and water management projects.

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In 1998, the DRA Board of Directors adopted the following mission statement:

"To develop, protect, and sustain a clean and dependable water resource for all citizens of the Duck River region."

The DRA represents seven water utilities that serve approximately 250,000 people and industries that include car manufacturers, food processing plants, and other businesses utilizing water for production. In addition to these uses, the river provides a wide range of other values including recreation, an excellent fishery and some of the most biologically rich freshwater habitat in North America.



The drought of 2007 highlighted the issue that in extended dry weather conditions the citizens of the Duck River Region primarily depend on the water stored in Normandy Reservoir to meet multiple uses, including drinking water, wastewater dilution, recreation, and natural resource protection. The dramatic decrease in rainfall, combined with the multiple uses of the reservoir and the river, caused record low water levels in Normandy that resulted in temporary dam operational changes to protect all water uses. Weather patterns and growth projections have created the need for a comprehensive regional water supply plan for the Duck River Region.

Strategic Planning Team

DRA has assembled a Strategic Planning Team to develop a Comprehensive Regional Water Supply Plan. The Team consists of O'Brien & Gere (Prime Consultant), CTI Engineers, Inc. (Sub-consultant), HydroLogics (Hydrologic Modeling), BDY Environmental, LLC (Environmental), and Trauger & Tuke (Legal). The Plan will provide direction to the DRA regarding the management of available water resources, including the implementation of specific water supply infrastructure projects if necessary.

Needs Assessment

The first step in the Comprehensive Regional Water Supply Plan is the assessment of the need for additional water supply. The draft Needs Assessment combines an evaluation of the available supply from Normandy Reservoir and the Duck River, with a projection of water demands for domestic, commercial, industrial, and agricultural purposes. The OASIS computer model is being used to examine the operations of Normandy Dam and the hydrology of the Duck River to help gain a better understanding of how we can satisfy the future need for public water supply while meeting the instream river flows necessary for wastewater dilution, recreation and natural resource protection. Water demands are being projected using studies by United States Geological Survey (USGS), and population projections developed by the University of Tennessee Center for Business and Economic Research (CBER).

Tennessee Duck River Development Agency

Introduction & Overview

Introduction

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The Agency is governed by a 17 member board of directors appointed by the governor. There are two citizens from each of the five participating counties (Coffee, Bedford, Marshall, Maury, and Hickman). There are two county mayors and two city/town mayors serving in the participating area. Two citizens who reside anywhere in the state of Tennessee serve as at-large positions on the board along with a member of the governor's staff. The Agency is managed by Doug Murphy, the Executive Director.

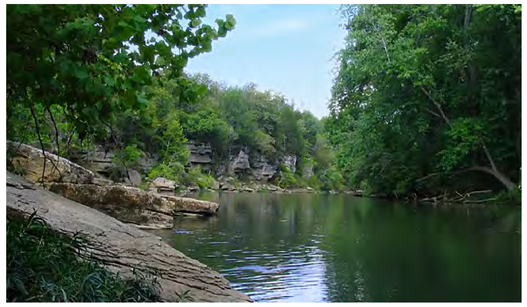
The DRA represents seven water utilities that serve approximately 250,000 people and industries that include car manufacturers, food processing plants, and other businesses utilizing water for production. The seven water utilities contribute five cents per one thousand gallons of water sold into a trust that provides funding for water supply and water quality projects as well as operating expenses for the Agency. Over $11 million resulting from these contributions have been set aside for water supply infrastructure projects in the Duck River Region.

In November 1999 the DRA/Water Systems partnership was further strengthened with the establishment of the Duck River Agency Technical Advisory Committee ("DRATAC"), which includes the water system managers. DRATAC provides advice, guidance and assistance to the DRA Board and has been a key to the success of the Agency.

The Agency sponsored the formation of the Duck River Watershed Water Resources Council (WRC) in May 2002. The WRC is a voluntary group, which includes all of the federal, state, and local agencies and private organizations working on water supply quantity and quality issues in the watershed. Its purpose is to foster cooperation and coordination of the member's activities as they attempt to fulfill their missions relating to ground and surface water resources.

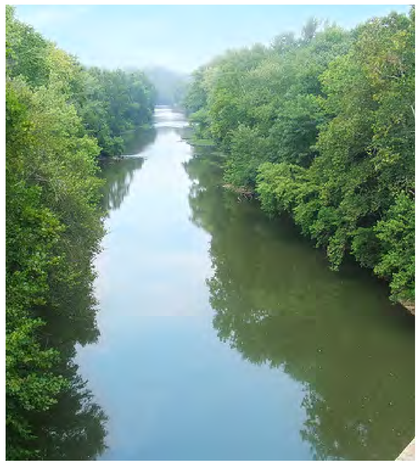






Mission Statement

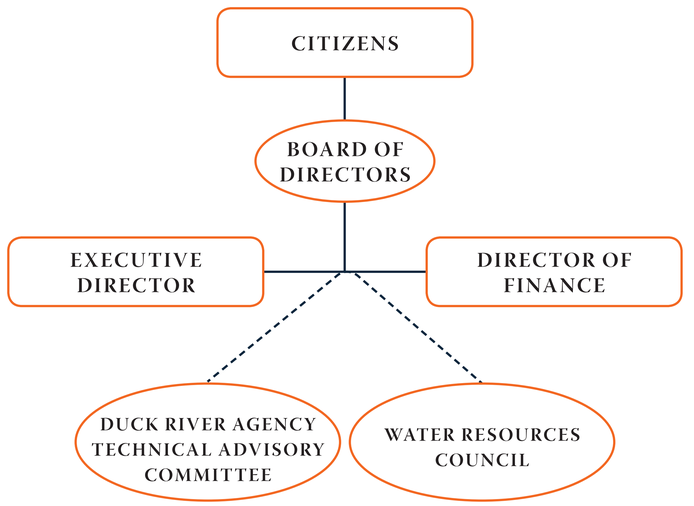
"To develop, protect, and sustain a clean and dependable water resource for all citizens of the Duck River region."



Organizational Chart

Duck River Agency Technical Advisory Committee consists of each of the water systems in the Duck River Region.

The Water Resources Council is made up of federal, state, and local agencies that share responsibility for the watershed, concerned environmental organizations and other stakeholder organizations, and individuals working to improve the watershed.



Study Area



For More Information

Phone or E-mail

For any additional information contact:

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On the Web

For information on the Tennessee Duck River Development Agency (DRA), a listing of DRA members, and much more, please visit the project website at:
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Tennessee Duck River Development Agency

Study Approach & Schedule

Introduction

The Tennessee Duck River Development Agency (DRA) has undertaken a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties to meet future water demands and address concerns with possible water shortages brought on by drought conditions. The goal is to develop a plan with a 50-year projection and a 100-year planning horizon that will provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects if necessary. The plan will include specific recommendations, including budgets and implementation timelines, for water supply and water management projects.

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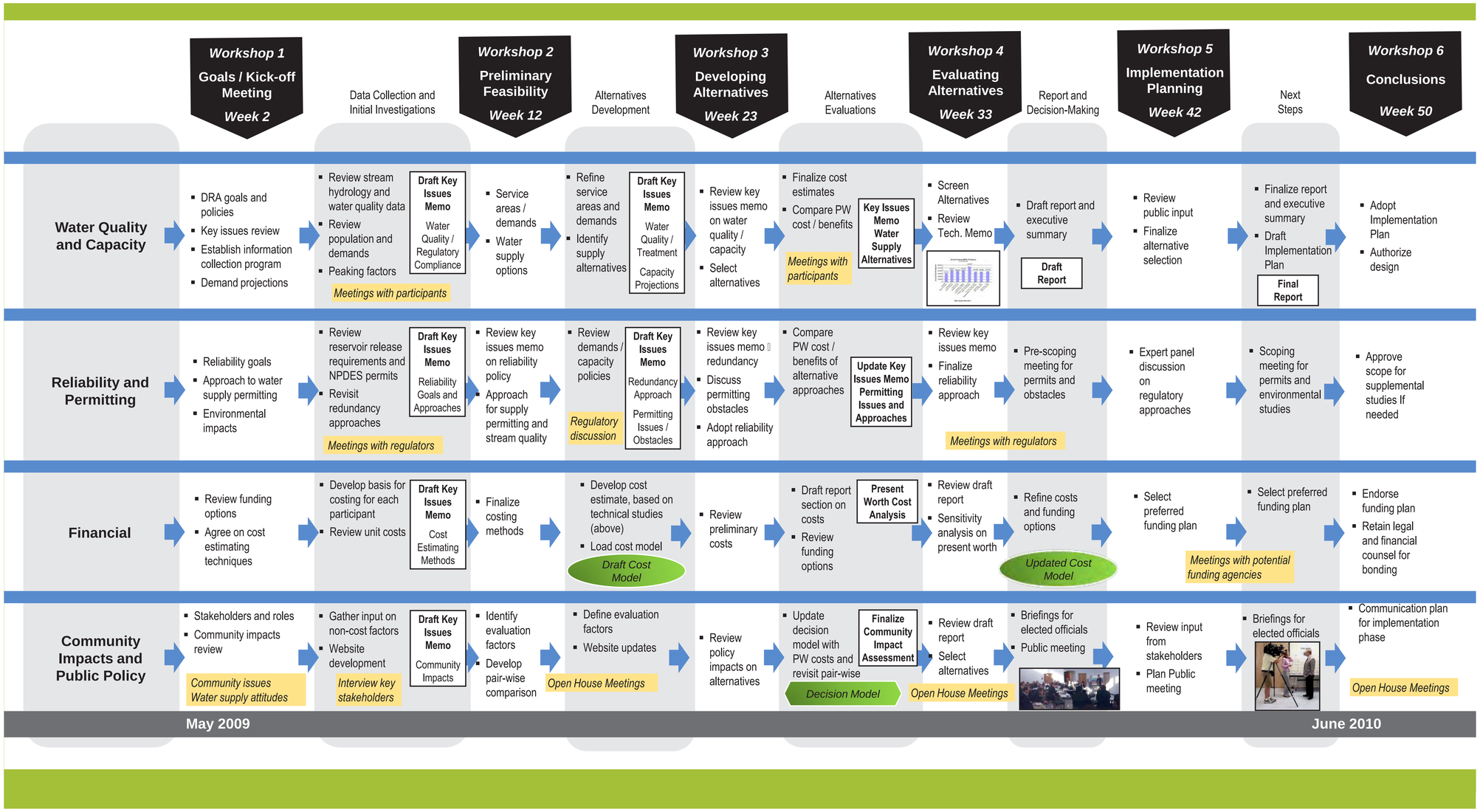
Project Approach & Decision Making Process



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Needs Assessment – Water Supply Availability

Summary

Normandy Reservoir and the Duck River are the existing sources of public water supply.

Normandy Reservoir

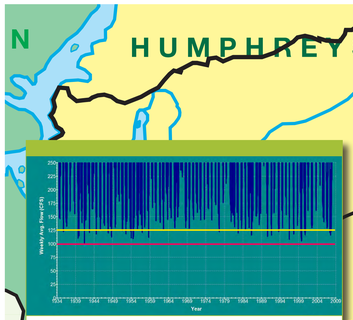
When construction of Normandy Reservoir was authorized, Manchester, Tullahoma and Shelbyville received allocations of 8, 14, and 6.5 million gallons per day (MGD), respectively. Manchester and Tullahoma are supplied with water drawn directly from the Normandy Reservoir pool, while Shelbyville's allocation is released from the reservoir and is drawn from the Duck River at Shelbyville. The OASIS computer model was used to analyze the yield of Normandy Reservoir under existing conditions for each of the droughts of the past 75 years. The *Normandy Reservoir Yield* figure shows the supply available from Normandy Reservoir based on the worst case drought of record to-date (i.e., a 1-year in 75-year event) and assumes "no action" is taken mitigate impacts (i.e., change in reservoir operations, etc.). The severity of the 2007 drought on Normandy Reservoir is illustrated in the modeling results shown in the *Normandy Reservoir Elevation* figures.

Duck River

Shelbyville, Bedford County Utility District, Lewisburg, Chapel Hill, Spring Hill and Columbia Power and Water Systems withdraw water directly from the Duck River. The OASIS computer model was used to examine the water supply available from the Duck River while maintaining the river constraints. The available water supply during drought conditions depends on the severity of the drought. As shown in the *Weekly Average Flow at Columbia* figure, a number of events drop below 125 CFS (81 MGD) and approach the 100 CFS (64.6 MGD) constraint at Columbia under existing demand conditions and assuming "no action" is taken to mitigate impacts (i.e., water use restrictions, etc.). The severity and duration of the low flow events over the past 75 years and based on existing water demands is illustrated in the *Years with Flows < 125 CFS (81 MGD) at Columbia* figure.

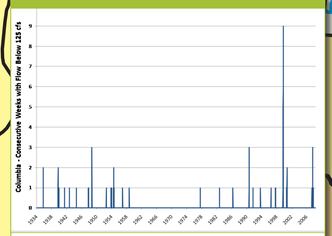
Key for Map

- Water Treatment Plant Intake Locations
- Wastewater Treatment Plant Discharge Locations



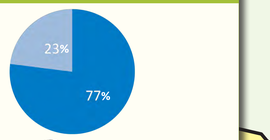
Weekly Average Flow at Columbia - Model Results

Period of Record



Years with Flows < 125 cfs (81 MGD) at Columbia - Model Results

Period of Record

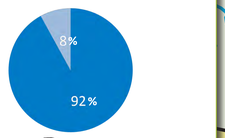


2010 Demands

All Other Uses Supported by Instream Flow Requirements –Minimum Weekly Average Flow at Columbia during Severe Drought (88MGD = 136 CFS)

Public Water Supply – Net Water Supply Withdrawl from Duck River between Shelbyville and Columbia (26MGD = 40 CFS)

Use of Water from Duck River at Columbia during Severe Drought

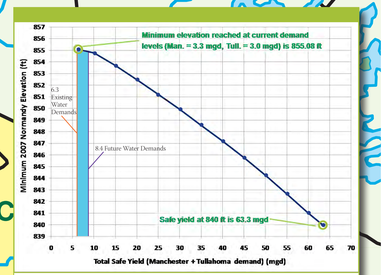


2010 Demands

Public Water Supply – Net Water Supply Withdrawl from Normandy Reservoir (4MGD)

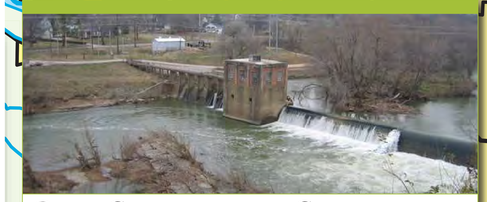
All Other Uses Supported by Required Reservoir Release – Normandy Reservoir Summer/Fall Release (100MGD = 155CFS)

Use of Water from Normandy Reservoir during Severe Drought



Normandy Reservoir Yield for 1-year in 75-year drought - Model Results

Period of Record



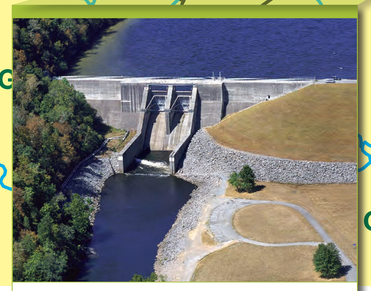
River Constraints at Columbia

- Columbia Power and Water System's Aquatic Resource Alteration Permit identifies the following permit conditions:
  - Columbia Power and Water System's maximum instantaneous withdrawal rate shall be limited to 19.4 MGD (30 CFS)
  - Columbia Power and Water System's withdrawal shall not result in a reduction of flow in the Duck River of less than 64.6 MGD (100 CFS) as measured downstream of the intake
- Columbia's NPDES permit has an outstanding permit appeal
- No release requirement from Normandy Reservoir stipulated for Columbia



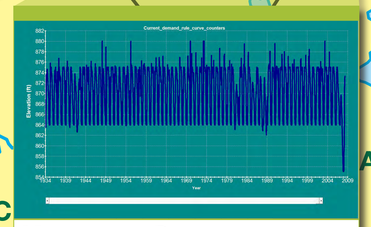
River Constraints at Shelbyville

- 77.5 mgd (120 CFS) minimum instantaneous flow at Shelbyville (December through May) at USGS gage at Duck River Mile 221.4
- 100.2 MGD (155 CFS) minimum instantaneous flow at Shelbyville (June through November) at USGS gage at Duck River Mile 221.4
- Up to 6.5 MGD(10 CFS) additional instantaneous flow at Shelbyville's water supply intake located at Duck River Mile 221.9



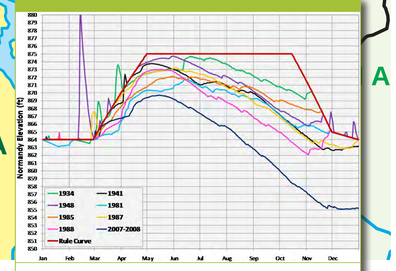
River Constraints just Downstream of Normandy Reservoir

- Release from Normandy Reservoir to maintain 25.8 MGD (40 CFS) minimum instantaneous flow



Normandy Reservoir Elevation - Model Results

Period of Record



Normandy Reservoir Elevation for Major Droughts - Model Results

No Action Alternative

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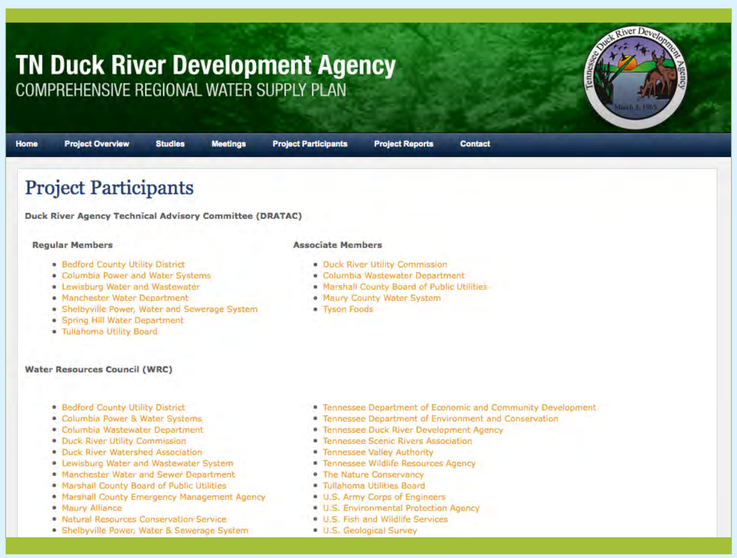













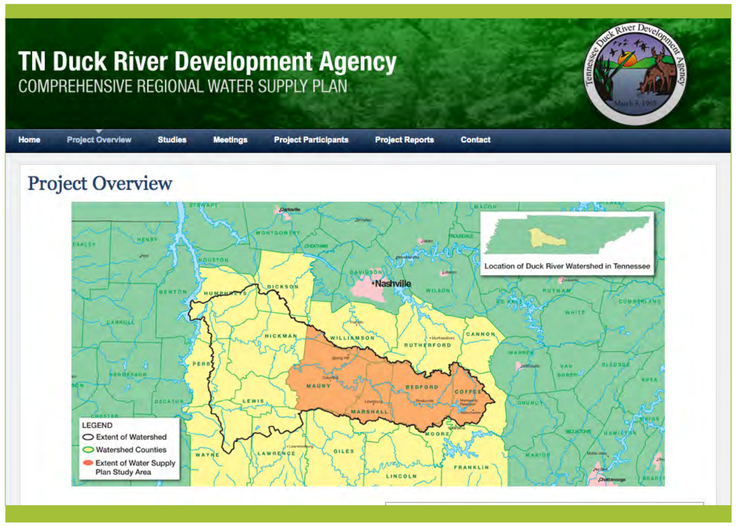

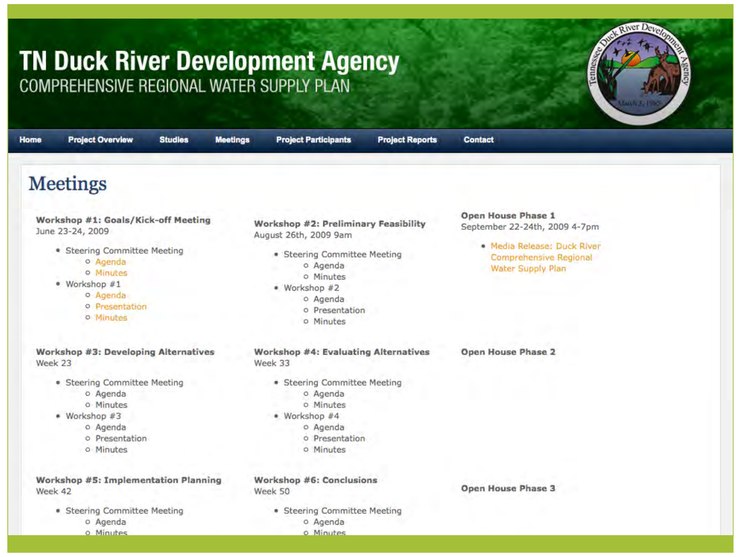

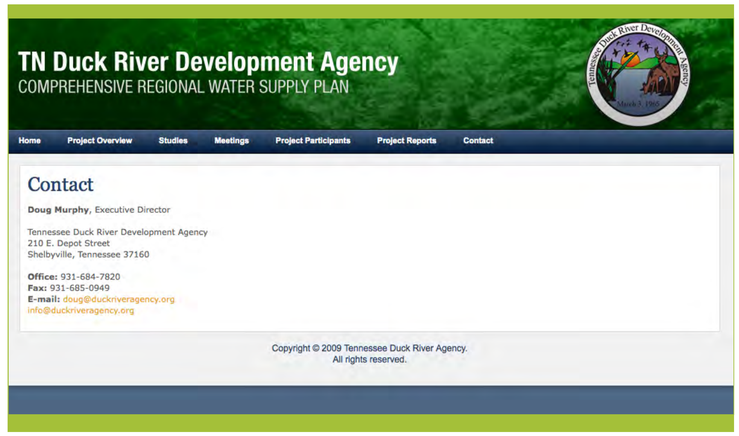

WWW.DUCKRIVERAGENCY.ORG.

For continuous updates or to learn more about the Tennessee Duck River Development Agency and the Comprehesive Regional Water Supply Plan please visit our website at www.duckriveragency.org.

The website provides access to:

- A complete Project Overview
- The time and place of meetings
- Materials from meetings (minutes, agendas, presentations, etc.)
- The Project Approach and Decision Making Process
- The full Scope of Services
- Links to all the project participants (Regular Members, Associate Members, the Water Resources Council (WRC), the Steering Committee, and the Strategic Team)
- Contact information

Studies and reports will be posted online as they are completed.

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Alternatives Analysis

A list of 40 potential water supply alternatives identified in previous studies was reduced to 26 unique alternatives which were considered worthy of further consideration. Alternatives included a wide array of non-structural and structural measures such as:

- Implementing additional water efficiency measures
- Implementing a regional drought management plan
- Changing operation of Normandy Reservoir
- Modifying river constraints
- Raising Normandy Dam
- Constructing tributary reservoirs (Fountain Creek Reservoir)
- Building offstream storage reservoirs (pumped storage)
- Utilizing quarries
- Constructing pipelines from reservoirs, rivers or other water systems

A summary matrix was developed which described each of the alternatives and documented key aspects of the alternative related to seven criteria: reliable capacity, raw water quality, cost, implementability (permitting), flexibility (phasing), environmental benefits, and recreation. During public work sessions with stakeholders, the alternatives were discussed and sorted into four categories:

- Baseline (water efficiency, drought management, etc.)
- Fatally Flawed or Highly Unlikely (unreliable, permitting obstacles, etc.)
- Backup (alternative which may be suitable for implementation with a cornerstone alternative)
- Cornerstone (alternatives capable of satisfying entire river deficit in 2060)

More detailed investigations are currently being conducted and implementation plans are being generated on four candidate cornerstone and four backup alternatives to assist with identification of a recommended alternative.

Extensive Public Involvement

The Comprehensive Regional Water Supply Plan is being conducted using a uniquely open process, with extensive opportunities for input from the public, elected officials, and governmental agencies through the use of public workshops and informational meetings, routine updates via our website, agency briefings and press coverage. The DRA is conducting six public workshops and several public meetings to obtain input from the public. Among the many stakeholders are the public water systems, represented by the Duck River Agency Technical Advisory Committee (DRATAC), and the DRA's Water Resources Council, which includes over 25 governmental and non-governmental organizations.

What Are The Next Steps?

DRA is accepting input on the Alternatives Analysis at the public meetings scheduled in March 2010. Comments can also be sent to Doug Murphy at the address below.

In the near term, the Strategic Planning Team will:

- Further evaluate cornerstone and backup alternatives that address the water supply needs.
- Develop possible implementation plans.
- Plan for Workshop No. 5, where the results of the investigations of the cornerstone and backup alternatives will be discussed.

The Duck River Agency is moving forward aggressively to complete the Comprehensive Regional Water Supply Plan by the summer of 2010.

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Tennessee Duck River Development Agency

Comprehensive Regional Water Supply Plan

Spring 2010







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Needs Assessment

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Tennessee Duck River Development Agency

Alternatives Analysis

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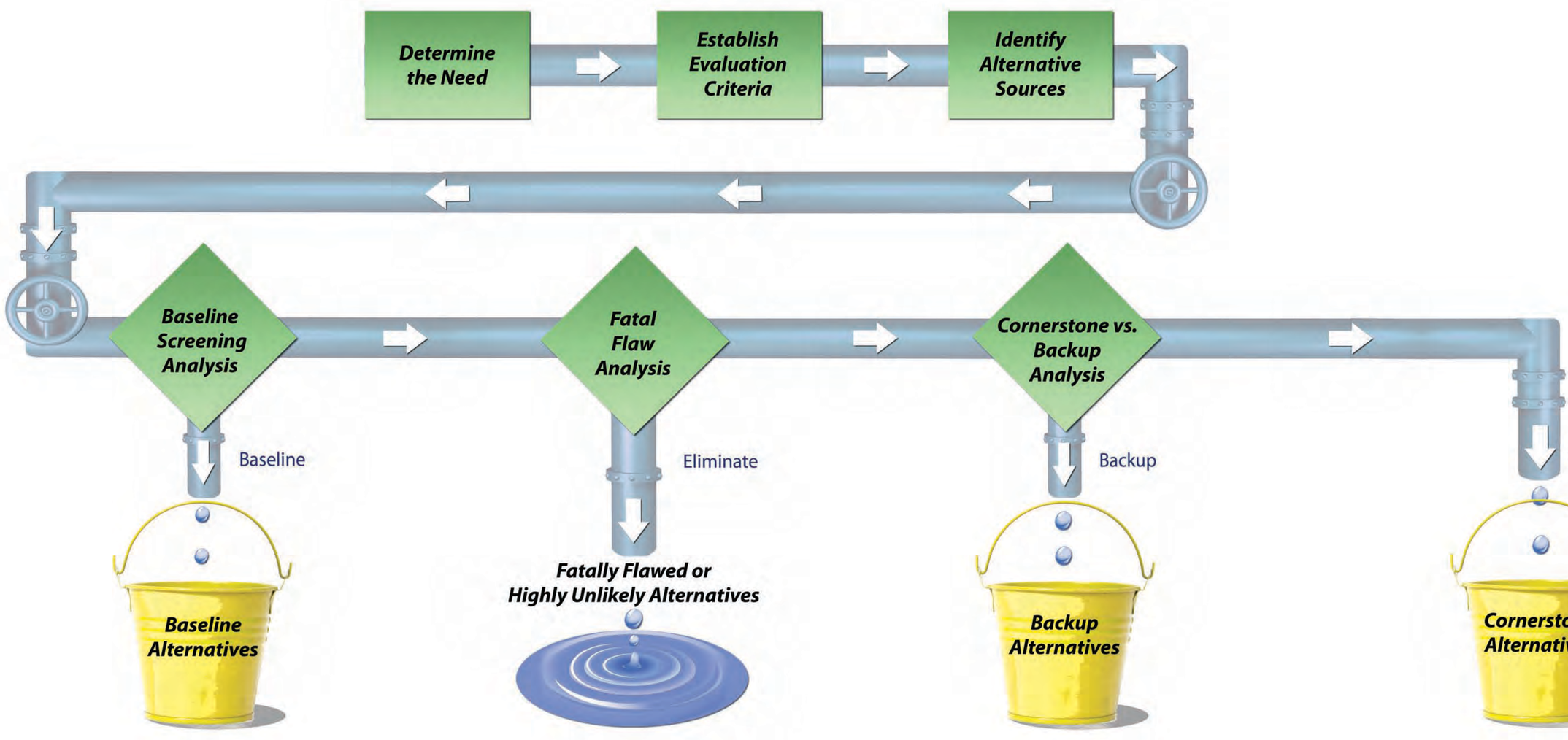

- Water Efficiency Measures
- Regional Drought Management Plan
- Optimize Releases from Normandy Reservoir

- Reduce Irrigation Withdrawals
- Upgrade Existing Columbia City Dam to Allow Releases
- Utilize Groundwater Sources
- Construct Water Intake for Maury County at River Mile 163
- Construct Fountain Creek Reservoir and Pipe Raw Water to Columbia WTP
- Construct Fountain Creek Reservoir with Downstream Release
- Construct Pipeline from Tennessee River to Columbia WTP
- Construct Pipeline from Tims Ford Reservoir
- Purchase Water from Nearby Systems
- Pump Treated Wastewater from Columbia WWTP to Below Columbia Dam
- Construct Water Intake near Williamsport and Pump Back to Columbia Dam Pool
- Construct Infrastructure to Return Treated Wastewater from Tullahoma WWTP to Normandy Reservoir

- Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels and Improve DRUC Intake
- Modify River Constraints to Preserve Storage in Normandy Reservoir
- Utilize Quarries
- Convey Arnold Cooling Water to Normandy Reservoir

- Raise Normandy Reservoir Winter/Spring Pool Level without Raising Dam / Modify Normandy Reservoir Flood Rule Curve to Meet Columbia Constraint
- Raise Normandy Dam (Increase Winter/Spring Pool and Retain Summer/Fall Pool Level)
- Monsanto Lake (Existing Offstream Storage Reservoir)
- Construct Water Intake near Williamsport and Pump Back to Columbia WTP



Duck River Comprehensive Regional Water Supply Plan

Open House No. 2 / March 24, 2010

O'BRIEN & GERE
www.obg.com

Briefing Topics

- Project Goal
- Water Supply Evaluation Process
- Roles of Key Participants in the Decision Process
- Water Supply Needs Assessment
- Water Supply Alternatives Screening
- Next Steps

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Project Goal

The goal of the Comprehensive Water Supply Plan is to provide direction to the Duck River Agency regarding the management of available water resources, including the implementation of specific water supply infrastructure projects."

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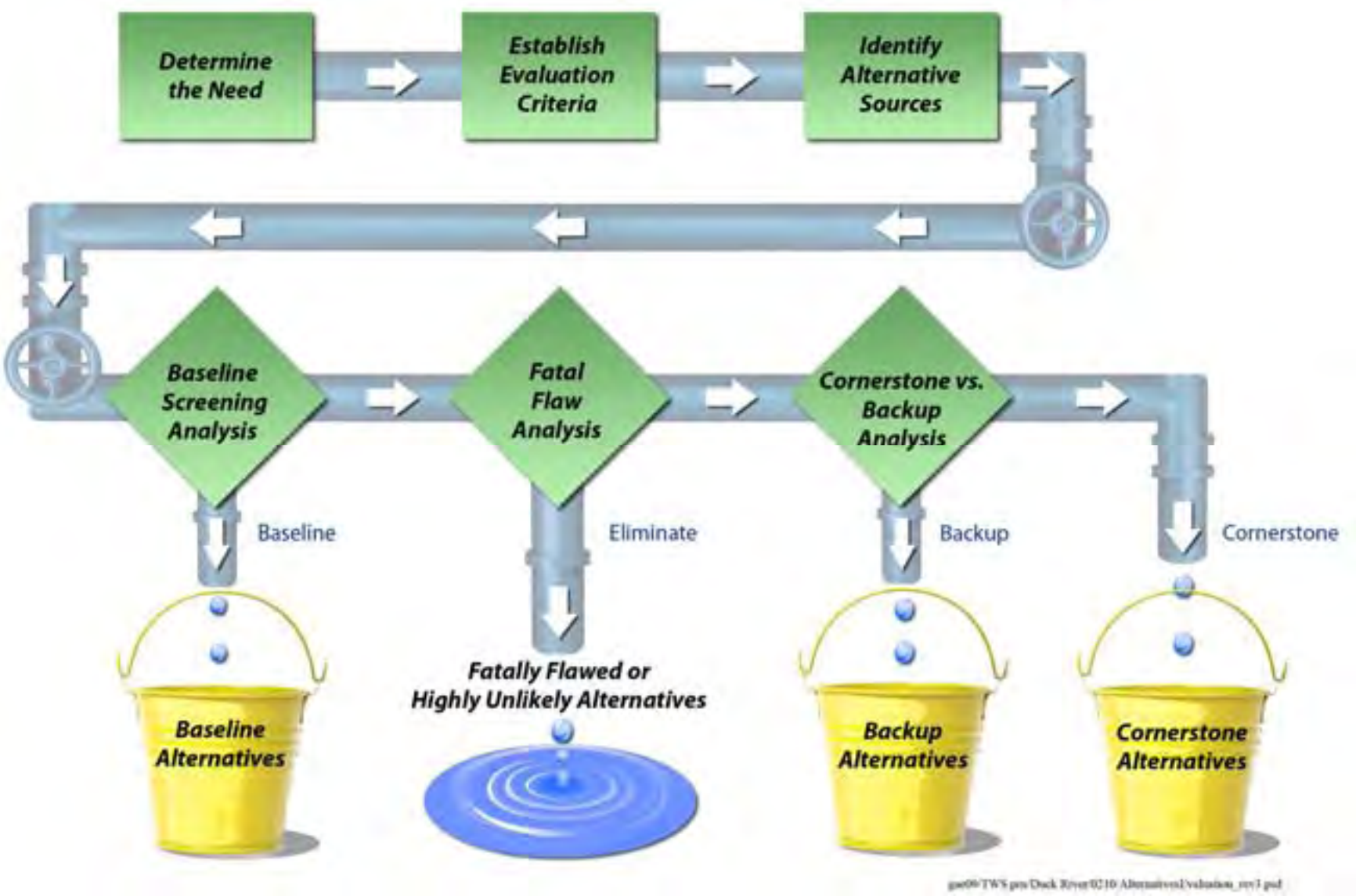
Water Supply Evaluation Process



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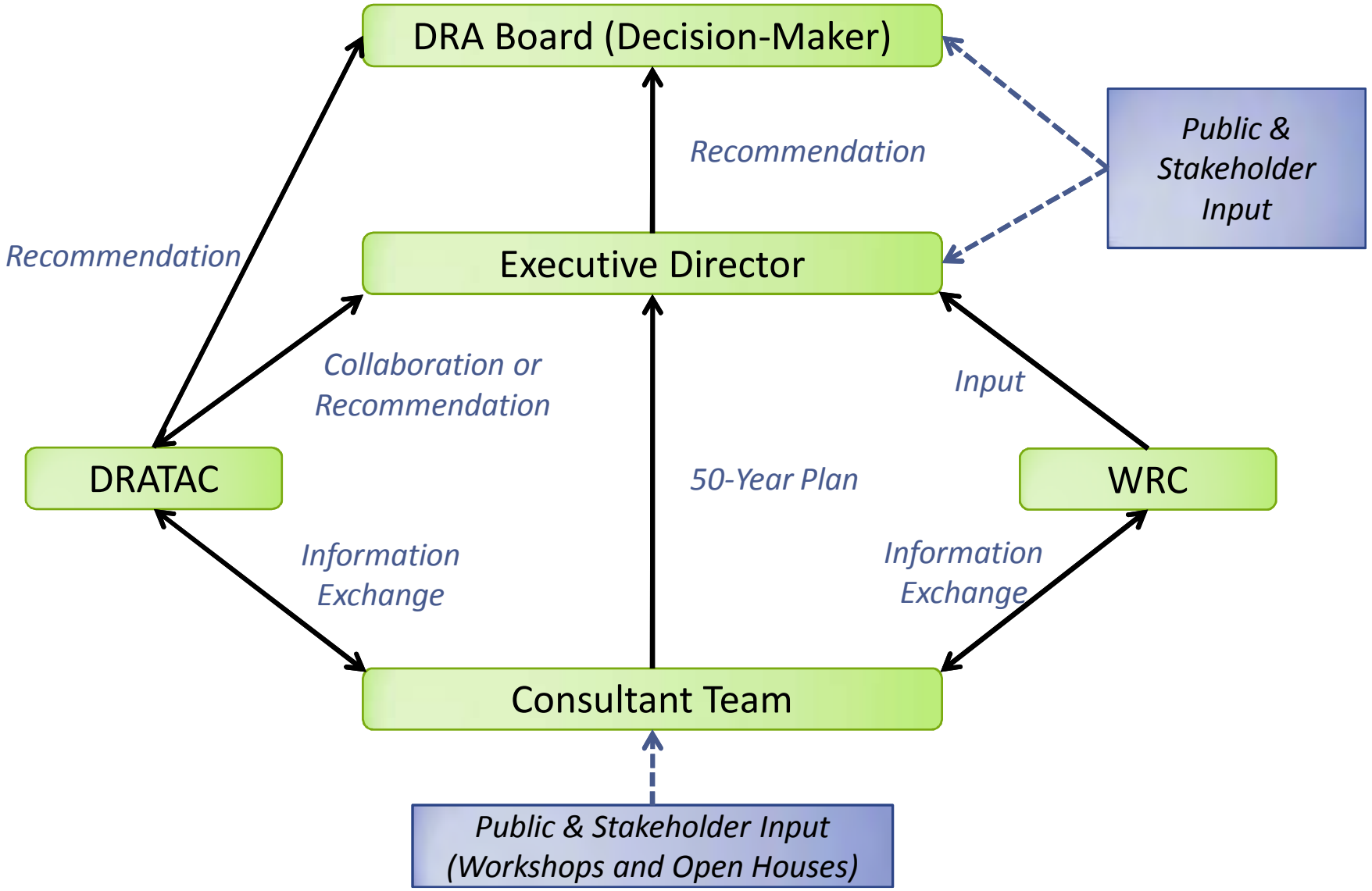
Roles of Key Participants in the Decision Process



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Service Area

"Estimated Use of Water in the Upper Duck River Watershed, Central Tennessee, and Water Demand Projections through 2030 ," USGS, 2008

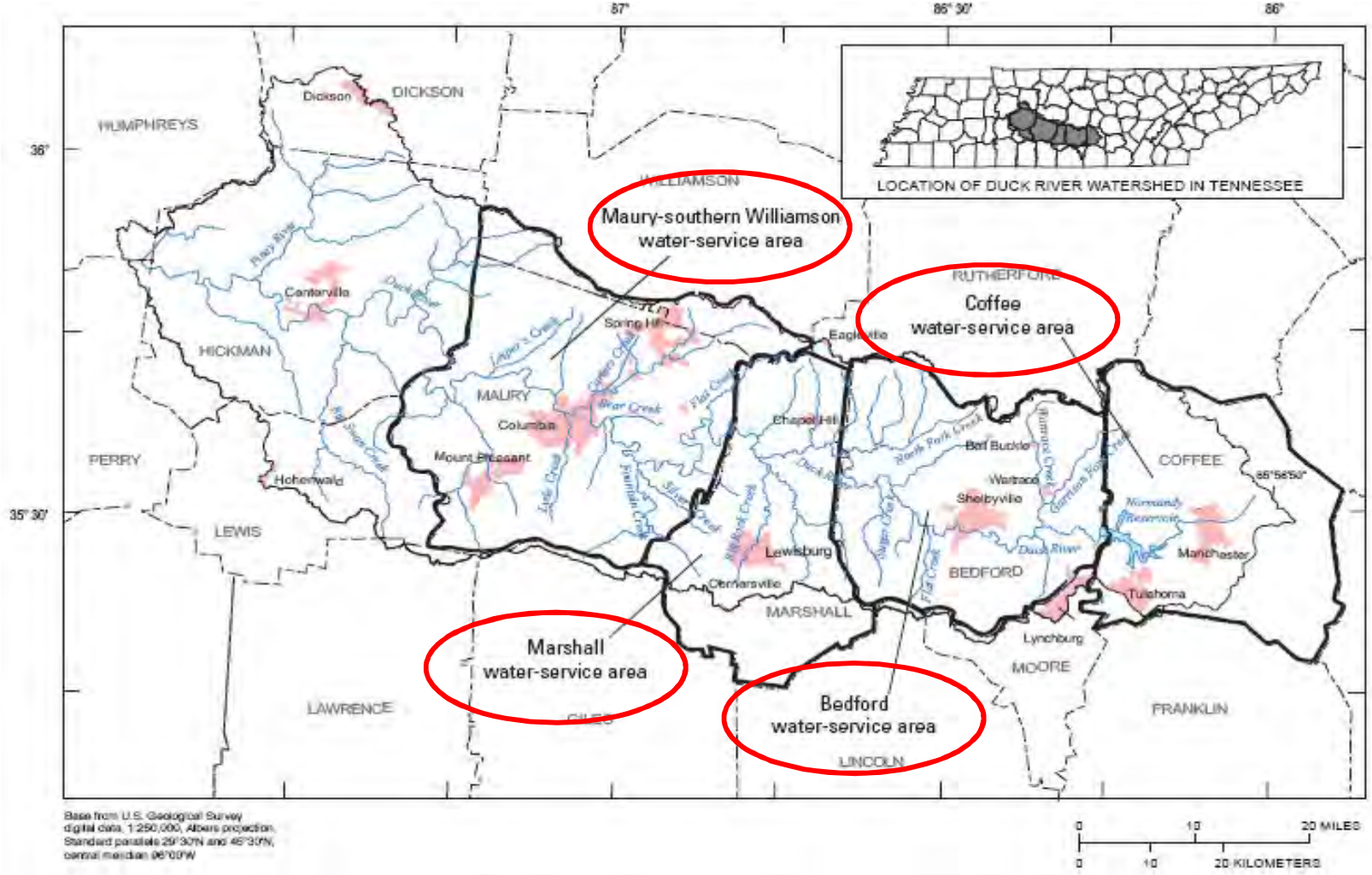

Figure 1. Upper Duck River study area and the Maury-southern Williamson, Marshall, Bedford, and Coffee water-service areas.

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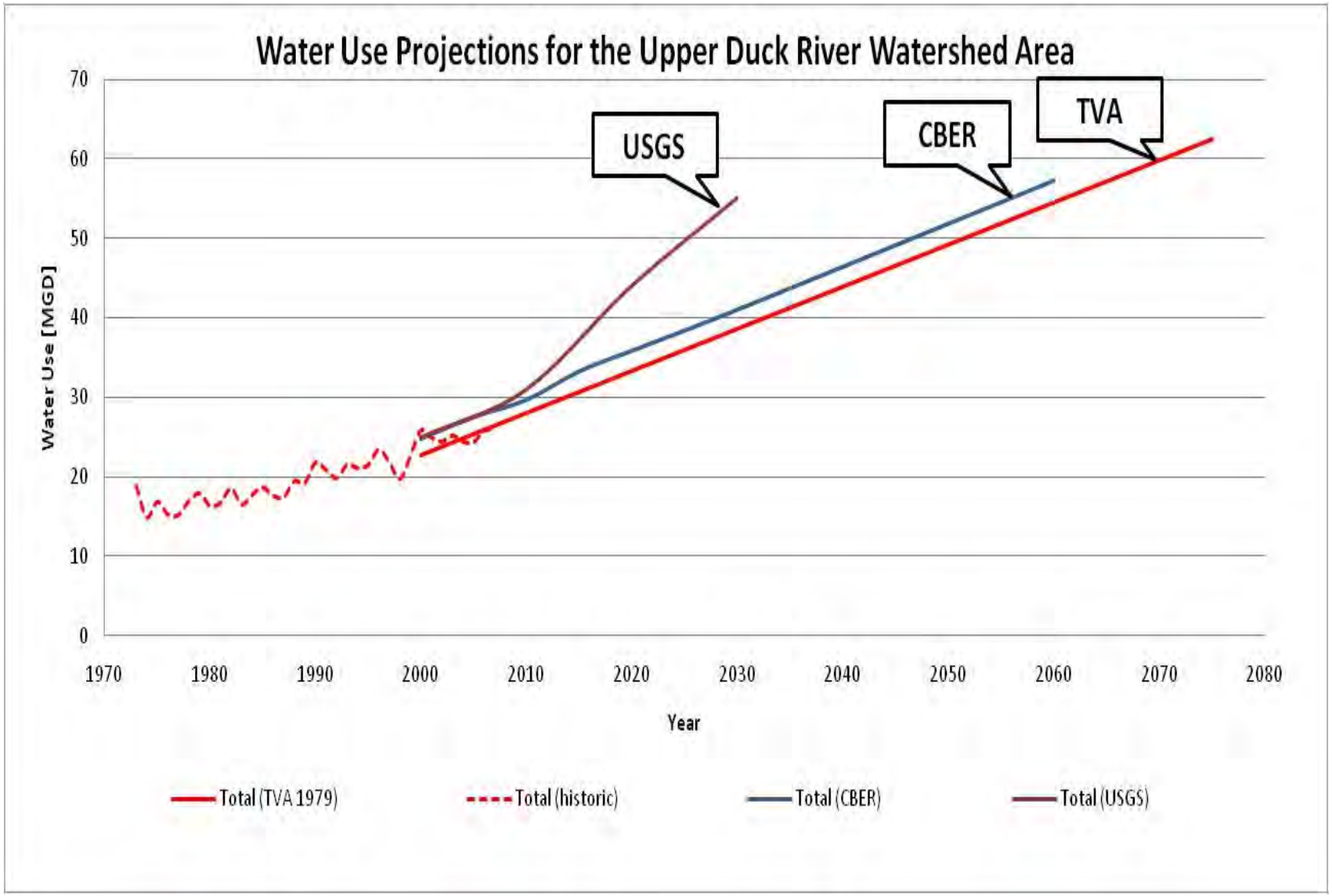
Summary of Future Water Demands



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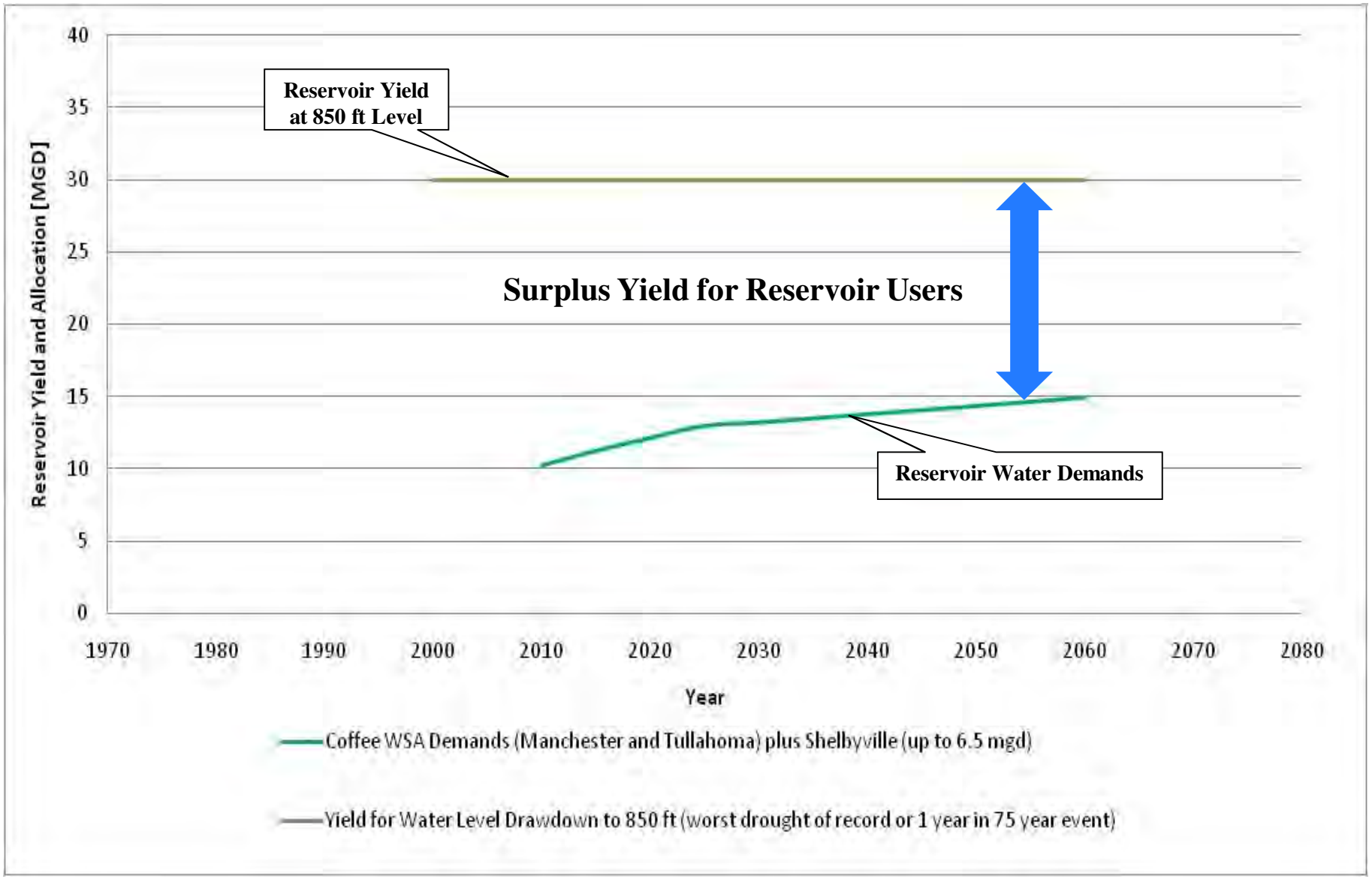
Needs Assessment for Normandy Reservoir Supply



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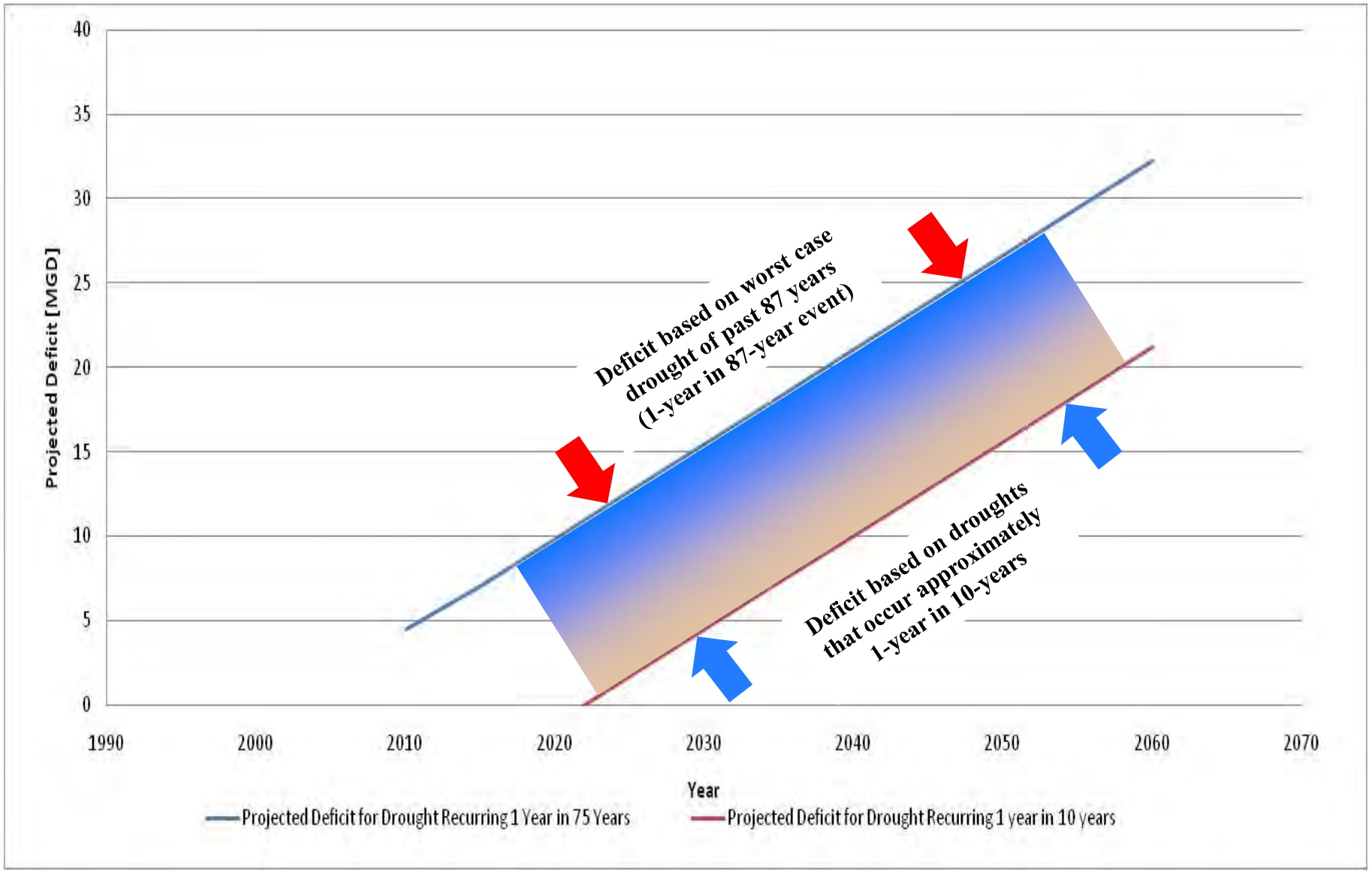
Needs Assessment for Duck River Supply



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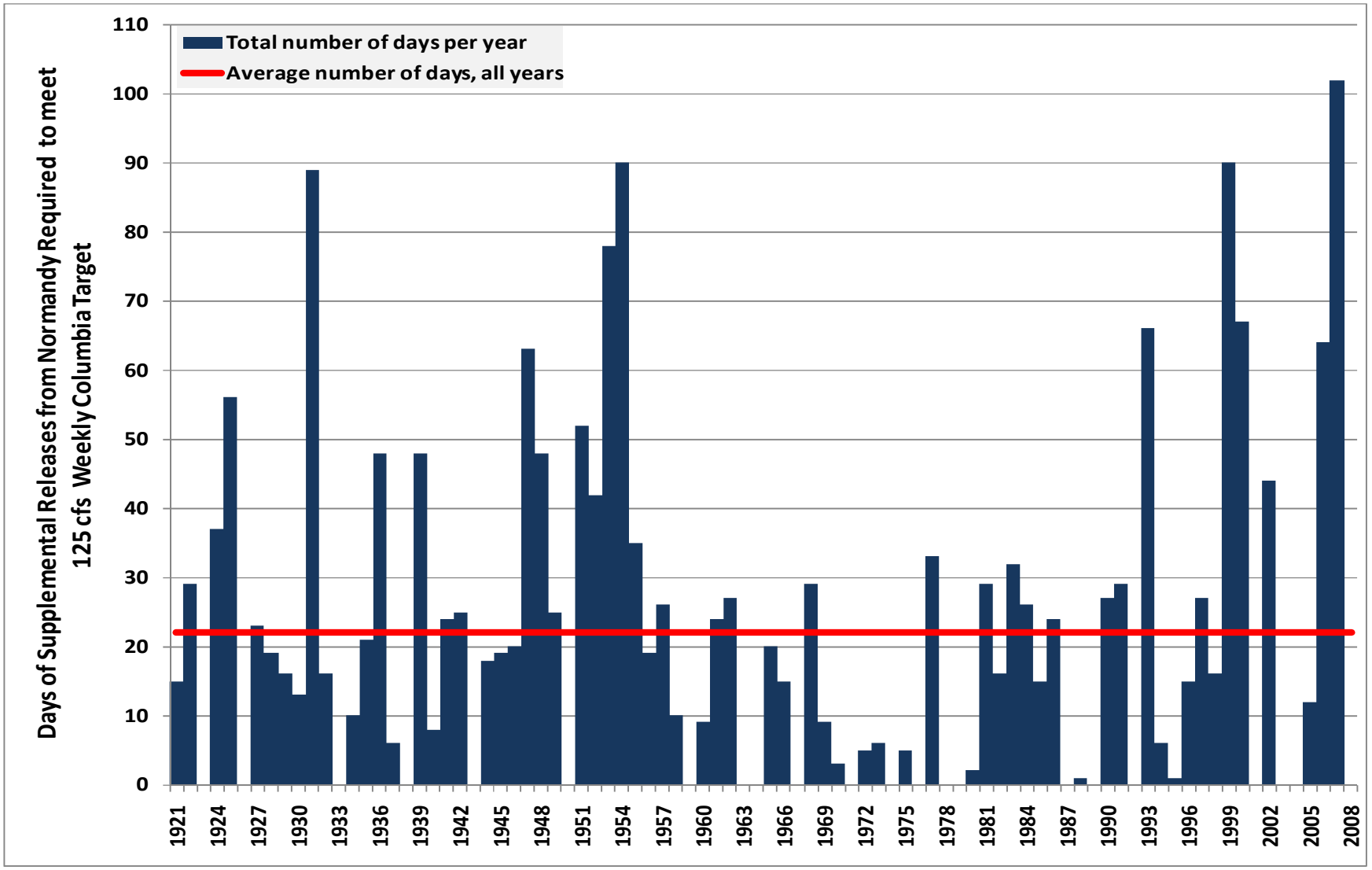
Number of days per year that extra water is needed to meet 125 cfs Columbia weekly flow target with 2060 demands



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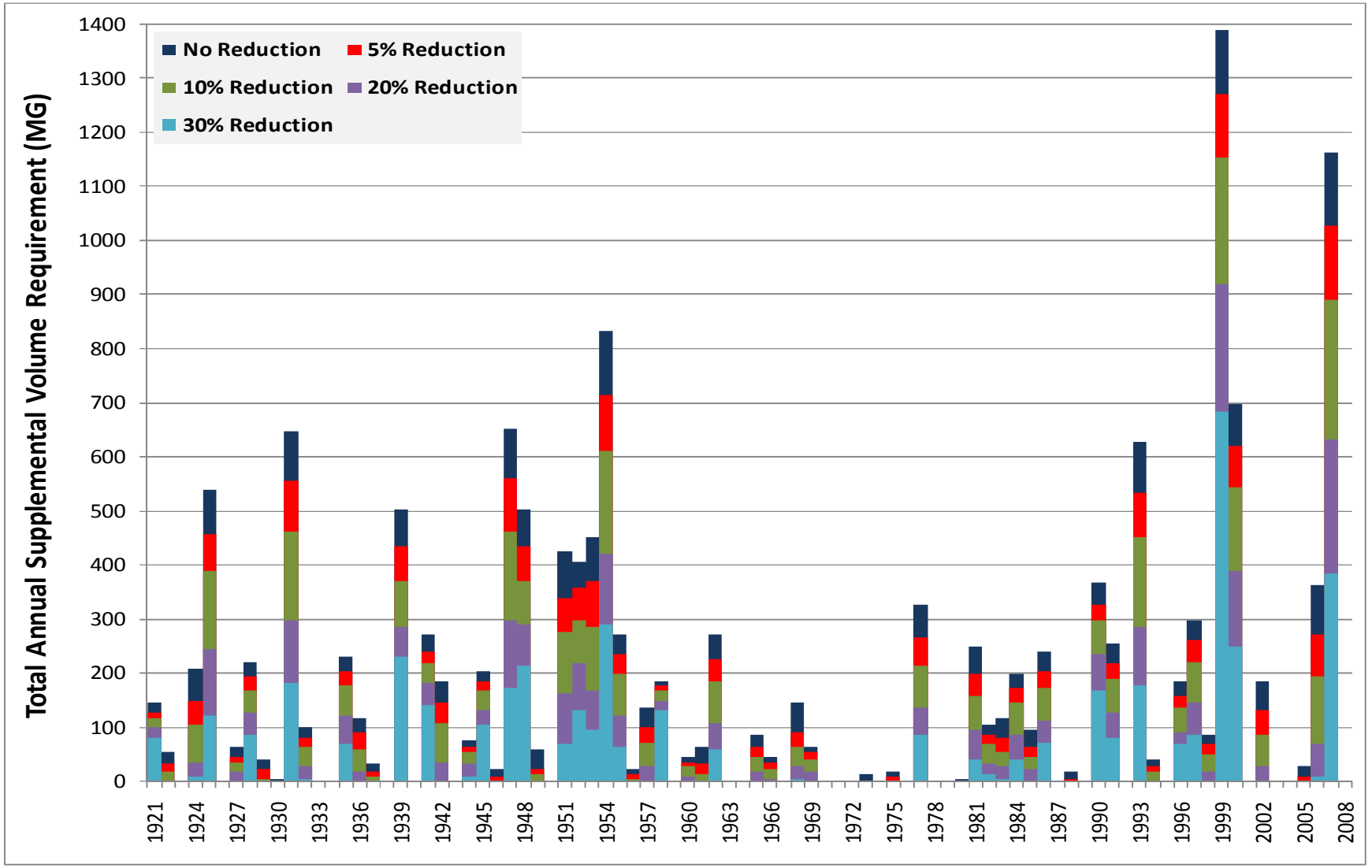
Supplemental annual volume required to maintain 125 cfs Columbia weekly avg. flow – 2060 demand with various reductions



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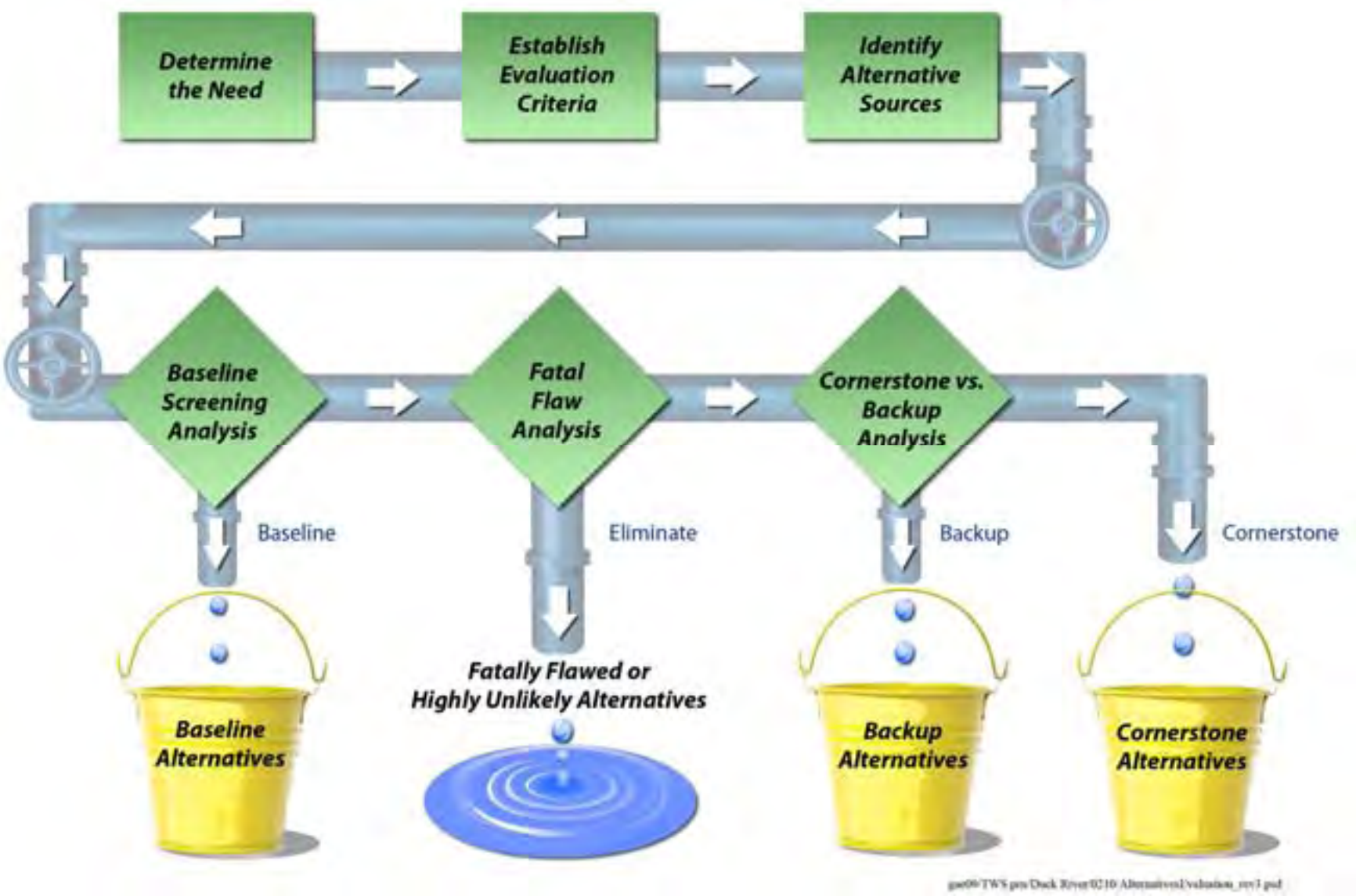
Water Supply Evaluation Process



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Evaluation Criteria

- Reliable Capacity
- Raw Water Quality
- Cost
- Implementability / Risk of Delays
  - permittable
  - public acceptance
  - property acquisition
- Flexibility
  - phased implementation
- Environmental Benefits
- Recreation

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Water Supply Alternatives Screening

- What the different buckets mean:
  - All alternatives were sorted into one of these groups:
    - **Baseline** – an alternative that was selected (prior to the screening at Workshop 4) to be a component of the recommended water supply plan, no matter which alternative is selected as the cornerstone
    - **Fatally Flawed or Highly Unlikely** – an alternative that was eliminated from further consideration
    - **Back-up** – an alternative that was not selected as a Cornerstone, but will be considered as a potential component of the 50-year water supply plan
    - **Cornerstone -** an alternative in the "shortlist" that could satisfy the entire deficit, and is receiving further consideration as a key element of the 50-year water supply plan

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Baseline Alternatives

- #1 – Water Efficiency Measures
- #3 – Regional Drought Management Plan
- #4 – Optimize Releases from Normandy Reservoir

Baseline alternatives will be a component of the recommended water supply plan



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Fatally-Flawed and Highly Unlikely Alternatives

- #7 – Reduce Irrigation Withdrawals
- #12 – Construct Fountain Creek Reservoir and Pipe Raw Water to Columbia WTP
- #13 – Construct Fountain Creek Reservoir with Downstream Release
- #14 – Upgrade Existing Columbia City Dam to Allow Releases
- #17 – Construct Pipeline from Tennessee River to Columbia WTP
- #18 – Construct Pipeline from Tims Ford Reservoir
- #20 – Purchase Water from Nearby Systems
- #21 – Utilize Groundwater Sources
- #22 – Pump Treated Wastewater from Columbia WWTP to Columbia Dam
- #23 – Construct Water Intake for Maury County at River Mile 163
- #25 – Construct Water Intake near Williamsport and Pump Back to Columbia Dam Pool
- #26 – Construct Infrastructure to Return Treated Wastewater from Tullahoma WWTP to Normandy Reservoir

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Backup Alternatives

- #2 – Increase Normandy Reservoir Release to Meet Columbia Constraint Without Raising Dam or Pool Levels
- #8 – Modify River Constraints to Preserve Storage in Normandy Reservoir
- #16 – Utilize Quarries
- #19 – Discharge Arnold Cooling Water to Duck River

Back-up alternatives were not selected as Cornerstones, but each of them is being considered as a potential component of the 50-year water supply plan

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Cornerstone Alternatives

- #5 – Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam, and Modify Normandy Reservoir Flood Rule Curve to Meet Columbia Constraint
- #9 – Raise Normandy Dam (Increase Winter/Spring Pool Level and Retain Summer/Fall Pool Level)
- #15 – Monsanto Lake (Existing Offstream Storage Reservoir)
- #24 – Construct Water Intake near Williamsport and Pump Back to Columbia Water Treatment Plant

Cornerstone alternatives are receiving further consideration as key elements of the 50-year water supply plan

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#5 Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam



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#5 Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam

- Raise winter pool level from 864 ft to 869 ft to preserve winter storage
- Alternative needs to be combined with modified release from Normandy Reservoir to satisfy the deficit of downstream users
- Satisfies entire river deficit of 32 mgd
- Potential to increase flooding
- Project cost primarily for land acquisition in flood prone areas which is to be determined (additional information expected from FEMA to refine estimate of flood prone areas)

- **Status: Cornerstone**

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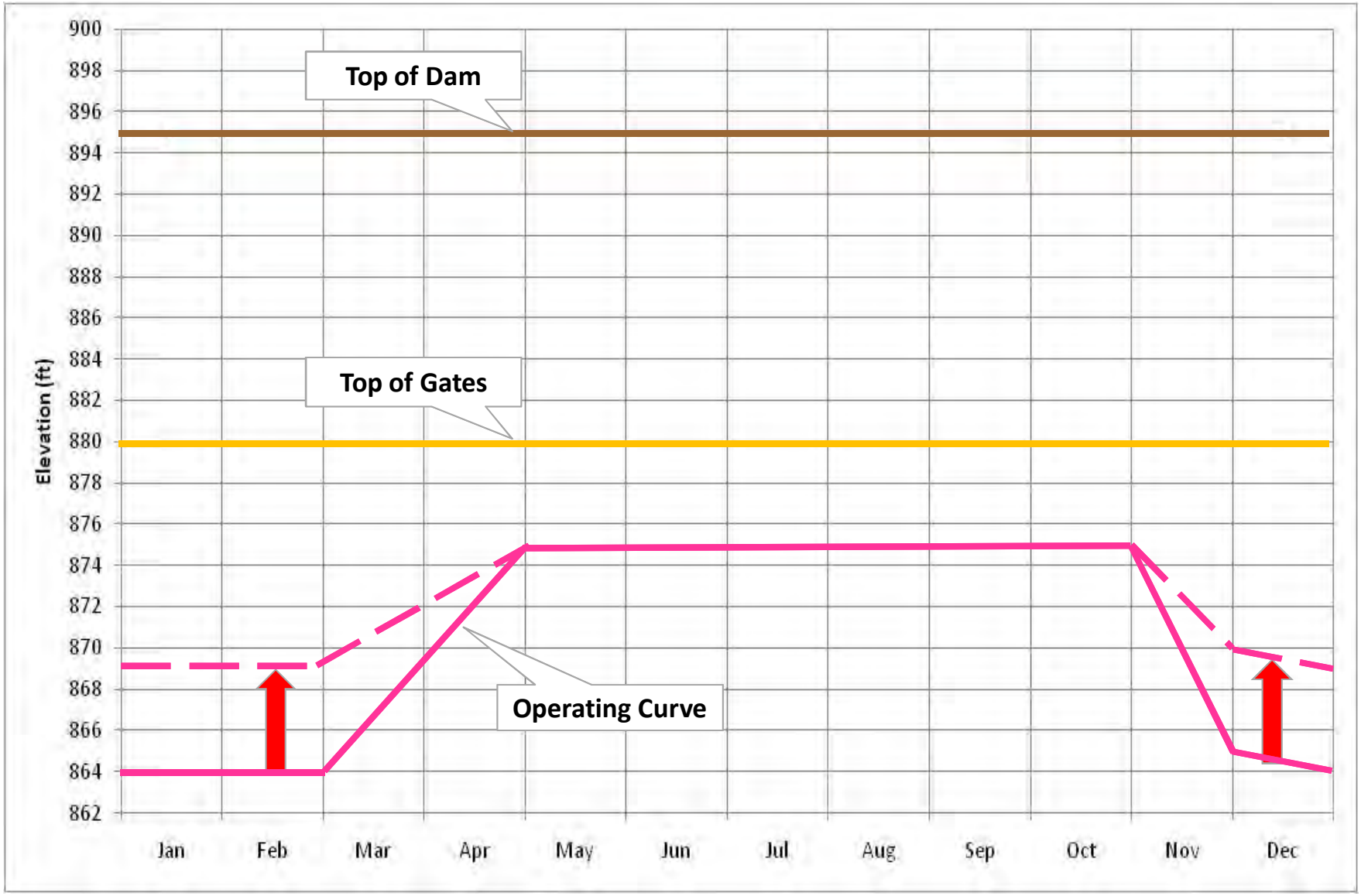
#5 Raise Normandy Reservoir Winter/Spring Pool Level Without Raising Dam



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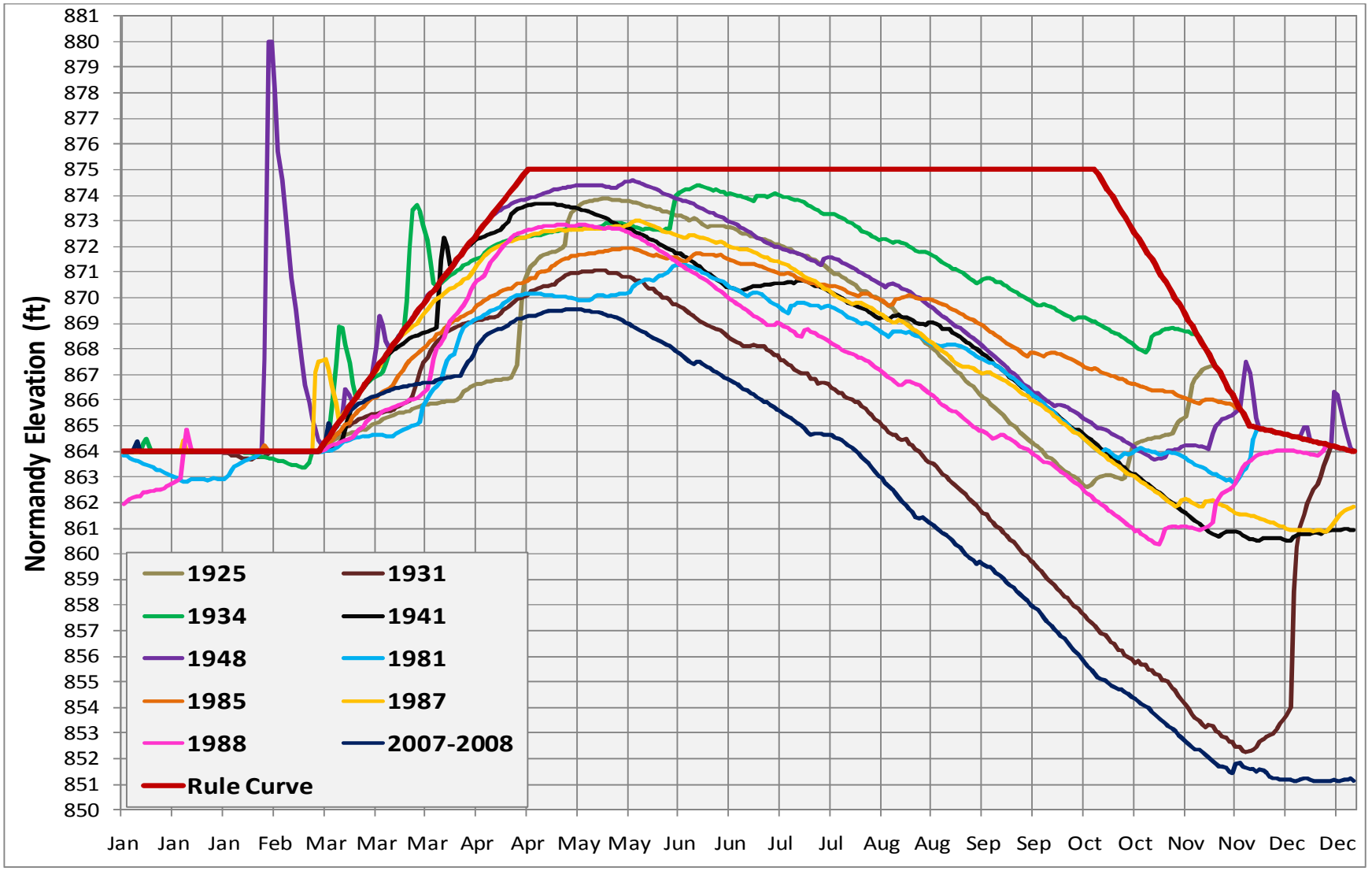
Major droughts – Existing rule curve 2060 demand levels, 125 cfs weekly Columbia target



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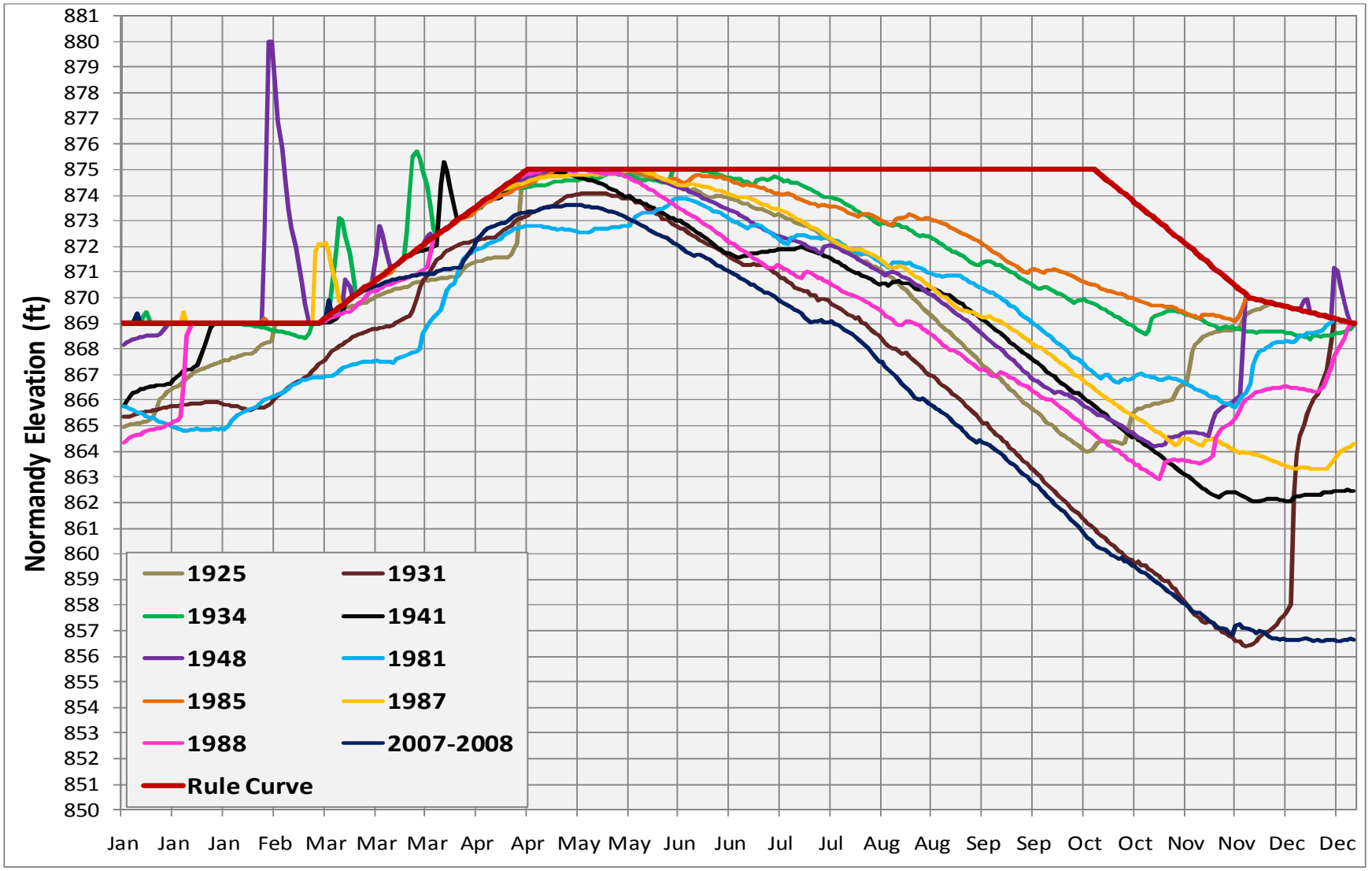
Alts. #5 & #9: Major droughts – Modified rule curve 2060 demand levels, 125 cfs weekly Columbia target



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#9 Raise Normandy Reservoir
Retain Summer Pool Elevation, Maintain Flood Storage



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#9 Raise Normandy Dam
Retain Summer Pool Elevation, Maintain Flood Storage

- Increase Winter/Spring pool level by 5 feet, but retain Summer/Fall pool level
- Alternative needs to be combined with modified release from Normandy Reservoir to satisfy the deficit of downstream users
- Satisfies entire river deficit of 32 mgd
- Approach reduces impact on flora and hiking trails at Short Springs
- Project cost $15-30 million, depending on need to raise bridges, rebuild roads, etc.
- EA or EIS required
- Potential impacts to campgrounds and boat ramps

- **Status: Cornerstone**

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#9 Raise Normandy Reservoir



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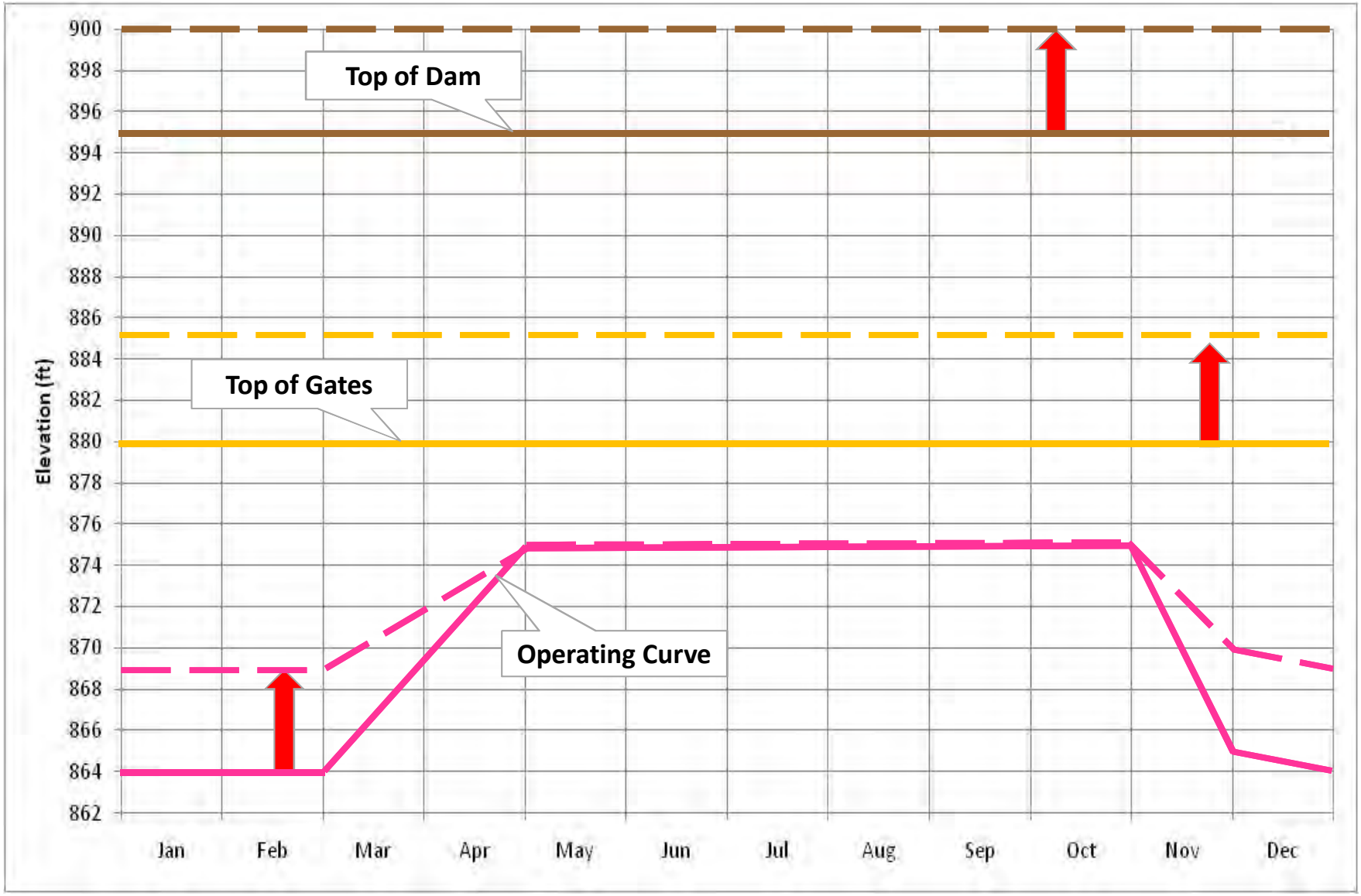
#9 Raise Normandy Reservoir



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#15 Monsanto Lake (Existing Offstream Storage Reservoir)



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#15 Monsanto Lake (Existing Offstream Storage Reservoir)

- Purchase Monsanto Lake, which is a 5 BG offstream storage reservoir along Duck River approximately 8 miles northwest of Columbia
- Utilize existing Columbia intake, upgrade existing Columbia pumping station, and construct 30 inch pipeline (10 miles) from reservoir to Columbia WTP to convey water from reservoir to WTP, and to refill reservoir from the Duck River
- $34 million capital cost plus land costs
- Appears readily permittable
- Satisfies entire river deficit of 32 mgd
- Reduces reliance on Normandy Reservoir
- Potential for fishing and other recreational opportunities
- Awaiting water quality data, and report on recommended dam improvements
- **Status: Cornerstone**

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#15 Monsanto Lake (Historic Photo)



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#15 Monsanto Lake (Current Photo)



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#24 Construct Water Intake near Williamsport and Pump Back to Columbia WTP



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#24 Construct Water Intake near Williamsport and Pump Back to Columbia WTP

- Construct new intake at River Mile 108 near Williamsport and 30" pipeline to Columbia water treatment plant (17 miles)
- Satisfies entire river deficit of 32 mgd
- $38 million project cost
- EIS required, but should be permittable
- Reduces reliance on Normandy Reservoir

- **Status: Cornerstone**

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Next Steps

- Prior to Workshop No. 5
  - Prepare additional information for review at Workshop No. 5
  - Combine each Cornerstone Alternative with compatible Backup Alternatives
- Workshop No. 5
  - Select cornerstone alternative for inclusion in 50-year water supply plan
  - Identify back-up alternatives that are most compatible for the 50-year water supply plan
- Workshop No. 6
  - Present Implementation Plan and Draft Report

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Project Schedule Status

PHASE I	
Workshop No. 1 - Kick-off	June 24, 2009
Workshop No. 2 - Preliminary Feasibility	Aug. 26, 2009
Open House Meetings	Sept. 22-24, 2009
PHASE II	
Workshop No. 3 - Developing Alt's	Dec. 9, 2009
Workshop No. 4 - Evaluating Alternatives	Feb. 24, 2010
Open House Meetings	**March 24, 2010**
PHASE III	
Workshop No. 5 - Implementation Planning	April 2010
Draft Report	May 2010
Workshop No. 6 - Conclusions	June 2010
Final Report	July 2010
Open House Meetings	Aug. 2010

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Open House Question Period



COMMENTS and QUESTIONS

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Media Release

September 1, 2010
For immediate Release

Contact
Doug Murphy, 931-684-7820
doug@duckriveragency.org

The Duck River Agency sponsors a Public Open House for review of the Duck River Regional Comprehensive Water Supply Plan: *Phase III "Recommended Alternatives and Implementation Plan"*

Shelbyville, TN - The Tennessee Duck River Development Agency (DRA) has undertaken a Regional Comprehensive Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties to meet future water demands and address concerns with possible water shortages brought on by drought conditions. The goal is to develop a plan with a 50-year projection and a 100-year planning horizon that will provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects. The plan will include specific recommendations, including budgets and implementation timelines, on water supply and water management projects.

Phase I: "Needs Assessment", of the planning process was presented in a Public Open House in September 2009. *Phase II: "Alternative Selections",* was presented to the Public in March 2010. *Phase III "Recommended Alternatives and Implementation Plan",* is the last phase of the planning cycle.

The Public Open House will be on **September 9**, at Henry Horton State Park Conference Lodge, Chapel Hill, TN. There will be two sessions in the afternoon: **1:30pm to 3:30pm** and **5:30pm to 7:30pm**. A short presentation will be given at the beginning of each session.

For more information on the Duck River Regional Comprehensive Water Supply Plan please visit www.duckriveragency.org. For interviews with the Duck River Agency contact Doug Murphy, 931-684-7820.

Tennessee Duck River Development Agency

Comprehensive Regional Water Supply Plan

September 2010



Introduction

The Tennessee Duck River Development Agency (DRA) is developing a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson Counties to meet future water demands and address concerns with possible water shortages brought on by drought conditions. The plan addresses water needs through a 50-year planning period with a 100-year planning horizon and provides direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects.

The Tennessee General Assembly created the DRA in 1965 as a comprehensive regional development agency. In 1998, the DRA Board of Directors adopted the following mission statement:

"To develop, protect, and sustain a clean and dependable water resource for all citizens of the Duck River region."

The DRA represents seven water utilities that serve approximately 250,000 people as well as industries that include car manufacturers, food processing plants, and other businesses utilizing water for production. In addition to water supply, the Duck River provides a wide range of other benefits including recreation, an excellent fishery, and some of the most biologically-rich freshwater habitat in North America.

The drought of 2007 highlighted the issue that in extended dry weather conditions, the citizens of the Duck River region primarily depend on the water stored in Normandy Reservoir to meet multiple uses, including drinking water, wastewater assimilation, recreation, and natural resource protection. The dramatic decrease in rainfall, combined with the multiple uses of the reservoir and the river, caused record low water levels in Normandy Reservoir that resulted in temporary changes in dam operation to protect water uses. Weather patterns and growth projections, combined with our obligation to manage resources responsibly for future generations, have created the need for a comprehensive regional water supply plan for the Duck River region.

Strategic Planning Team

The DRA assembled a Strategic Planning Team to develop the Comprehensive Regional Water Supply Plan. The Team consists of O'Brien & Gere (Prime Consultant), CTI Engineers, Inc. (Sub-consultant), HydroLogics (Hydrologic Modeling), BDY Environmental, LLC (Environmental), and Trauger & Tuke (Legal).

Defining the Water Supply Need

The first step in the Comprehensive Regional Water Supply Plan was the assessment of the need for additional water supply through the year 2060 which included a projection of water demands for domestic, commercial, industrial, and other purposes. The OASIS computer model was used to examine the operation of Normandy Reservoir and the hydrology of the Duck River to help gain a better understanding of how to satisfy the future need for not only public water supply but for all designated uses. Water demands were developed using population projections from the University of Tennessee's Center for Business and Economic Research (CBER). The study indicates that during extreme or prolonged drought conditions there is the potential for a deficit of up to 32 mgd for users of the Duck River in the year 2060. Currently, drought conditions such as those experienced in 2007 could result in a 4 mgd deficit, straining the river's ability to maintain water supply for all uses. The drought and population growth challenges faced by the region indicate that water supply plans must be reliable, flexible, and collaborative to meet both current and future demands.

Finding Water Supply Solutions

A list of 40 potential water supply alternatives was reduced to 26 unique alternatives which received further evaluation. Alternatives included a wide array of non-structural (i.e., water efficiency, etc) and structural measures (i.e., reservoirs, etc).

A matrix was developed which described each of the alternatives and documented

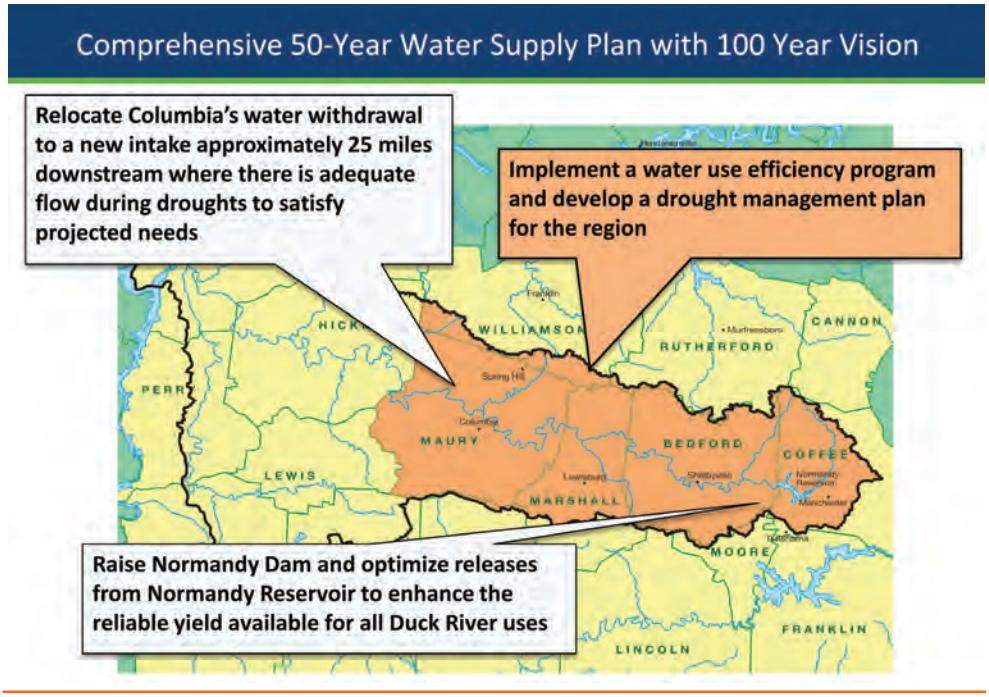
key aspects of each alternative related to seven criteria: reliable capacity, raw water quality, cost, implementability (permitting), flexibility (phasing), environmental benefits, and recreation. Using the evaluation criteria and working closely with the stakeholders, the Strategic Planning Team identified and recommended the following non-structural and structural components:

- Develop a regional drought management plan
- Implement a water use efficiency program
- Optimize releases from Normandy Reservoir to preserve storage in the reservoir for when it is most needed
- Raise Normandy Dam without raising the summer pool. This approach increases water storage for use during droughts and enhances flood protection while minimizing environmental impacts
- Relocate Columbia's water withdrawal to a new intake approximately 25 miles downstream where there is adequate flow during droughts to satisfy projected needs

The recommended non-structural and structural solution increases reliability by utilizing multiple sources of supply. It provides a regional solution with benefits beyond water supply. It benefits the entire Duck River region by providing flexibility to address uncertainties associated with potential changes in future water demands, regulations and hydrologic conditions

Cost and Financing

The DRA has received contributions from the Duck River region water systems since 1972 for water supply infrastructure. The contributions are paid by the water system at a nickel per one thousand gallons of water sold. Currently, there is approximately $13 million in trust funds available for future water supply infrastructure projects that will be used to supplement project costs.



The estimated cost for the recommended plan is $62 million. Additional technical and environmental investigations are planned to refine the project cost. The proposed financing approach reflects a philosophy that *"growth pays for growth"*, in which new customers and growth of existing customers would pay a one-time system development charge to offset the cost to provide the new infrastructure required to serve them. A fee based on water withdrawals would be charged to all customers to pay for the benefits of enhanced reliability. Rates and charges are still being developed, but it appears that implementing the proposed approach will cost current customers no more than$1.50 per household per month. This financing approach recognizes that regional benefits allow for regional sharing of costs…*"Working Together Works!"*

Extensive Public Involvement

The Comprehensive Regional Water Supply Plan was conducted using a uniquely open process, with extensive opportunities for input from the public, elected officials, and governmental and non-governmental agencies through the use of public workshops and informational meetings, routine updates via the DRA website, agency briefings and press coverage. The DRA conducted six public workshops and several public open houses to obtain comments from the public. Among the many stakeholders were the public water systems represented by the Duck River Agency Technical Advisory Committee (DRATAC) and the DRA's Water Resources Council, which includes over 25 governmental and non-governmental organizations.

What are the next steps?

The DRA is conducting a public meeting on September 9, 2010 to solicit comments on the recommendations. Comments can also be sent to Doug Murphy at the address below. The DRA will incorporate the comments, as appropriate, and prepare the final Comprehensive Regional Water Supply Plan for endorsement by the DRA Board in October 2010.

For more information, please visit the project website at: ***www.duckriveragency.org*** *or contact :*

DOUG MURPHY
Executive Director
Tennessee Duck River Development Agency
210 East Depot Street
Shelbyville, TN 37160
931-684-7820
doug@ duckriveragency.org

Tennessee Duck River Development Agency

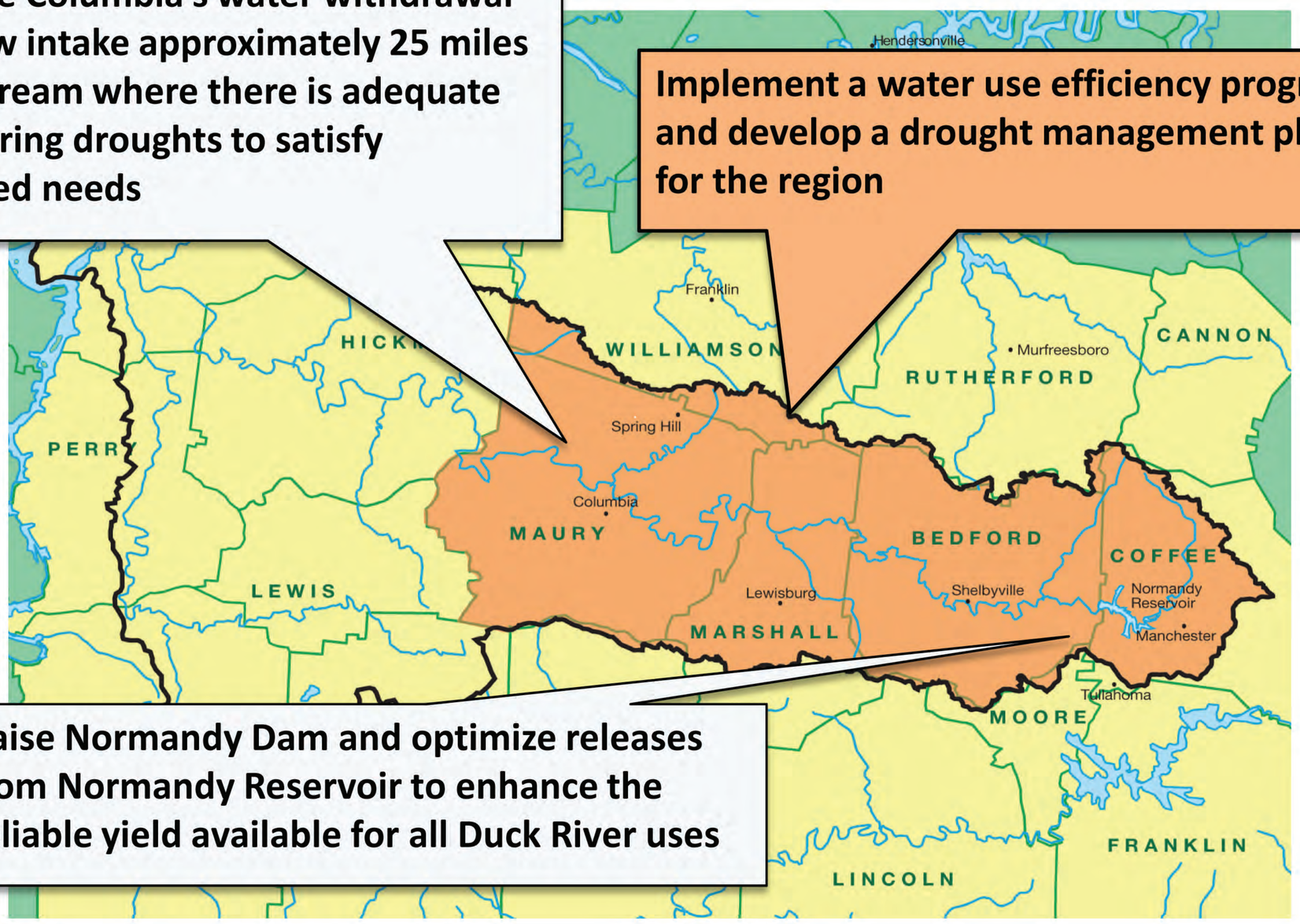
Recommended Solution and Implementation Plan

O'BRIEN & GERE

Comprehensive 50-Year Water Supply Plan with 100-Year Vision

Relocate Columbia's water withdrawal to a new intake approximately 25 miles downstream where there is adequate flow during droughts to satisfy projected needs

Implement a water use efficiency program and develop a drought management plan for the region



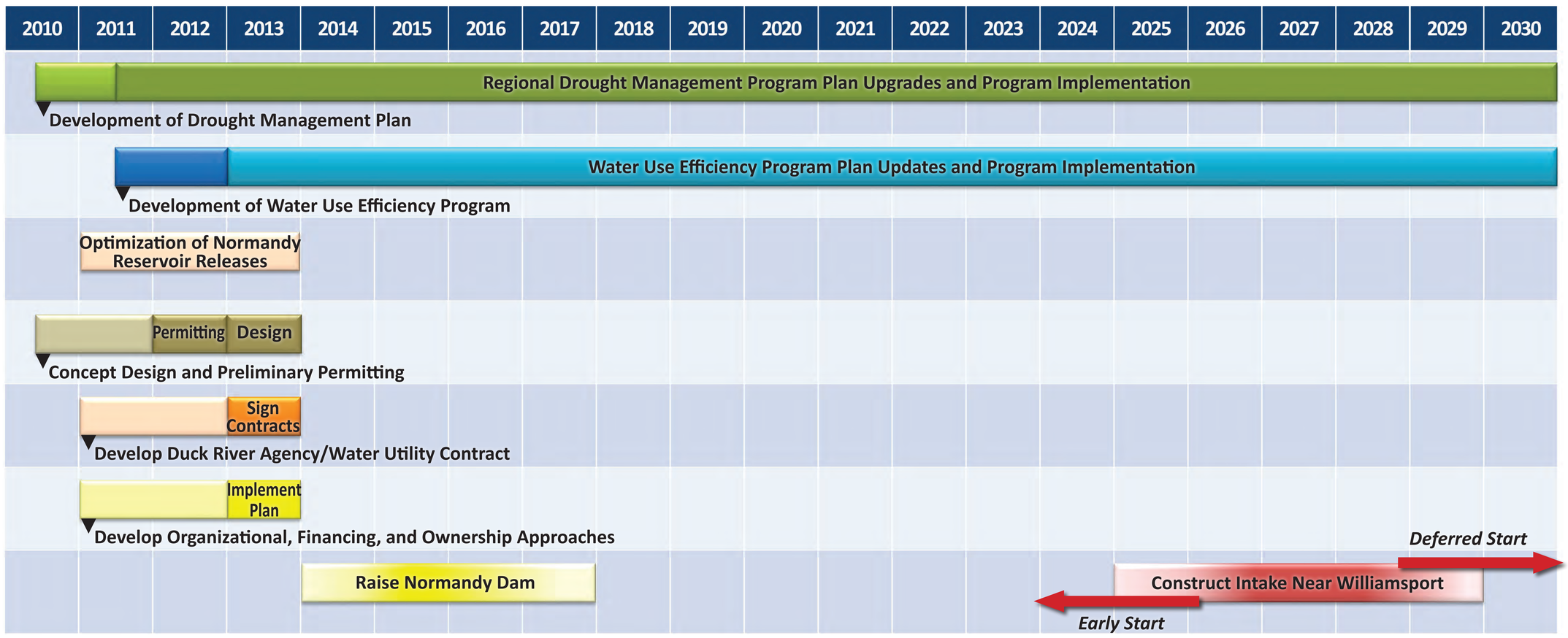
Raise Normandy Dam and optimize releases from Normandy Reservoir to enhance the reliable yield available for all Duck River uses

Cost Sharing Philosophy:

- Growth pays for growth
  -System development charge for new services and larger services
- Common charge for all current and new water withdrawals
- Phased construction plan (see below) to spread the cost over time

"Working Together Works!"

Potential Schedule and Phasing Approach for Comprehensive Regional Water Supply Plan



APPENDIX H

ARTICLES

Normandy Lake keeps local water flowing

Wednesday, August 15, 2007
By Brian Mosely

"If wasn't for Normandy Reservoir, we'd be looking at water rationing."

But thankfully, said Bedford County Utility District [BCUD] General Manager Marty Davis, we do have plenty of the wet stuff and they are pumping it to their customers at record levels during this summer's continuing drought.

But Davis stressed that more federal funding was needed to get that much needed water to rural areas and especially to farmers.

"As of right now, we're good," Davis said, adding that the utility has been distributing 2.2 to 2.5 million gallons per day from the Duck River. Their plant has a capacity of 4 million gallons per day.

BCUD takes its water from the river at Halls Mill while Shelbyville's utility pumps it out inside the city limits, above their wastewater treatment plant. However, neighboring Tullahoma and Manchester, who are serviced by the Duck River Utility Commission, take their water directly from Normandy Lake.

While the lake is meeting the needs of those Coffee County communities, a lower gate on the reservoir's intake building could be opened since the level of the lake is dropping an inch a day due to evaporation.

Davis said that the Tennessee Valley Authority has to provide a minimum flow from Normandy Lake to keep the county and city supplied with water. According to the latest figures, the lake was at 863.34 feet above mean sea level Tuesday.

That's about a foot and a half below the winter pool of 865 feet, and Shelbyville Power, Water and Sewer General Manager David Crowell says that's "not good." But, the city is also getting what they need from TVA.

"We have an ample supply," Crowell said.

TVA likes to keep Normandy Lake at an elevation of 875 feet, according to Gil Francis, spokesman for the federal utility. Currently, the lake has an average daily outflow of 157 cubic feet per second, however the body of water only has a daily average inflow of 10 cubic feet per second.

Crowell didn't want to speak for TVA, but his thinking was that "unless we get some good rain within the next couple of weeks," the federal utility may have to change the amount of water they supply to the area.

Most of Bedford County is currently considered under an "extreme drought" while the southern portion of the county is suffering from an "exceptional drought."

Davis also confirmed that most of the water they are distributing this summer are going to water cattle around the county. In fact, it's the most water that's gone for livestock since the utility started, BCUD's manager said.

It's this situation that has Davis calling for more federal funding to get water to areas of the county that need it,

especially the farmers hardest hit by the dry conditions. He's been getting his message to elected officials such as Congressman Lincoln Davis.

According to a 2004 study by the Tennessee Department of Environment and Conservation [TDEC], about 112,000 homes, five percent of those in the state, do not have access to public water.

Extending water lines to everyone in Tennessee would cost about $1.7 billion, the study said. Meanwhile, when the wells run dry for those rural customers without a water tap, they're out of luck.

"We can't wait two or three years for a grant to come through," Davis said. "We need it now."

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Story URL: http://www.t-g.com/story/1246631.html

The Daily Herald.

TVA may reduce flow to Duck

By SAMANTHA BALLARD/Staff Writer

The state's environmental department requested the Tennessee Valley Authority reduce water released at a Coffee County reservoir that feeds into the Duck River Friday in an attempt to alleviate its dwindling water levels.

The Tennessee Department of Environment and Conservation sent a letter to the TVA requesting the company reduce flow two months earlier than usual at the Normandy Dam to help conserve water distributed through the Duck River to Columbia and other area cities.

"It's in TVA's hands now that we may be able to actually save some water out of Normandy," said Jim Clark, general manager for Columbia Power and Water Systems. "They haven't cut back anything yet, but we're really hoping they don't take a lot of time to do that."

Normandy's reservoir supplies water to the Duck River, which serves as the primary source of water for CPWS and other area water utilities. TVA reduces flow rates at the Normandy Dam in December as a part of normal practice.

More than 250,000 people use water from Normandy for all essential and household uses. The reservoir is currently half-full and losing about a foot of water per week. If water levels at the reservoir drop much lower, some Middle Tennessee cities will start to have problems receiving water and overall quality will suffer, Clark said.

"We believe the situation warrants requesting that flow reduction sooner with the provision that biological and water quality parameters be carefully monitored," said Meg Lockhart, a TDEC spokesperson, in an e-mail.

Gil Francis, a spokesperson for TVA, said he had not seen the letter but would attempt to find out more information.



Docks normally used along the Normandy Reservoir in Coffee County are now hundreds of feet from the water's edge because of recent drought conditions. The reservoir supplies water to the Duck River, which is the primary water provider for Columbia Power and Water Systems. Courtesy Photo

Clark said residents should conserve water through limiting non-essential uses to help alleviate the strain put on Normandy.

Columbia has joined cities like Mt. Pleasant, Lewisburg, Manchester, Tullahoma and Shelbyville in requesting residents voluntarily reduce their normal consumption of water by 15 percent. Clark said the city may have to implement tougher restrictions if the drought continues.

"I still think we're about a month or so from mandatory conservation," he said. "We got through the summer, but that doesn't magically fix the situation."

Middle Tennessee is currently classified by the National Weather Service as having the most intense drought conditions. Local average rainfall is still about 15 inches below normal for the year.

Doug Murphy, executive director of the Tennessee Duck River Agency, said the river has supplied water to residents with limited flow in the past, but conservation should have been started sooner this year to help prevent the recent water woes.

Murphy said the DRA is forming an emergency plan to conserve more water, but hopes the utility never has to use it. He said mandatory restrictions could be approved by local water boards within the next two months.

"That's if the supply keeps dropping," he said. "Some rain would definitely help, but if you look at a watershed as small as Normandy Reservoir, it takes a lot of rain in that small area to recharge things."

Clark said Columbia has a small reservoir on Normandy that would give the city about six weeks of drinking water if the lake ever completely dried out, but the likelihood of having to rely solely on the small reserve depends on local rainfall between now and next summer.

"It would take several months from now to get to the point that Normandy was completely empty," he said. "If there isn't any rain by March or April, we could go into the summer with practically no water supply other than our small dams."

Samantha Ballard may be contacted at sballard@c-dh.net or (931) 388-6464 ext. 3054.

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Some in Middle Tennessee get needed drought relief

Rain helps areas north and west; others still suffer

By CLAY CAREY
Staff Writer

Published: Wednesday, 12/12/07

A few months of rain have been a blessing for several Middle Tennessee communities.

But as fall turns to winter, many are still cursed by a lingering drought.

"Most of the relief from rain we've seen over the last month or so are in areas north and west of Nashville," said Sam Herron, a meteorologist with the National Weather Service. For instance, over the past month, Clarksville got 128 percent of the normal expected rainfall, he said.

Other areas haven't fared so well. Many counties south and east of Nashville are still in "extreme drought conditions," Herron said.

In Sparta and Jamestown, for instance, rainfall over the past three months has been about half the normal level.

"It will take a lot more prolonged rainfall over several months to really bring those areas around," Herron said.

Many Tennessee communities enacted water restrictions over the summer as supplies dwindled.

Like some of its neighbors, Portland started lifting voluntary water restrictions in mid-November, Mayor Kenneth Wilber said.

The city in northern Sumner County has no restrictions.

"If we hadn't started getting rain when we did, we would have had to go to another level of restrictions" that would have been tough on local residents and businesses, the mayor said.

Parts of southern Middle Tennessee are still struggling.

The Duck River Utility Commission's 51,000 customers are still being asked to conserve, and the area's main source of water, Normandy Lake, is as low as it has been in 20 years, said Randal Braker, the utility commission general manager.

"We haven't got any rain of any significance," Braker said. "Nothing has improved. If anything, things are getting worse."

Published: Wednesday, 12/12/07

Former Shelbyville city engineer blames Tullahoma for lake woes

LINDA STOCKWELL, Staff Writer

A former engineer for the City of Shelbyville charges the City of Tullahoma with wasting precious water from Normandy Lake by discharging its treated wastewater into Rock Creek.


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The treated wastewater from Tullahoma eventually ends up in Tims Ford Lake, not in the rapidly drying, drought-stricken Normandy Lake.

The former engineer, Fred Horn, was quoted as calling Tullahoma "a major leak in our water supply."

Not so fast, said Duck River Utility Commission manager Randal Braker, who called the article in another newspaper "distorted and misleading."

Braker said that almost the entire reason there is the problem of a rapidly diminishing supply in Normandy reservoir is due to the fact that the City of Shelbyville, in order to save spending $20,000 to $25,000 upgrading its sewage treatment plant in 1991, asked both the state and Tennessee Valley Authority to increase the downstream flow out of Normandy so Shelbyville's sewage could be more diluted and thereby pass toxicity standards.

"Tullahoma discharges less than 1.5 million gallons of water into the Elk River watershed in a day but Shelbyville requires more than 17 times that, about 105 million gallons a day to dilute its wastewater," Braker said Wednesday.

"To charge Tullahoma with causing the problem is wrong. Tullahoma's wastewater plant was designed to flow downhill and built years before Normandy Reservoir was built. To try and pump it back to the Duck River drainage today would cost way more than the benefit of the 1.5 million gallons a day," Braker said.

Currently DRUC, which supplies treated water to Tullahoma. Manchester and Coffee County customers, is using just one quarter of its allotment from Normandy, while Shelbyville uses 100 percent of its allotment to dilute its sewage so that it can pass state mandated dechlorination and toxicity levels set to protect rare and endangered river mussels.

For 17 years, Shelbyville has required 110 million gallons per day of additional flow from Normandy during the summer and an additional 80 million gallons per day during the winter to dilute sewage effluent "just to save a few bucks," according to Braker.

Those 17 years of extra discharge from Normandy

have contributed much more to the water crisis now facing the area than 1.5 million gallons a day that Tullahoma has diverted to Rock Creek, he said.

"We need to slow the discharge back to what it was before Shelbyville increased it and we need to raise the level of Normandy Dam to provide more water storage," Braker said.

"This drought is a real crisis and petty bickering between neighboring cities is certainly not going to help solve the problem," Braker added in a memo to the other newspaper.

The City of Shelbyville is planning to build a more updated wastewater treatment plant in the next few years and Braker said that should allow for a reduction in the discharge from Normandy, which would save millions of gallons of water a day in the Normandy reservoir.

The Daily Herald.

Water restrictions on the horizon?

By D. FRANK SMITH/Staff Writer

Mandatory water restrictions could be initiated for all water utilities in the Duck River watershed before February at the rate water is being used in Normandy Reservoir, a Duck River Agency official said.

The agency's executive director, Doug Murphy, said the river was headed towards catastrophe as a result of the drought. The possibility of the river running dry grows more real every week, he said.

"There's a small probability we could run out of water this year," he said. "It's getting pretty scary."

The water level at Normandy Reservoir in Coffee County is sitting at 852 feet elevation. The dam releases water that all utilities in the watershed draw from. Those utilities are currently enforcing stage 1, or voluntary water restrictions.

At 850 feet, Murphy said he would request all utilities that draw from the Duck River to engage in stage 2, mandatory water restrictions. Those restrictions would charge a fee or discontinue service to any customer in violation of the usage terms listed by the utility.

The water level has been dropping at Normandy by about 1 foot of elevation every week, according to Jim Clark, general manager of Columbia Power and Water Systems.

Murphy said this was the worst scenario the river has been in since the agency was formed in 1965.

In Summertown, a mandatory restriction was engaged in October. Some of their restrictions include — no watering of lawns or shrubbery, no filling or re-filling swimming pools, and water served for drinking purposes at restaurants is restricted to be served only if requested.

Despite a series of thunderstorms and light rain throughout Middle Tennessee in early 2008, Murphy said Coffee County hasn't seen nearly as much rain as the surrounding areas.

"It's like there's a big dome around the county," he said.

The DRA is a state-commissioned agency created to protect the Duck River watershed.

PLANNING FOR THE FUTURE

Murphy visited Spring Hill city officials Thursday to propose a water rate hike of about 15 cents per household each month. That money would be placed in a trust fund for the agency that would be used for future projects to improve water infrastructure in the watershed.

The plan would charge 5 cents for every 1,000 gallons used by the city's water utility. Murphy said the average household in the city uses about 3,000 gallons a month.

"I don't see this as a tax, I see this as insurance," Murphy told city officials. "I believe everybody in this room would like to leave the region a little bit better than we had it. That's what we hope to do."

Spring Hill is the only utility in the river's watershed that hasn't signed onto the agency's Technical Advisory Committee yet. The purpose of the committee is to provide guidance to the agency concerning water projects.

If city officials vote to pursue a seat on the committee, they would have a voice in future planning for water in the region, Murphy said.

"We're all in the same boat, and we need city officials to help design these plans," he said.

The Spring Hill Board of Mayor and Aldermen are scheduled to vote on the item at their regular meeting at 7 p.m. on Jan. 20.

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Shelbyville, Tennessee ~ Thursday, February 19, 2009

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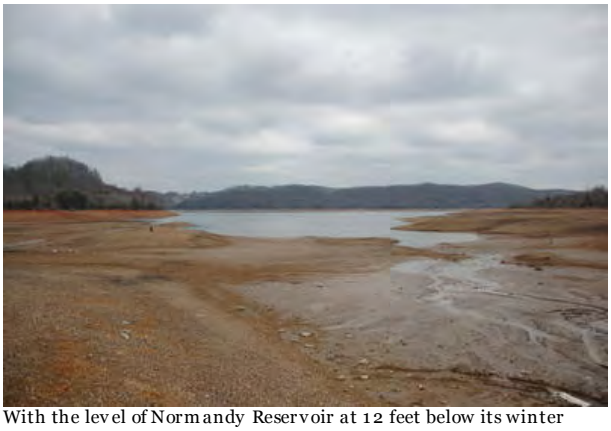
Braker: Shelbyville sewer plant affects water supply

Saturday, January 12, 2008
By Brian Mosely



With the level of Normandy Reservoir at 12 feet below its winter pool, the head of the Duck River Utility Commission says that the flow going into the Duck River from the dam needs to be further curtailed.
(T-G Photo by Brian Mosely)

Calling the area's ongoing drought "a real crisis," the head of the Duck River Utility Commission (DRUC) believes the release of water from Normandy Dam should be cut further.

Randall Braker of DRUC also took issue with the idea that Tullahoma's waste water flowing into the Elk River watershed is a "major leak" in the Duck River's water supply, as a former engineer for Shelbyville claimed last week.

Braker estimated that if the flow from Normandy is not cut and the area does not receive "a whole lot of rain," DRUC will be forced to use a secondary pump system by summer to supply Coffee County, "then the lake will go dry later in the summer or early fall, leaving everyone from here to Columbia without water."

Braker said that while the Tullahoma Utilities Board (TUB) does discharge approximately 2.3 cubic feet per second (cfs) of water to the Elk River which originated in Normandy Reservoir, the discharge "is a drop in the bucket compared to the massive flow required for dilution of Shelbyville's wastewater output into the Duck River."

The Tullahoma wastewater plant existed before there was a Normandy Reservoir, Braker said.

"Tullahoma got their water from Short Springs, not the Duck River, and they discharged their treated sewage in the natural downhill direction southwest to Rock Creek and eventually to the Elk River," he explained

Braker said that Shelbyville's current wastewater treatment plant is "old and out of date" which requires "very high dilution rates to prevent environmental damage to the river."

"It is well operated by good people, but it is not up to current technology equal to the other sewage plants in the area," Bracker stated.

Funding for a new wastewater plant, designed to handle 6.5 million gallons a day, was approved last July by the Shelbyville City Council at an estimated cost of around $25



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million.

Shelbyville Power, Water and Sewerage system manager David Crowell had said last year that the existing facility has served its purpose and that the building of the new plant is driven by a state commissioner's order.

The current facility has a capacity of 4.9 million gallons a day. It originally handled two million gallons when first constructed in 1957, but was upgraded and expanded extensively in 1977 to meet Environmental Protection Agency (EPA) Clean Water Act requirements.

It was expanded again in 1986 with no increase in design capacity. The sewer system entered into a letter of agreement with TDEC in 1991 to begin a sewer system rehabilitation program and in late 2005, a commissioner's order was issued due to several permit violations.

Braker says that his utility's withdrawal from the Duck River for drinking water is "minuscule compared to the 110 million gallons a day [mgd] summer and 80 mgd winter flow minimum releases required to dilute the sewage of the City of Shelbyville."

"Shelbyville has a 5 cfs drinking water allocation and a 155 cfs wastewater dilution allocation from Normandy. There is 67 times more water being released from Normandy to the Duck River and then lost forever into the Tennessee River for Shelbyville's sewage dilution than the diversion by TUB."

Braker also stated that in 1991, Shelbyville asked for a 40 cfs increase in the release from Normandy "to avoid upgrading their sewage treatment plant to current standards."

"Rather than spend as little as $20,000 on dechlorination equipment and other small improvements, the city got TVA to increase the minimum flow from 80 to 120 cfs, a 50 percent increase, Braker said. He added that the extra water being released "and lost forever for sewage dilution is by far the largest contributor to the dropping levels of Normandy Reservoir."

"That increase in sewage dilution flow alone is having 17 times the impact as the TUB discharge," Braker claims. "The long term solution is to improve storage in the reservoir and improve wastewater effluent quality so that lower dilution rates are required."

Braker said that in the short term the release from Normandy Reservoir should be cut "immediately to a flow target of 80 cfs at Shelbyville, which he says is the flow rate "that was used every winter until 1992 when Shelbyville petitioned for an increase to 120 cfs."

"We warned that the increase would cause TVA not to be able to fill the reservoir in the spring and it happened that first year," Braker stated. "Luckily that year we had timely rain in early summer that filled the reservoir late. It took until this past year for the problem to get bad enough to be noticed."

At 8 a.m. Friday, the reservior was at 852.44 feet with a flow of 74 cubic feet per second, according to the Tennessee Valley Authority [TVA].

The DRUC head believes if the flow is dropped back to 80 cfs and the area gets some reasonable rain in March and April, "we have a good chance TVA can get the reservoir full again."

"In either case, water supply for the water plants downstream will not be affected. They can operate normally at flows as low as 40 cfs without difficulty," he said. The only impact downstream could be at the Columbia wastewater plant, Braker stated.

As for other ways for dealing with the water shortage, Braker says that extreme conservation by Shelbyville, Manchester and Tullahoma "is unlikely to save more than 2 million gallons per day combined while cutting the release down to 80 cfs saves more than 25 million per day guaranteed."

Braker also took issue with engineer Fred Horn's proposal of piping water from Tims Ford into a tributary of the Duck River, calling it a "a poor solution."

"It can only help the situation if the water is delivered above the Shelbyville wastewater outfall and the flow from Normandy is cut way down," Braker said.

He added that other options suggested in a 2000 TVA environmental impact study, such as another reservoir or a downstream pipeline, "would not have made any difference in this current crisis, assuming that Shelbyville still requires the high dilution water for their wastewater plant."

"Our money is best spent on a new wastewater plant in Shelbyville and raising the lake level at Normandy," he said. "Storing more water at the head of the stream helps everyone because it flows through all of the impacted areas."

Braker stated that raising the winter pool level in Normandy Reservoir is "practical, inexpensive and has virtually no impact on anyone," creating more storage capacity that

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does not have to be filled in the spring while improving flood storage to protect Shelbyville.

If the Tennessee Department of Environment and Conservation (TDEC) and TVA had cut the flow 10 percent from Normandy in July when first asked, Braker said, "we would have 1,800 million gallons in the reservoir right now."

"If TDEC and TVA had cut the winter flow back to the original 80 cfs, that would have saved another 1050 million gallons. That's nearly 3 billion gallons more in the reservoir. That would be a great reserve right now."

Taking issue with the T-G article published Tuesday, Braker said that "we need to stop blaming others and fix the problem."

"Shelbyville is preparing to build a new wastewater plant, the Duck River Agency is exploring raising the lake level and we are all trying to get a staged flow reduction plan in place that will allow future reaction to a drought to be implemented without all the red tape and delays," Braker said.

"Right now, today, we need short term correction by immediately lowering the flow to 80 cfs."

Comments

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Great factual story. Now lets get the State to reduce the flow for the sake of every citizen who depends on this water.

-- Posted by **TheTruthAgain** on Sat, Jan 12, 2008, at 10:02 PM

Great story Brian. Facts are right on the money. Only with the local governments and utilities working together will we get State and Federal agencies to fix this problem. There is enough water in Normandy to supply drinking water and the minimum needs of aquatic wildlife through 2050 with the additional storage and a wastewater fix.

-- Posted by **H2O Man** on Sat, Jan 12, 2008, at 8:06 PM

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Water officials agree on cutting Normandy Dam flow; no adverse action seen from reduction

LINDA BARR, Staff Writer


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What has amounted to a long, drawn-out controversy over what to do about drought-stricken Normandy Lake has apparently come to a satisfactory conclusion.

It's going to be OK with the powers that be to cut the water flow downstream from the dam, thus preserving more water in the reservoir.

In more formal terms, Tennessee Valley Authority this week issued a "Finding of No Significant Impact" concerning reducing the flow until May 31 from 120 cubic feet per second to 80cfs as measured at Duck River at Shelbyville.

The outflow at the dam will be around 40cfs — the 40cfs extra flow into Shelbyville being made up by various tributaries such as the Garrison River near Wartrace.

A summary of the finding says in part:

"Middle Tennessee is experiencing an exceptional drought. Consequently, the stored volume of water and pool elevation of Normandy Reservoir on the Duck River are much lower than normal.

"The state of Tennessee has requested that the Tennessee Valley Authority (TVA) temporarily reduce the volume of water released from Normandy Dam. The proposed change would conserve water in Normandy Reservoir to help meet needs of the Duck River Utilities Commission (DRUC) and other users of Normandy Reservoir.

"If the drought persists, it would also better ensure that more water is available in later months to help reduce potential impacts to water users and aquatic resources downstream of Normandy Reservoir…

"The proposed action would result in conservation of water and reservoir elevations approximately one foot higher per month than would be the case under the current operating policy for Normandy Reservoir."

The report also says, if TVA decided on a "no action" alternative, "TVA would not try to save additional water in Normandy Reservoir during the spring and this additional water would not be available to help offset the effects of the drought later in the summer.

"The amount of water available for human consumption and aquatic specie uses would be less, contributing to possibly serious impacts to water quality, public health, safety, and aquatic

species downstream from in the area."

David Crowell, general manager of the Shelbyville Power, Water & Sewage System, said he fully supports TVA's decision to reduce the flow coming into Shelbyville.

"I'm certainly in agreement with that," Crowell said. "It's the best thing for all the cities that get the benefit from Normandy Lake, from Manchester to Columbia.

"And we agree with the reduced flow coming out of Normandy. With our new (sewage treatment) facility coming, I think that will not be a problem. We'll deal with it on the wastewater end."

Randal Braker, general manager of the Duck River Utility Commission, said the news gives him hope that the reservoir can reach normal levels by late spring.

"The authority agreed to the Tennessee Department of Conservation's request to put together an environmental assessment on the impact of reducing the flow target at the Shelbyville wastewater plant from 120 cubic feet per second to 80cfs.

"They released two reports, an in-depth environmental assessment and a two-page summary of the results," Braker said.

"They've been working on it a long time," Braker said. "They've just been waiting for the state's request in writing."

With the "no significant impact" finding, Braker said TVA should be able to keep the release from Normandy Dam close to the minimum 40cfs throughout the spring.

"This is to be in effect until May 31," he said. "So if we get some semi-normal rainfall in March, April and May, we have a lot better chance of refilling the reservoir.

"It gives us some optimism that we'll get back to normal. It's not a solution but it puts us in the race. At least we have a chance now. We just need the rain," Braker said.

"If we can get a few of those March storms, some April showers and no tornadoes we can get full again."

Measured by Braker at the commission Tuesday morning, the reservoir level was 856 feet above sea level.

"That's still 19 feet from the target summer pool level of 875," he said. "We've come up a total of four feet from its minimum the first of February when it bottomed out at 852.

"At 856.4, TVA's gauge will start working again, which will be nice. They never thought it would get

that low. Then we can look at the automated Web site, www.tva.gov, to see the reservoir's water level, inflow and outflow.

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Lake level is up, but still far below normal

Monday, March 10, 2008
By Brian Mosely
TVA's gauge that measures the level of Normandy Reservoir is back in operation, but the numbers still show that the amount of water in the lake is far below normal.

According to figures reported by the Tennessee Valley Authority's web site this morning at 6 a.m., Normandy was at an elevation of 858.66 feet above sea level, with water flowing out of the lake at a rate of 42 cubic feet per second (cfs).

Measurements taken at this time last month showed the lake at 852.98 feet. TVA estimates put the inflow at 190 cfs, no doubt caused by the amount of recent rain and snow fall.

But even though the area has seen it's share of rain events, the level of the lake is still below where officials would like it to be.

According to Normandy's operating guide, the lake should currently be around a level of 866 feet at this time of year.

Doug Murphy, executive director of the Shelbyville-based Duck River Agency, said this morning that the amount of rainfall has not been nearly what is needed to meet the reservoir's operating guidelines.

"We're still in a drought," Murphy said Monday, adding that the recent lowering of the outflow of the dam has helped conserve the water in Normandy.

Reducing the amount of water required at gauge 221.4, which is the location of Shelbyville's water intake, has been a major contribution to the level of the lake rising.

But one of the biggest contributing factors to getting more runoff to the lake has been last week's snowfall, which soaked the ground with moisture.



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"Now that the ground is saturated, we're going to get a lot better runoff to the lake, Murphy said. "That snow was a real blessing."

But Murphy cautioned that rainfall is still below normal -- almost 50 percent, according to his estimates. Also, area wetlands and ponds need to be filled first before the lakes.

According to data supplied by TVA, only a total of 6.5 inches of rain have fallen at Normandy Lake since the first of the year: A total of 1.84 inches in January, 3.30 inches in February and 1.36 in the first nine days of March.

Murphy said last month that between 10 to 15 more inches of precipitation over the next three months would be needed to make "a significant impact" to the level of the lake.

It would take an average of five inches a month to get the level up to the lake's winter pool as stated in Tennessee Valley Authority's operating guidelines for the reservoir, Murphy said in February.

According to TVA, the Tennessee River watershed has one of the highest annual rainfall totals of any watershed in the United States, with an average of 51 inches of rain a year.

The monthly average rainfall in the Tennessee Valley ranges from 3.0 to 5.5 inches, TVA says, with March, July, and December typically being the wettest months, and September through November typically the driest. Of course, in any year, the wettest and driest months may be different.

The monthly average runoff varies from a high of almost four inches in March to a low of less than one inch in August, September, and October, TVA says.

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TIMES-GAZETTE

Normandy flow limit urged by commission

Wednesday, March 12, 2008
By John I. Carney

Bedford County Board of Commissioners approved a resolution Tuesday night calling on Tennessee Valley Authority to "limit the flow of water from Normandy Lake with emphasis on human consumption."

The original document read "...emphasis on human consumption rather than aquatic life," but Doug Murphy of the Shelbyville-based Tennessee Duck River Agency told commissioners that the two are not necessarily at odds, and that it might be counterproductive to antagonize environmental groups.

"The critters will be the first ones to die, when that water stops running," said Murphy. He said aquatic life tends to be in shallow areas, while water intakes tend to be much deeper.

Still, he said wildlife authorities must learn that some loss of aquatic population may be inevitable.

Murphy made a lengthy report to commissioners Tuesday night -- he said County Mayor Eugene Ray had originally invited him to give a five-minute presentation, but he told Ray the water issue is too complex to be discussed in that short a time.

As reported earlier this week, Normandy Lake is now rising, with more inflow than outflow, but is still far lower than officials would like it to be. The lake's current level, said Murphy, is 858.8 feet above sea level.

"We are gaining," said Murphy. "The curve has changed."

The current level is an improvment on the recent record low of 852 feet, but it's still far lower than the normal winter pool of 864 feet.

Murphy said the area is in the third year of a drought which started in March 2006; the National



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Weather Service officially predicts three to five more years of drought, with some informal speculation that it might last longer, or that drought periods might be more and more common during the coming decades due to changing ocean currents and weather patterns.

A recent change allowing less of a water flow at the U.S. Geological Survey gauge in Shelbyville allowed the release of water from the dam to be reduced.

Murphy discussed the preparation of an emergency water shortage action plan, and a regional water use restriction plan.

Possible short-term remedies for the area's water problems include raising Normandy Dam, to increase the storage capacity of Normandy Lake during times of rainfall. A water use program would work with developers to make sure that new homes built in the area have water-conserving fixtures like low-flow toilets and shower heads.

In the long term, a regional supply plan might work to better connect area utilities in a "grid" system.

The resolution, amended to take out the reference to aquatic life, passed the commission by voice vote.

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Normandy water level rises more than a foot

Monday, March 17, 2008
By Brian Mosely

While just under an inch of rain fell Friday and Saturday at Normandy Reservoir, the level of the lake is up nearly a foot and a half from the same time last week.

According to figures reported by the Tennessee Valley Authority's web site today at 6 a.m., Normandy was at an elevation of 860.15 feet above sea level, with water flowing out of the lake at a rate of 42 cubic feet per second (cfs).

The level at the same time last Monday was 858.66 feet, which means the level is up 1.49 feet. TVA estimates put the inflow Monday at 370 cfs, and the level of the lake is expected to reach 860.70 feet by Wednesday.

But even with the added rain, and more expected later this week, the level of the lake is still far below where it should be. According to Normandy's operating guide, the lake should be around a level of 866 feet at this time of year.

According to data supplied by TVA, only a total of 7.45 inches of rain have fallen at Normandy Lake since the first of the year: A total of 1.84 inches in January, 3.30 inches in February and 2.31 in the first 16 days of March.

Last week, Doug Murphy of the Shelbyville-based Tennessee Duck River Agency told Bedford County commissioners that Normandy Lake is now rising but is still far lower than they would like it to be.

Murphy said the area is in the third year of a drought which started in March 2006; the National Weather Service officially predicts three to five more years of drought, with some informal speculation that it might last longer, or that drought periods might be more and more common during the coming



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decades due to changing ocean currents and weather patterns.

Possible short-term remedies for the area's water problems include raising Normandy Dam, to increase the storage capacity of Normandy Lake during times of rainfall. A water use program would work with developers to make sure that new homes built in the area have water-conserving fixtures like low-flow toilets and shower heads.

According to TVA, the Tennessee River watershed has one of the highest annual rainfall totals of any watershed in the United States, with an average of 51 inches of rain a year.

The monthly average rainfall in the Tennessee Valley ranges from 3.0 to 5.5 inches, TVA says, with March, July, and December typically being the wettest months, and September through November typically the driest. Of course, in any year, the wettest and driest months may be different.

The monthly average runoff varies from a high of almost four inches in March to a low of less than one inch in August, September, and October, TVA says.

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Rain continues, but still not much impact

Monday, March 31, 2008
By Brian Mosely

Rain many have fallen for most of the weekend, but it wasn't enough to have much impact on the level of a drought stricken Normandy Reservoir.

From Friday until midnight Sunday, a total of 0.54 inches of rain fell at Normandy, bringing the level of the lake up to 862.18 feet above sea level.

Total amount of rainfall this month at Normandy is 3.39 inches, according to TVA data, and only a total of 8.53 inches of rain have fallen at Normandy Lake since the first of the year, including a total of 1.84 inches in January, and 3.30 inches in February.

Inflow to the lake is estimated to be 140 cubic feet per second and the level is expected to rise to 862.30 feet by Wednesday. Two weeks ago, the level was at 860.15 feet and three weeks ago, it sat at 858.66 feet.

Doug Murphy of the Shelbyville-based Tennessee Duck River Agency said recently that the lake gains a foot of elevation for every inch of rain that falls in the region.

The area is now in the third year of a drought which started in March 2006, with the National Weather Service officially predicting three to five more years of drought, with some speculation that it might last longer.

Possible remedies for the area's water problems suggested by TVA in a 2000 report include raising Normandy Dam, to increase the storage capacity of Normandy Lake during times of rainfall, or to run a pipeline from Time Ford Lake to the Duck River.

Typically, the Tennessee River watershed has one of the highest annual rainfall totals of any watershed



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in the United States, with an average of 51 inches of rain a year and the monthly average rainfall in the Tennessee Valley ranging from 3.0 to 5.5 inches, TVA says.

Murphy said last month that between 10 to 15 more inches of precipitation over the next three months would be needed to make "a significant impact" to the level of the lake.

It would take an average of five inches a month to get the level up to the lake's winter pool as stated in Tennessee Valley Authority's operating guidelines for the reservoir, Murphy said in February.

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TIMES-GAZETTE



Water summit planned at Horton Park

Wednesday, April 2, 2008
By Clint Confehr
A brainstorming session is scheduled Thursday evening at Henry Horton State Park in Marshall County to reach consensus on how to deal with drought in the Duck River watershed, according to State Sen. Bill Ketron.

Ketron (R-Murfreesboro) represents the 13th Senate District, including Maury and Marshall counties along the Duck River. He also represents Lincoln County and western Rutherford County.

State and federal lawmakers, county mayors, and the leaders of water utilities have been invited to the water summit, Ketron said. He emphasized that adequate water for everyone is the goal; egos and turf battles must be left at the door; and no idea has been selected thus far.

Nevertheless, proposals have been kicked around for months.

Ideas that could be considered include creation of a regional water authority, which would require authorization from the Tennessee General Assembly, Ketron said during a telephone interview last week.

As envisioned by some area leaders, a water authority could sell income tax-free bonds to raise money needed for public works projects to ensure adequate water supplies for the five-county watershed and other areas, the Murfreesboro Republican said.

Ketron mentioned the idea of a large supply pipe from the Tennessee River, complete with pumps to bring water back up into the watershed. He agreed that water harvesting and all kinds of ideas should be discussed at the water utilities' summit.

Water harvesting diverts high flows during the rainy season to reservoirs which may include old

quarries.

However, Ketron was clear about having a clean slate before brainstorming begins. He spoke of possibilities, instead of conclusions, which should emerge from the meeting.

"There's nothing on the table," he said. "We should have a brainstorming session and work on it jointly to make sure that all the residents and businesses along the Duck River have water. We should put all the ideas on the table."

Ketron said the idea of creating a regional water authority has been only discussed for nearly six years. He recalled going to a Duck River Agency meeting in 2002 when agency officials said they were working on it, "and now we're in a drought."

DRA, which is based in Shelbyville, was started in connection with TVA's Duck River project, which was to include dams at Normandy and Columbia. The Columbia project was later canceled. Rain over part of Coffee County flows into Normandy Lake and is held in reserve as a water source and for constant flow down the Duck River. Now, water supply is threatened by what some climatologists see as the third year of a five-year drought.

In five counties, utilities drawing water from the Duck River pay five cents per 1,000 gallons sold. DRA has received millions of dollars that way, but most of what it has bought with the money are studies, not public works projects, although repair of the Columbia city dam is funded by the DRA. It's contemplated doing the same for Shelbyville and Lewisburg dams. Regardless, the cost of public works projects to deal with the entire watershed would dwarf the DRA's treasury, even though it exceeds $10 million.

Experts quoted by Ketron estimated the cost of a pipeline from the Tennessee River up through the watershed at $1 million per mile. It is more than 50 miles downstream to the river.

"But what's expensive is when you have no water," Ketron said. "Next to air, water is the most valuable resource, and we just assume it's going to be there. It may be time to form a regional water authority" to sell bonds that would finance whatever construction project is selected.

Selecting a project and building support for a water authority may well come from the brainstorming session Ketron envisions lasting from 4-8 p.m. at Henry Horton State Park. It's not planned as a formal dinner meeting, although the park has a cafeteria.

"We may just take a break and go eat," Ketron said.

Other obstacles face the water utility chiefs who are invited to the brainstorming session, as Ketron learned over dinner with Gov. Phil Bredesen a few weeks ago.

Bredesen hosts dinners for state lawmakers' four legislative caucuses. During the Senate Republican Caucus dinner in the Tennessee Tower last month, Ketron said he told Bredesen his counties are in "the exceptional category of drought and I'd like his backing" on a solution.

"He said when he was mayor of Nashville, the egos and turf rights were the biggest hurdles," Ketron reported.

The senator's hometown of Murfreesboro was locked in a long federal case with Consolidated Utility District, the rural water service for Rutherford County. The issue was service area. Because of federal loans, the rural utility couldn't release areas with customers, or potential customers because it threatened CUD's revenue base. Similar conflicts exist in Marshall, Williamson and other counties where some leaders learned from Rutherford's stalemate.

County mayors, leaders of utilities, state and federal senators and representatives have been asked to attend Thursday's meeting, Ketron said.

Marshall County Commissioner Rocky Bowden, chairman of the county's Board of Public Utilities; his former colleague on the commission, Sam Smith; and a host of other utility leaders, including Commissioner Joe B. Brandon and MCBPU Superintendent Tommy Whaley lobbied their state lawmakers during the Tennessee Association of Utility Districts Legislative Meetings last month, according to MCBPU Office Manager Judy Crowson.

"They spoke with them about long-term water issues and what can be done," Crowson said. "The drought has not been relieved.

"There have been exceptional watershed problems in the area," she said. "There has been talk about a



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long and large water line. Sen. Ketron is looking for what the interest is in the idea."

Ketron said, "I'm reacting to a request from several utility districts at the hill."

The best-case scenario for the brainstorming session would be "what's in the best interest of the people," Ketron said. "I think everybody realizes the watershed above the dam is not big enough to sustain the growth in the south central area" of Tennessee.

"Revitalizing Columbia Dam is out," he said, indicating the idea was not worth discussing.

After TVA ended the Columbia Dam project, there was some discussion of a smaller dam at Fountain Creek, on the southern side of the Duck River between Lewisburg and Columbia. But Ketron said that won't work either, agreeing that there may be too many caves in the area to have a secure dam. And, there may have been too much growth around Fountain Creek since construction of Columbia Dam was stopped and the dam was demolished.

"So," he said, "the next thing that popped up was running two 60-inch pipes up the watershed to the dam (at Normandy) from the Tennessee River. And then we have to overcome the fact that TVA controls the Tennessee River. Going to the Cumberland River with a pipe would be good for Williamson and Rutherford, and maybe Maury. The Corps of Engineers controls that."

Regardless of which public works project seems feasible, one early step apparently must be chartering a water authority.

"If there's a consensus among everybody, we could always go to a delayed bill committee," Ketron said. His goal would be to get a bill "enacted before the recess in May, otherwise it would be in 2009," after an election and with a new array of legislators, the senator said. "Based on the weather reports, I'd like to see something before that."

The utilities' water summit would be an open meeting, so anyone could attend. Names of legislators mentioned as the likely participants include Sen. Jim Tracy and Rep. Curt Cobb, both of Shelbyville, as well as Sen. Doug Jackson of Dickson, Sen. Steve Roller of Morristown, Rep. Tom DuBois of Columbia, Rep. Eddie Bass of Prospect, Rep. Joey Hensley of Hohenwald and Rep. John Tidwell of New Johnsonville.

Ketron said he has spoken with various lawmakers about forming a water authority and various alternatives to be funded. U.S. Rep. Bart Gordon, U.S. Rep. Lincoln Davis and U.S. Rep. Marsha Blackburn have been invited to send representatives, as have U.S. Sen. Lamar Alexander and U.S. Sen. Bob Corker.

Ketron has also invited county mayors, including Joe Boyd Liggett of Marshall and Eugene Ray of Bedford. County mayors have been asked to forward invitations to their local water utility leaders.

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Drought now 'extreme,' improved from 'exceptional'

Thursday, April 3, 2008
By Brian Mosely
Bedford County is no longer "exceptional" -- and that's a good thing.

The National Drought Mitigation Center has lifted the "exceptional" drought category for Coffee, Franklin, Bedford and Warren Counties, with the region now listed in the second-worst rating of "extreme" drought.

But we're not out of the woods just yet, according to Doug Murphy, executive director of the Duck River Agency, who says Normandy Reservoir is still seven feet below where it should be this time of year.

"We're really still in a drought situation," he said. "We still need more rain and more runoff." According to Murphy, the lake is now at about 63 to 65 percent of its full capacity.

Downpours early Tuesday added 0.93 inches to the total rainfall amount at Normandy Lake. The reservoir was at an elevation of over 863 feet Wednesday, nearly a foot higher than reported Monday.

As of Wednesday, a total of 9.55 inches have fallen at Normandy Lake since the first of the year. Murphy said seven to eight more inches of rain in the region would be needed to put the level back up to where TVA's operating guide said it should be.

"We're getting the rain, the ground is wet, the grass is growing and the flowers are blooming ... but we're still seven feet from where we need to be." At this time last year, the reservoir was six feet lower than it should have been, according to TVA's operating guide.

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"We're not in a crisis, but in an extreme awareness situation ... there's still a lot of activity going on how we're going to manage the reservoir and the releases for this summer."

Currently, the amount of water flowing out of Normandy Dam is at 41 cubic feet per second (cfs) which was reduced in February to conserve water. The flow rate will remain that way until May 31.

Murphy said that the flow would likely be increased this summer, but the question is "how much."

"It depends on how much water (the Duck River) gets from the tributaries and runoff downstream. If we've got plenty of runoff coming in, that's going to save water in the reservoir."

Murphy said that hopefully within the next 30 days, a draft operating plan should be ready to help TVA manage the reservoir during an extended drought period. "That's not in there now," he said. "It's just operating as it is in normal, average conditions."

The National Weather Service is still stating that the drought the region is currently enduring has about three to five years left, he said.

Murphy said recently that for every inch of rain that falls in the area, the water level at Normandy goes up a foot.

Nearly all of the runoff that drains into Normandy Lake comes from about a 200 square mile area in Coffee County, he said.

"These spring showers are great. Let them come."

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Coffee and surrounding counties have improved their drought status, according to the National Drought Mitigation Center. In the past week, the drought center has re-classified these counties, removing them from the center's worst drought category, "Exceptional," to its second-worst, "Severe" category.

Drought ranking improves slightly

LINDA BARR, Staff Writer

Going into possibly the third year of drought in Coffee and surrounding counties, the area has had some rain and a little good news this week — if only a little.

In the past week, this area was moved in rank from the most extreme drought category into the second worst ranking.

That's according to the latest report from the National Drought Mitigation Center, a national database that tracks drought conditions across the country.

The Middle Tennessee region encompassing Coffee, Grundy, Franklin, Bedford, Moore, Grundy, Lincoln, Warren and Cannon counties has improved from "D-4 Exceptional" drought to "D-3 Severe" drought.

The Tullahoma Wastewater Treatment Plant recorded almost an inch of rain from the strong storm that moved through the Midstate in the early morning hours Tuesday.

The new ranking doesn't mean the danger is over, but it's a step in the right direction.

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The level in Normandy Lake has risen about three feet since mid-March, from 860 feet above sea level to 863.

However, the spring rains, although helpful, may be too little, too late, for trees already damaged by ongoing dry conditions coupled with a killing freeze last April.

Dean Northcutt, Coffee County agent for the University of Tennessee Agriculture Extension Service based in Manchester, said the recent rains have not been enough to replenish soil moisture down deep.

"You can't tell if the trees have been damaged. The last I heard the soil is still pretty dry four to six feet underground.

"We may be seeing the damage to trees from the drought for the next three to five years. They die over time."

When the outward signs of damage occur, Northcutt said, the trees will be dying seemingly for unknown reasons, but the actual killer, over time, is the drought.

"It would be good if it clouded up and drizzled for about a month, so it would have a chance to soak in and not just run off," Northcutt said. "We need slow, soaking rains."

The rain shortage in the past two years with disastrous droughts in 2006 and 2007 have left the region short about three-fourths of a year's worth of water, he said.

"It's dry down deep where the roots are and trees are just going to suffer from it."

Oak and Hickory trees, Northcutt added, would be the first to go due to their vulnerable water transport systems from the ground to the treetops.

Hollow pores in their wood structure, he said, make them less resilient to drought.

"There are no warning signs; the tree just suddenly dies because the water system fails.

"This year we will probably see more than in the past. Trees will be in distress this year because of the lack of moisture down deep."

Northcutt said the true impact might not be known for another year or so.

"The first places we will see trees die are in areas normally high in moisture such as low areas where the ground is normally wet or spongy," he said.

"They are accustomed to getting a lot of water; they are used to being spoiled and will be the first ones

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to go into shock and die.

"That puts them in more stress than a tree that's used to having to fight for its life all the time."

Northcutt predicts that Tullahoma will see its first tree deaths in residential areas with normally wet conditions due to poor internal drainage in the soil.

He said drought-stricken trees would likely first appear in low areas between Wilson Avenue and West Lincoln Street.

"I wouldn't be surprised to see trees dying in those areas seemingly for unknown reasons, but it would probably be linked to stress related to the 2007 drought."

As for farmers, Northcutt said they are hoping the tide will turn.

"There's enough moisture to get crops started, but if we have another dry summer, we could have another disaster like last year," he said.

Crop yields, Northcutt added, were only about a third their normal harvest last year. And hay production was only one-tenth of its normal yield.

Coffee County received federal aid after the county was declared a disaster area for drought in 2006 and 2007, in addition to the April 2007 freeze.

"Farmers are eternally optimistic," Northcutt said. "They plant on faith and pray for rain."

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Rains raise Normandy Lake to winter level

LINDA BARR, Staff Writer

NORMANDY — The slow, soaking rain that Coffee County agricultural agent Dean Northcutt said the county needs has been coming down steadily, but at times not so slowly.

The level in Normandy Lake is rising steadily and had reached the normal winter pool level by early Friday morning. From Tuesday to Friday, the lake rose 1.5 feet from 862.5 feet above sea level to 864.

Randal Braker, general manager of the Duck River Utility Commission, said the rain was a "welcome sight. We're just hoping it continues," he added.

The weather forecast calls for a warm, dry period for the next several days with no additional rainfall under later in the week.

"We're no longer under 'Stage 1' drought, which involves voluntary conservation," Braker said.

"The lake should be in its refill cycle right now and the level should be close to 870 feet. So we're still six feet behind on our fill curve because of the (previous) dry weather."

At 864 feet, the lake is no longer in a drought stage as assessed by the utility commission, an improvement over its "Stage 2" drought ranking when the level dropped to 852 feet in January.

Tennessee Valley Authority is predicting that the lake will rise almost another three feet from drainage by Monday. But even if it reaches 867, it will still be eight feet shy of the 875-foot target summer pool level, which DRUC hopes to reach by the first of May.

The Tullahoma Utilities Board gauge, which measures rainfall in the Tullahoma area, showed 1.52 inches of rainfall in the 24-hour period from 11 a.m. Thursday to the same time Friday.

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And the TUB gauge has recorded 3.5 inches of rainfall for the month.

Paul Coston, chief operator at the Manchester Water and Sewer plant, said total rainfall this month in the Duck River basin, which drains into Normandy Lake, was 2.1 inches as of Friday morning.

Tim Carter, laboratory technician at the plant, added, "What we're going to read tomorrow will be tremendous."

He said the gauge there, from Friday morning at 8:30 to 11:15, recorded .9 inches of rainfall.

Coston said the rain gauge recorded just more than an inch of rain from Friday morning at 7 a.m. to 4 p.m.

The rainfall for the first three months of the year, he added, registered 10.95 inches,

"It's been so dry up until this week. We were running 75,000-pound 18-wheelers in the fields, disposing of sludge, with dust flying. It's been dry. We just need some more (rain)."

For the past 12 years preceding the last two drought years, Coston said, normal average rainfall for the area has been about an inch per week, or about 53 inches a year.

"With what we got today, we're close to our average rainfall," he said.

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Utilities discuss supply at water summit

Tuesday, April 8, 2008
By Clint Confehr

Several solutions are needed to avoid a repeat of last summer's drought scare, and they may include adjusting the Duck River Agency's charter, according to a consensus officials heard during a water utilities summit last week.

State Sen. Bill Ketron (R-Murfreesboro), who represents Marshall and Maury counties, hosted a brainstorming session at Henry Horton State Park on Thursday with dozens of leaders from water utilities attending with county mayors and other officials.

The next day, Ketron learned, Normandy Lake had retained enough water for its surface to rise to its winter pool altitude. It was 15 days after the first day of spring. Winter pool is usually seen as the low level of the lake in comparison to the summer pool level.

That's just one indication of the concerns over whether Normandy Lake will continue to be an adequate source of water for the Duck River watershed. The lake is the direct source of water for Tullahoma and Manchester. Releases from the dam provide constant flow downstream, but its reliability has been questioned in the face of growth and development.

"It's not going to be just one idea" that will ensure water supplies for the region, Ketron said over the weekend while reflecting on results of the summit. "It will take two to three, but the consensus was to move forward."

As a result, the state senator anticipates leaders of the Shelbyville-based Duck River Agency will meet with officials from Tennessee Valley Authority this month on what steps to take. That would appear to be making decisions toward a feasibility study on raising the level of Normandy Lake so the reservoir will have more water for growth and development throughout the watershed.

That may serve anticipated needs for 15-20 years, Ketron said.

"But we've got to look at the next 50 years," he said.

So, there have been suggestions for an 8-9-mile pipe from Tims Ford Lake, and a much longer pipe from the Tennessee River. Using closed quarries as reservoirs is another idea.

Implementing such ideas may work better with a fundamental change in the charter of the Duck River Agency from one that's charged with the responsibility to protect water quality and quantity. The river agency might acquire authority to sell income tax free bonds and serve as a water authority to control distribution, according to discussion among utility leaders.

As a member of the state Senate Environment and Conservation Committee, Ketron said this week he'd talk with state employees in the Tennessee Department of Environment and Conservation about what can be done. Ketron noted that it was TDEC that persuaded TVA to reduce the flow of water through Normandy Dam to preserve water supplies for Tullahoma and Manchester.

"If we have to look at changing the structure from a watershed agency to a regional water district, then we can do that," Ketron said, agreeing that time has run out to deal with it during the current session. "It'll be next January. But I hope in the next 6-8 months we'll have some sort of blueprint..."

Ketron organized the water utilities summit by asking county mayors to invite the water utility leaders in their jurisdictions to attend. Ketron counted 60 people attending. Others estimated perhaps 80 people attended.

Bedford County Mayor Eugene Ray noted that the summit organized by Ketron did seem to generate consensus that action is needed, but the group present was not authorized to take such action.

"The sentiment of the crowd was that they want the talking to stop and have something done," Ray said. "They realized they didn't have the authority to do it... that TDEC and TVA would be the ones who would make the decisions...

"We're going to have to do a combination of things: expand the reservoir, increase the source, and look at how we might get a pipeline that will pipe the water back up here.

"And we need to look at conservation with homes that have commodes that don't use so much water," he said. "Wastewater treatment plants have got to be more efficient.

"It's a combination of things, not just one," Ray said.

Amid such a broad view, however, Ray expressed confidence in the executive director of the Duck River Agency, Doug Murphy.

Murphy became the agency's executive in 2006 after a career with TVA and as a result, he understands the culture of the authority, Ray and others have explained.

When Murphy was faced with one suggestion after another during the summit, Ray reported, the agency's executive not only provided a good review of the proposal, but he made it clear that one conclusion should be obvious.

"He put the icing on the cake," Ray said of Murphy's conclusion; "If anything is done, 'It will take a long time.'"

Marshall County Mayor Joe Boyd Liggett noted attendance was good and he saw a consensus that perhaps raising the capacity of Normandy Lake is a solution.

"A 16-inch pipeline from the Tennessee River was mentioned," Liggett said. "A regional water authority was seen as a possibility, and since it (the Duck River Agency) is in place, it was seen as something that could get it off center.

"The consensus of the group was 'Let's do something,'" Ligett said, recalling Ketron's attendance at a river agency meeting six years ago when he heard similar concerns and was told they were talking about what could be done.

Liggett's personal opinion of the idea of raising the level of Normandy Lake is qualified by his desire to see a feasibility study. Lacking that, he said there' still the issue remains on how to fill the reservoir.

As for building new dams; "The environmentalists wouldn't let us do that," Liggett continued.



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Asked about water harvesting, the practice of diverting water when flows are high and storing it separately, Liggett reports he spoke with TVA officials on Wednesday last week and there was a representative of the Rogers Group present.

The Rogers Group is probably best known in this area as the business that operates quarries. One of the largest is at Pottsville. The company has bought and closed quarries in the area.

During Liggett's conversation with TVA and Rogers Group officials, the county mayor on Saturday reported, "I said, 'It would be nice if they'd donate the quarry in Lewisburg to solve the problem.'

"They (Rogers) have to have water to settle the dust to do what they do," Liggett said.

Rationing water would impact quarry operations, Liggett said.

As for making the Duck River Agency a water authority, Liggett remained uncertain. He points out that the flow of the river would still be controlled by TVA and TDEC.

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Pipeline, higher dam among water supply ideas

Tuesday, April 22, 2008
By Clint Confehr

Alternatives on how to avoid water shortages due to drought are to be explored at Henry Horton State Park on Thursday when the Duck River Agency Board of Directors convenes for its quarterly meeting.

One of the ideas is to have a pipe to transfer water from Tims Ford Lake, which is fed by the Elk River, to the Duck River below the Normandy Lake dam to maintain river flow through Shelbyville as well as water reserves for the utility serving Tullahoma and Manchester, according to the river agency's executive director and chairman of the board.

"That's one of the suggestions from TVA in 2000," River Agency Executive Director Doug Murphy said Monday when asked about the plan as it was described by board chairman Freddie Stacey of Lewisburg.

Drought severely lowered the level of Normandy Lake last year. To retain supply for drinking water services, the agency persuaded the state to get TVA to release water at a reduced rate. It was a complicated matter since TVA is required to maintain the flow of water through Shelbyville. The required minimum flow through Shelbyville is in order to dilute sewage treatment plant discharge; the city's water treatment plant could actually get by with a lesser amount.

Murphy and the agency's financial director, Jill Garrett of Lewisburg, said the DRA board would meet with officials from the Tennessee Valley Authority at 5 p.m. in Meeting Rooms A and B at the state park lodge in Chapel Hill. Directors and visitors will break for dinner at the park's restaurant at about 6 p.m. and thereafter the board will hold its quarterly business meeting.



Related subjects

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The TVA officials are to report on their findings since DRA officials met with them on April 9 in TVA offices at Chattanooga, Murphy and Stacey said. The issue is broadly defined as increasing the water storage capacity of Normandy Lake.

One way to do that would be to increase the height of the dam so the level of the lake would be higher and more water would be stored for the utilities that rely on Normandy Lake as their supply reservoir, Stacey and Murphy said.

Raising the level of the lake, however, would affect other structures and properties, Stacey said. It could require raising bridges to accommodate the higher level of the lake; those projects, he said, could cost nearly as much as the dam work.

TVA has broad estimates on the cost of the several ideas to be discussed Thursday, Stacey said. River agency directors might be considering hiring engineers for more specific cost figures.

Meanwhile, there has been extensive discussion about the creation of an authority to have regional control over water policies throughout the Duck River watershed, or at least the area served by the Duck River Agency, which has representatives from Marshall, Bedford, Coffee, Maury and Hickman counties.

Bedford County's representatives on the DRA board include Circuit Court Clerk Thomas Smith and Wartrace Mayor Don Gallagher.

On Monday, Murphy and Garrett went to a state legislative hearing conducted by the Joint House and Senate Agriculture and Natural Resources Committee.

That panel conducted a sunset hearing for the river agency as required by state law. All state agencies are called to testify to their related legislative committee to justify their continued existence. While continuation is generally routine, some agencies have been discontinued, or "sunsetted," as described by lawmakers. One such example was the Fayetteville-based Tennessee Elk River Development Agency that had been developing and selling residential lots on property TVA acquired when it impounded land for Tims Ford Lake in Franklin, Moore and Coffee counties.

Joint committees on the topic of an agency hear justifications from agency and department leaders and make a recommendation to the House and Senate which vote on whether the agency should be sunsetted or not.

"We sure hope it's another sunrise," Garrett said Monday. "Our last one was four years ago."

Sunset hearings are conducted on all state departments, agencies, boards and commissions on a four-year cycle.

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$21 million is possible cost of Normandy project

Saturday, April 26, 2008
By Mary Reeves



With Normandy Lake slightly above winter pool and nearly four feet away from its summer level, things are certainly looking better for the region's water supply. On Jan. 21 at the dam, the level was 852.22 feet. On Thursday, as seen here, the elevation was recorded at 870.65 feet above sea level. But regional officials continue to look at long-term threats to the area's water supply. (T-G Photo by Brian Mosely) [Order this photo]



With one eye on the current drought and the other eye on future flooding, the Tennessee Duck River Development Agency will soon be requesting feasibility studies for solutions -- one of which could be

raising the pool level at Normandy Dam 5 feet -- which would mean construction work to raise the actual dam and replace the spillway gates.

Mike Eiffe, program manager for water quality at TVA, gave the DRA a short presentation Thursday night during a work session at Henry Horton State Park.

"In 2000, TVA completed a programmatic environmental impact study (PEIS)," said Eiffe.

The purpose of the study, he added, was to research ways to increase the water supply for the upper Duck River watershed, and the estimated cost at that time was about $8 million.

The estimated cost of the project Eiffe gave the board Thursday was closer to $21 million, but he said there was a still a lot of uncertainty in that final number.

The breakdown of the project included:

Cost to raise the dam -- $5.03 million

Modification of spillway gates -- $3 million

Modification of roads -- $ 5.6 million

Modification of bridges -- $5.5 million

Land acquisition -- $520,000

Environmental impact study -- $1.3 million

While TVA was fairly confident in the costs for raising the dam and modifying the gates, Eiffe said the other costs required more study, especially the bridges. If the bridges can be raised without having to replace the basic structure, he said, that would bring the cots down.

In the original 2000 study, it was thought that simply reinforcing the spillway gates and strengthening them would suffice, but Eiffe said they would have to be replaced.

Raising the pool level five feet would require purchasing about 52 acres of land that TVA doesn't already own in a narrow strip around the lake.

"It's mostly woodland," said Eiffe. "We're not talking residential here."

TVA looked at other options, including simply raising the winter pool level one foot. Eiffe displayed a graph that showed by increasing the winter pool level just one foot, the possibility of future flooding increased dramatically -- especially in Shelbyville.

Other structural possibilities were also mentioned, including a dam at Fountain Creek, a pipeline from Tims Ford to the Duck River and a pipeline from the Tennessee River below Columbia to Columbia.

At the board meeting later that night, a motion to request proposals for feasibility studies for

* Increasing storage at Normandy Reservoir

* A pipeline from Tims Ford Reservoir to Duck River

* A reservoir in the Fountain Creek Watershed

Additional alternatives should be considered in the study, the motion read, such as a pipeline from the Tennessee River, waste water plant upgrades or other infrastructure projects for regional water supply.

"We're capable of making a decision now," said Doug Murphy, executive director for DRA, at the work session. "But we may not have all the information to make a good decision."

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May 5, 2008

Talks begin again on raising Normandy Dam

LINDA BARR, Staff Writer

It has been talked about before, and now it's being talked about again — raising Normandy Dam five feet to increase water storage capacity in the reservoir.

Following a presentation of Tennessee Valley Authority's findings from a preliminary feasibility study, the Duck River Agency has voted 10 to 1 to proceed with hiring a company to conduct a more comprehensive feasibility study on several options for increasing water capacity.

One of those possibilities is raising Normandy Dam five feet at a projected cost of $20 million. Other options being looked at include building a pipeline from Tims Ford Reservoir to the Duck River; building a reservoir in Maury County; and constructing a pipeline from the Tennessee River.

Doug Murphy, Duck River Agency executive director, said the board, in a meeting April 24 at Henry Horton State Park, approved putting out a Request for Proposal for such a study to determine the best option.

He said the study would be paid for from a pool of money comprised of water user contributions. Water users in the Duck River region pay 5 cents per 1,000 gallons of water they use into this fund.

Murphy said adequate funds are available for the comprehensive study, but since no definite option for increasing water supply has been determined, it is premature to discuss how such a project would be funded.

The Duck River Agency last July asked TVA to put together a preliminary feasibility study on its proposed options for increasing water storage capacity.

Michael Eiffe, TVA river operations manager for

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water supply, presented the authority's findings to the board at a work session preceding the board meeting.

Murphy said Eiffe told the board that no obvious opposition stands in the way of raising the dam another five feet at a preliminary estimated cost of $20 million.

Murphy said the next step for the board would be hiring a private consulting firm to look at several alternatives for increasing water supply to meet projected demand.

"We're going to be looking at several other alternative water supply infrastructure options," Murphy said.

"I'm not recommending any particular option at this time. The Duck River Agency will let the comprehensive feasibility study help decide which option will be the best.

"And it could be a combination of several water supply alternatives."

Duck River Utility Commission general manager Randal Braker was unable to attend the Duck River Agency work session but commented on TVA's presentation.

"There weren't any impediments to raising the reservoir that they could see," Braker said.

"While there may be issues to be addressed and possibly mitigated, there is nothing presently known that renders this option infeasible."

He said TVA's preliminary estimate of $20 million for raising the dam is significantly higher than in 2000 when TVA first provided preliminary cost estimates on that prospect.

He said a breakdown of the estimated cost includes $5 million to raise the dam; $3 million to upgrade and modify the spillway gates; $5.5 million for roadway modifications; $5.5 million for bridge modifications; $.5 million for land acquisition; and another $1.3 million for a final environmental impact statement.

The proposed land acquisition would give TVA ownership of five feet above the maximum height of the gates around the dam.

If raising the dam is approved, Braker said, TVA may have to purchase land that could be subject to flooding and roads and bridges may have to be raised.

TVA, he added, already owns all the land within five feet of the existing maximum height of the dam.

"And if they raise it five feet and want to own five feet above that, there's about 52 acres of land they don't own," he said.









































If TVA purchases the property, Braker added, "That's a small amount of land in comparison to the thousands of acres they already own."

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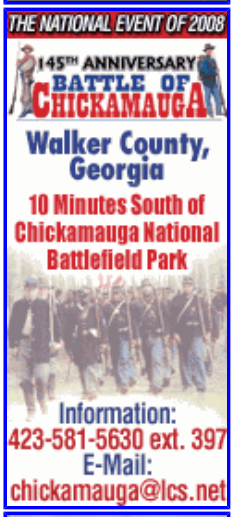















Gordon committee looks at water supply issues

Tuesday, May 20, 2008
Shelbyville Times-Gazette

On Wednesday, U.S. Rep. Bart Gordon chaired a House Science and Technology Committee hearing focusing on the challenges facing the United States' water supply.



U.S. Rep. Bart Gordon (Official photo)

[Click to enlarge]

"In Tennessee, the first eight months of 2007 were the driest in the last 118 years," said Gordon in a news release. "I hear from farmers whose water supplies have shrunk and homeowners whose wells have run dry. Towns have been forced to implement water restrictions to deal with decreased supply. It's been bad in Tennessee, but it's not unique to us. The entire nation is facing these challenges, and they must be addressed."

Population growth, changes in water use, competing demands for water supply, degradation of water quality and climate change are factors that affect the availability and use of water. As the U.S. population grows and groundwater tables decline, experts warn the U.S. water supply cannot support future populations and economic activity at its current rate of consumption.

"With investment in research and development and public education on water supply status, we may be able to avoid the high costs and environmental damage that comes with water shortages," said Gordon.

More than 50,000 water utilities nationwide require approximately 40 billion gallons of water per day to supply water for consumption, industrial needs and other uses. An adequate supply of treated water is critical to many industries, including agriculture, power generation and manufacturing.



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Water shortages can negatively affect companies and industries, resulting in reduced job creation and retention. When severe water shortages occur, the economic effect can be substantial. According to a 2000 report from the National Oceanic and Atmospheric Administration, water shortages from drought or heat waves each resulted in at least $1 billion in monetary losses over the past 20 years.

Gordon said his committee is advancing legislation to help the Untied States use its water resources more effectively through increased efficiency practices and additional research in water treatment.

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DRA plans water supply study

Saturday, June 14, 2008
By Brian Mosely

Even though the region's drought classification continues to drop, local officials are looking at a comprehensive study to find the best way to continue to provide water to the area.

TVA reported at the Duck River Agency's last board meeting that expanding the capacity of Normandy Lake would cost an estimated $21 million, which doesn't include a feasibility study.

But Duck River Agency Executive Director Doug Murphy said their agency has "cranked it up a notch" by asking "what is the best water supply project" for the area.

"We're not going to make a decision to raise Normandy or run a pipeline to the Tennessee River or another reservoir yet," Murphy said.

Instead, the agency is about to proceed with developing a comprehensive feasibility study for the water supply for the Duck River region. Murphy said he will soon be sending out requests for qualifications to engineering firms.

After that process, the agency will select a small group of firms which will be sent a Request For Proposal (RFP) to do the study. The firm will be chosen late this summer or in early fall.

The study will be "very intense and in-depth" to help the agency make the decision on what the problem is with the water supply and what will be needed to solve it, according to Murphy.

The feasibility study is expected to take two years. There will also be lot of public communication and meetings as well as request for feedback from citizens in what Murphy called "a very open study."

"Everybody's going to be involved in this thing, because basically, its everybody's nickel that's paying for it and putting money back for water in the Duck River region."



Related subjects

- Utilities, roads and Infrastructure

According to the U.S. Drought Monitor, most of Bedford County is now considered to be in a "moderate" drought, while a small section on the western end of the county is termed "abnormally dry."

While the lower drought figures are welcomed, Murphy said it doesn't mean "we should sit back and relax either."

In the meantime, the Tennessee Valley Authority (TVA) has increased the flow of water from Normandy Reservoir to an average of 153 cubic feet per second (cfs), while only 40 cfs is entering the lake. During the winter and spring months, the average flow was around 40 cfs.

That means there is more water flowing out of the lake than is coming in, and TVA data shows the elevation is now beginning to drop. On Thursday, the level was at 872.34 feet and falling from its peak in early June.

Murphy says as long as the Duck River has a little support from flow of tributaries to keep the amount at the required 155 cfs at the Shelbyville wastewater treatment plant gauge, the flow from the dam could remain constant.

But Murphy expects TVA will raise the amount of water released from Normandy as the weather gets drier, letting out around 160 to 165 cfs to meet the required target.

Murphy added that "time will tell" if the area would see the drastic drop in the level of Normandy Lake that occurred during last year's exceptional drought.

The best thing about last year's water dilemma is that area officials are now watching the numbers a little closer than they did last year, Murphy said.

"Maybe we can get a reduction in discharge (from Normandy) in the fall, when everything cools down, that would save water in the reservoir for next spring."

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August 3, 2008

Duck River is in danger

Balancing growth, preservation takes on urgency since drought

By CHRISTINA E. SANCHEZ
Staff Writer

The drought last year sounded the alarm for what could happen to the Duck River.

During the Tennessee Valley's worst drought in 118 years, the water in the river receded to a point where shoreline that had been submerged for years was exposed. A distinct brown rim appeared around the lake that feeds the Duck, and boat ramps were left dry and unusable.

The drought underlined the fact that the Duck, one of the most biodiverse waterways in the country, was vulnerable. And it wasn't much of a jump to conclude that if nature could almost dry it up, then so could development.

Now the question is what to do about the Duck to preserve its pristine beauty while at the same time taking into account growth that is already arriving. The 269-mile river snakes its way through six Middle Tennessee counties to the south of Nashville. And while it contains more than 100 species of fish and freshwater mussels, it is also the source of water for ever-expanding regional growth.

During the past 20 years, nearly 100,000 people have moved into the towns that rely on the Duck River for both recreation and water. They have migrated to Maury, Bedford, Coffee and Marshall counties for jobs as industries moved there and houses sprang up that are more affordable than those in Nashville. The migration has brought on a major transformation — one that is almost certain to continue so long as there is a supply of water.

"A lot of people moved into town in a very short amount of time, and the economy has gotten much more diverse," said Frank Tamberrino, president of the Maury County Alliance. "We're no longer strictly rural, two hours from the interstate."

Projections are that with development the water use on the Duck River will double to 50 million gallons a day by 2030. And with that use comes a challenge.

"If we don't manage the Duck River properly, can we outgrow it? The answer is yes," said Paul Davis, director of water pollution control for the Tennessee Department of Environment and Conservation. "Potentially we could find ourselves where Atlanta is, but we don't have to. The issue is resource management. Some decisions will have to be made."

'There was no backup plan'

That's worrisome to water officials, conservationists and residents, such as riverfront property owner Doug Jones, who want to establish a balance between water use and preserving the unique mussels and fish that rely on the Duck's habitat.

"This is something that affects us all," said Jones, who joined a group of concerned citizens in the winter to form the Duck River Watershed Association. "We are all concerned about planning

and what happens if there is another drought. One thing we learned last year was there was no backup plan."

The fact that there was no backup during the drought is rooted in the history of the region. More than 40 years ago, water planners looked at the meandering, scenic Duck and knew they had their work cut out for them because it was clear that development was inevitable. And what they came up with was a plan that could provide enough potable water for more than 50 years.

It consisted of a two-reservoir system — a 3,600-acre lake in Normandy and another in Columbia that would have been more than three times that size.

Normandy Dam was completed in 1976. But the larger companion project in Columbia, started in 1973, was halted and eventually demolished in 1999 to protect endangered species in the river.

For more than three decades, the fast-growing communities in Maury, Marshall, Bedford and Coffee counties have managed with just the Normandy.

"Normandy was never intended to be a one-dam system to serve everyone's needs," said Jim Clark, general manager of Columbia Power & Water Systems. "It has gone above and beyond its use."

But the severe drought last year — which has continued to an extent this year — strained water systems throughout Tennessee and the rest of the South. Water officials and communities in the Upper Duck River Watershed realized the risk of running out of water if they did not manage the river along with growth and create more water storage for their customers. Because of that, regional water managers in the Duck River basin are looking at four projects to increase water storage, including raising the Normandy Dam by five feet.

At the same time, they must consider how any action they take could affect the preservation and quality of one of the country's aquatic gems.

Feasibility study planned

For centuries, the Duck River has been an integral part of the landscape. Early settlers used it for transportation and their livelihood, and, later, fishermen and outdoorsmen used it for recreation. Thousands have navigated the waters of the longest wholly contained river in Tennessee.

The Duck's landscape varies, with sections containing bluffs, caves, bridges and historic gristmills, such as Cortner's Mill in Normandy. Fifty-one species of freshwater mussels inhabit the river.

The Duck River Agency and the seven utilities served by the Duck River plan to hire a consultant to conduct a feasibility study, likely to last two years, hoping to determine what projects will best serve future water needs, said Doug Murphy, executive director of the Duck River Agency.

"With the expected weather patterns plus future demands, we have to have a plan, and not a year-to-year plan," Murphy said. "We need to redevelop a 50-year plan with a 100-year horizon. The feasibility study would probably begin sometime in the fall."

Among the project considerations will be four suggestions that the Tennessee Valley Authority proposed in 2000 and reiterated again last spring. They are: raising the current Normandy Dam by five feet, building a dam at Fountain Creek Watershed in Maury County, running a pipeline from Tims Ford Reservoir in Franklin County and running a pipeline from the Tennessee River to Columbia.

There is reason for concern beyond last year's drought. Murphy said this year's rainfall hasn't been enough to bring water levels back to normal.

"Last year, the water level was dropping a foot every 10 days; this year it drops a foot about every 30 days," Murphy said during a recent trip to the Normandy. As he spoke about the river's issues, insects crept along the rocky shoreline of the lake and a seagull squawked overhead.

"We are five feet from going into voluntary water use restrictions," he said.

The Normandy reservoir could continue to meet the needs of Bedford and Marshall counties alone until 2050. Maury and southern Williamson counties, however, would need additional water around 2015 to fulfill service demands, according to a 1998 TVA report.

Conservation urged

Had the Columbia dam been finished, the water supply might have been stretched longer. But construction was halted in 1983 with the discovery of the birdwing pearlymussel, an endangered mussel. At the time, the project was almost half finished after 10 years of work and $80 million in construction costs.

TVA tore the dam down in 1999 and turned the land over to the state. Currently, there are seven endangered species in the river.

"Had there been a grandfather clause in the Endangered Species Act to allow for dams already under construction, the Columbia probably would have been built," Murphy said.

Clark, the Columbia utility manager, could envision raising the Normandy dam now. He views the Fountain Creek dam as a viable option for Maury County's long-term needs. The Columbia system pulls nearly 10 million gallons a day from the Duck and, at peak, 14 million gallons a day.

"Raising the Normandy is a short-term project and serves all the water utilities' needs," Clark said. "Then we may need to look at building another dam 20 years down the line."

Mike Eiffe, program manager for water supply for TVA, said the Normandy project could cost about $21 million and would require several steps and approvals to be completed. Modifications would be made to the spillway gates, the dam, embankments, and nearby roads and bridges. In addition, the state would have to acquire adjacent land. Environmentalists also would need to perform an impact study to show how any project would affect the river habitat. No decisions have been made about choosing the Normandy project.

"If we get a return to normal rainfall this winter, there are essentially no immediate issues," Eiffe said. "But if folks continue to see water as an infinite source, there is going to be another stress on the system."

Conservation, in the meantime, is being encouraged across the region, though it is not mandatory. Spring Hill, for example, put out a letter that encourages voluntary restrictions and offers conservation tips for residents on the city's Web site.

Last year's drought has raised awareness about ways people can cut down on water and what might happen if they don't, said Davis of TDEC.

"People are more conscious after the drought about water," Davis said. "Many people just never thought about it being a finite, expendable resource. We've got plenty of water, but it's all a matter of good management decisions."



Duck River resources are issue amid development

Areas along Duck try to plan wisely for future growth

BY CHRISTINA E. SANCHEZ • *STAFF WRITER* • AUGUST 3, 2008

The landscape along the Duck River is in the midst of change, as the bucolic is replaced by development that comes with growth.

Mixed in with the agrarian backdrop are new subdivisions of large, brick, two-story houses. Big-box stores like Super Wal-Mart and Lowe's have set up shop, and new shopping centers are on the way.

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While growth has slowed with the economic downturn, the area is expected to see continued development over the next several years, raising questions about how to manage that growth responsibly so that the river isn't overused.

"As land use changes from farming to developed subdivisions and asphalt parking lots, that has direct impact on water quality and flooding," said Leslie Colley, director of The Nature Conservancy's Duck River program. "The river is a tremendous resource for fishing and boating. The more we think about the issues as a whole, the better off we'll be."

The issues and concerns stem from the unprecedented development that has already occurred within the Duck River area. Maury County, for example, leads all Duck River basin counties in population growth since 1990. That once rural and increasingly suburban community has seen more than 25,000 people flock there in the past 18 years, according to the U.S. Census Bureau.

Spring Hill, which straddles Maury and southern Williamson counties, also draws some of its water from the Duck. That town has seen unprecedented growth, with its population increasing from 7,000 in 2000 to over 23,000 in 2007.

When General Motors' Saturn plant arrived in Spring Hill on the Maury County side in the 1980s, the facility created an estimated 8,000 jobs and a need for more housing.

"The Saturn plant caused an influx of people from out of state who came to work for the plant," said Bridget Jones, executive director of Cumberland Region Tomorrow, a planning agency for the 10-county region. "In turn, that created an increase in need for residential housing not only in Maury County but in the three- or four-county area."

Industrial Growth Is Key

An additional 10,000 to 13,000 residential lots are already approved for Maury County and will be built over the next decade.

"There are people building their first home and can't afford to buy in Franklin, and people retiring here where



A preserved farm silo is a focal point of a new Spring Hill subdivision, The Reserve at Port Royal. Spring Hill, which draws water from the Duck River, has seen unprecedented growth since 2000.

(SHELLEY MAYS / FILE / THE TENNESSEAN)

Duck River is in danger

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it is a slower pace of life," said Frank Tamberrino, president of the Maury County Alliance.

At the headwaters of the Duck River in Coffee County, industrial growth has influenced most of the population increase. There are five industrial parks, three of which are more than 400 acres.

The largest park, spanning 795 acres, is adjacent to Interstate 24. More than 2,500 people are employed at 22 companies on that site, where products such as carpeted floor mats and interior door panels for cars are manufactured.

"It has certainly grown, there's no question about that," said Ted Hackney, executive director of the Industrial Board of Coffee County. "Traffic is much heavier today. Wal-Mart, Home Depot, Starbucks, O'Charley's are names that weren't here then that are here now. "

Hackney said 1,000 acres are still available for industry. The Industrial Board, meanwhile, is about to announce a new manufacturer that will employ 200 people in phases over the next few years.

Bedford County is updating a growth management plan to look at projected growth in the next 10 years and how infrastructure, including the Duck River, will respond. A $23 million wastewater treatment plant is under construction to meet demands of an expanded population, which was expected to grow 19 percent in Bedford County between 2001 and 2011, said Walt Wood, chief executive officer of the Shelbyville-Bedford Chamber of Commerce.

"The Duck River is the key to the future of our success," Wood said. "We have to maintain a good water quality for folks to have for all purposes."

Contact Christina E. Sanchez at 615-726-5961 or cesanchez@tennessean.com.

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Lake is up, but officials can't relax yet

Sunday, March 8, 2009
By Brian Mosely
An abundance of rainfall during the early part of winter has resulted in Normandy Reservoir meeting its operating guide for the first time in two years.

But the region isn't out of the woods yet when it comes to the dry weather, with the National Weather Service saying the area is still experiencing a drought.

When it comes to the operations of Normandy Dam, March is the month when the flow of water is slowed from the reservoir to allow the level of the lake to rise to the summer pool level of 875 feet above sea level.

Doug Murphy, director of the Duck River Agency, said Tuesday that having the lake at its current level of nearly 865 feet "is a good thing."

Wet winter

The unexpected wet weather the area experienced in December and January brought the level of Normandy up almost eight feet, according to TVA data, so much so that the lake exceeded its winter pool level and the federal utility had to release water into the Duck River in January to keep it under control.

"That rainfall we had was real critical," Murphy said. "We're starting out at a higher reservoir elevation level than we have had in two years."

And while runoff from this weekend's snowfall should saturate the ground, the coming change in seasons over the next several weeks will result in emerging plants absorbing the moisture, Murphy said.



Snow is usually converted into inches of water by dividing by 10, so if one region of the county received eight inches, that would be the equivalent of 0.8 inches of rain.

"These rains we get in the next six to eight weeks (are) going to be real critical for us," Murphy explained. He said one of the good things is that snow melts slowly, meaning that there will be a continuing amount of runoff into the watershed.

"This will slowly move into the ground water, which will slowly recharge the Duck River," Murphy said.

As long as the flow rate of the Duck River remains at 120 cubic feet per second (cfs) or above at the gauge in Shelbyville, the rate of water from the dam shouldn't rise above the current rate of 50 cfs which TVA maintains during this time of the year.

But if the river comes down, more water from the dam would have to be released to meet the target levels, Murphy said.

According to the operating guidelines for Normandy Lake set by TVA, this water conservation period ends at the first of May, when the utility estimates the lake is supposed to be at summer pool.

Still dry

But while the lake is up to its operating level, the region is still experiencing the impact of a multi-year drought. Much of the state, including Bedford County, has fallen back into the category of "abnormally dry," according to the U.S. Drought Monitor.

Murphy stated that February was much drier than normal, with just a little over one inch falling at Normandy Dam.

"We're not letting our guard down," when it comes to managing the water in the region, Murphy said. While the National Weather Service said the region was going to see a wetter than normal winter, Murphy explained that we are still in a drought.

"We're still looking at a drier spring and summer, we're not out of it," Murphy said.

"We got some relief and it's been very welcome, it's helped us, but I expect to see a dry summer anyway and we're going to have to manage the water in the reservoir carefully."

Murphy added that the Agency is working with the state on formulating a drought management plan for Normandy Reservoir, which Murphy says he hopes will be released this year.

"We still are addressing drought issues and water shortage use issues and looking at our long term water supplies needs also," Murphy said.

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Normandy Lake reaches normal summer level

Thursday, April 23, 2009
By Brian Mosely



For the first time in almost three years, Normandy Lake has reached its summer pool; however, the head of the Duck River Agency is asking TVA to keep the water in the reservoir in case it is needed further down the road.
(T-G Photo by Brian Mosely) [Order this photo]

In December 2007, the man who watches over the area's water source said that half of it was gone.

But as of 7 a.m. Tuesday, it's all back.

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And Doug Murphy, director of the Duck River Agency, wants to keep it that way.

For the first time in nearly three years, Normandy Lake has reached its summer pool of 875 feet above sea level, but as soon as that level was reached, the Tennessee Valley Authority (TVA) began to release water from the dam. Murphy has requested that the utility hold up on that action.

The dam had previously been releasing 45 cubic feet of water per second (cfs), but a few hours after that elevation was reached on Tuesday, TVA began releasing 660 cfs from the flood gate, but then slowed the flow to 365 cfs late Wednesday.

Murphy said that the reservoir was filled nine days before the guide curve said it should be, and that TVA is trying to "get the reservoir back down to the curve" but Murphy is asking them to "leave it up."

"It had been running high above the curve all spring, and I'm just asking them to please leave it up because we don't have any rain in the forecast for seven to ten days," he said.

With the temperatures forecasted to be in the mid 80s by the weekend, Murphy explained that the evaporation loss alone would take the lake's level down "a good bit" even without releasing water from the dam.

Murphy said his request to TVA was to slow the discharge and let natural evaporation take care of keep the lake level. He said that six inches off of the top of the lake is "a whole lot of water."

"It can make a big difference, that top six inches, when we get to August and September ... if they can keep it up for us, it might make this summer easier," he said.

Murphy said the last time the lake reached its summer pool level was on June 13, 2006.

The level of Normandy has changed drastically since January 2008, when the reservoir was all the way down to 853 feet, 22 feet below summer pool.

Rains over the past two months have brought the level of Normandy up about ten feet from its winter pool of 865 feet and the U.S. Drought Monitor removed Tennessee from the "abnormally dry" classification earlier this month.

One day of heavy rain in late March brought the lake up over two feet in one day, which spurred TVA to release 40 times the amount of water than normal to keep the lake from reaching its summer pool prematurely.

The flow was reduced for several days to allow county officials to safely search for a man who disappeared near the Duck River on March 25.

But just because the lake is back to normal doesn't mean that officials aren't thinking about problems related to future droughts.

Murphy said an inter-agency group is addressing this very topic by developing a drought management plan for the reservoir.

"That will not stop," Murphy said. "We will have a plan that can be implemented without having to go through all the red tape that government has to go through to take action on something like this and we're going to do that while we can breathe right now," he said, referring to the current lull in the dry spell.

Officials learned a lot of things from the drought over the past three years, Murphy said.

"We got our hands bit and we can take actions now to keep that happening in the future," he said. "It just feels good to have water now."

The Duck River Agency will also conduct its quarterly board meeting at Henry Horton State Park tonight at 6:30 p.m.

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Water shortage plan being prepared by DRA

Friday, September 11, 2009
By Brian Mosely
During the peak of the region's recent drought, Doug Murphy, the head of the Duck River Agency (DRA), said that half of the area's water supply was gone.

Nearly two years later, Murphy says he wants to be better prepared when such a situation arises again.

As a result, a comprehensive water supply plan to address concerns with shortages caused by drought conditions and how to meet future demands for Bedford and other counties in the Duck River watershed has been undertaken by the DRA.



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And the first step in the plan will be an assessment for the need for additional water supplies, by looking at what is available in Normandy Reservoir and the Duck River, and projecting what future water demands may be.

During the height of the drought in January 2008, Normandy Reservoir reached a record low elevation that was 19 feet below the targeted summer pool level; local officials did not have a plan in place to deal with the water shortage.

Murphy said Thursday that the agency's goal is to have an insurance plan to keep a water shortage from occurring again "or at least keep us from a critical situation."

Findings by the agency will be released within the next week or so on its web site at duckriveragency.org and also during upcoming public open houses scheduled for later this month.

The events are to be held so that citizens can review and comment on the needs assessment, Murphy

said. The assessment would help the agency predict when shortages could possibly occur.

Demands for water for domestic, commercial, industrial, and agricultural purposes are being projected using studies by the U.S. Geological Survey, as well as population projections developed by the University of Tennessee Center for Business and Economic Research, Murphy explained.

The Comprehensive Regional Water Supply Plan has been drawn up for Bedford, Coffee, Marshall, Maury, and southern Williamson counties with the idea to develop a plan with a 50-year projection and a 100-year planning horizon.

"We know as demand increases and possible changes in weather, at some point in the future, we could have a greater demand for water that is being supplied in the river," Murphy said.

The plan would "provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects."

It will also include specific recommendations, including budgets and implementation time lines, on water supply and water management projects.

Murphy said some of the options being looked at comes from a TVA study released in 2000 entitled Future Water Supply Needs in the Upper Duck River Basin.

The TVA report presented several options for supplying more water to the Duck River, including transfer of water from Tim's Ford Reservoir to Normandy Reservoir by pipeline, building another reservoir in the downstream part of the Fountain Creek watershed, southeast of Columbia, constructing a water supply intake on the Duck River downstream from the mouth of Catheys Creek northwest of Columbia or raising the pool level of Normandy Lake.

Murphy said that legislation was passed in 2008 that made the agency go back and look at those four alternatives, "plus others we're wanting to add to it."

The TVA document is being used as a starting point, Murphy said and the open houses will give citizens an opportunity to come and take a look at the plan.

"We're trying to answer a lot of questions up front, so if we get in a certain scenario, everybody knows what we want to do before we get there," Murphy said.

The open houses will be conducted from 4 to 7 p.m. on the following dates:

* Sept. 22, Henry Horton State Park, Conference Room C

* Sept. 23, Manchester City Hall, Board Room

* Sept. 24, Maury County Court House, Commission Meeting Room

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Duck River demand may outstrip supply

Thursday, October 8, 2009
By Brian Mosely



James Smithey and his daughter Ashley take in some fishing near Halls Mill on the Duck River, a section of the waterway which may not be able to meet the future demands of the community, according to a TVA study.
(T-G Photo by Brian Mosely) [Order this photo]

A recent TVA study expects that the future demand for water on the Duck River between Shelbyville and Columbia could exceed the current supply.

However, a needs assessment study to be released next month by the Duck River Agency may help

This Holiday Season

to address water supply issues that may occur in the future.

The agency already is working on a comprehensive water supply plan to address shortage concerns caused by drought conditions and also how to meet the future demands for Bedford and other counties in the Duck River watershed.

According to Doug Murphy, director of DRA, the TVA study entitled "Water Supply and Demand in Tennessee River Watershed Streams Below Reservoirs" released in July, was an examination of the tail water areas below the reservoirs that supply water to the region.

"The Duck River region from Shelbyville to Columbia was the only area in the Tennessee Valley that TVA highlighted as an area to expect future demand to exceed its current supply," Murphy said.

Murphy said that this latest study only reiterated what was said in the TVA report entitled "Future Water Supply Needs in the Upper Duck River Basin," which was released in 2000.

Recent projections by TVA and the U.S. Geological Survey indicate the Tennessee River watershed will add about 1.2 million more residents to the existing 4.7 million by 2030.

Additionally, TVA says growth in urban areas around the region, some of which are already facing water-supply challenges, will increase pressure on the Tennessee Valley's water resources.

TVA first made water demand projections in 1979, Murphy said, and additional projections have been made by the University of Tennessee Center for Business and Economic Research (CBER) and the U.S. Geological Survey (USGS).

CBER used population projections and data on industrial growth, but when combined with the study from USGS, the region could see water shortages by 2010 to 2015 in a worst case scenario.

"If we had a drought like we had in 2007, yeah, we could possibly start seeing some issues," Murphy said.

In that type of shortage, "we would really have to tighten down and do some mandatory restrictions for water use, operate the reservoir different," Murphy explained.

However, Murphy stresses that computer models are still being run and that it is not possible to set a date and say "this is when we're going to run out of water," but he added as demand for water grows and more water is drawn from the Duck without more supply provided, "then you have issues."

Also, the state mandates that a certain amount of water, measured in cubic feet per second, has to keep flowing through the Duck to meet environmental needs.

"We've got to prepare for future demand either by coming up with ways to manage the river different or to offering alternative supplies," Murphy said.

Murphy said they are looking "at about 30 to 40 alternatives," right now to boost the water supply -- "everything from pipelines to storing water in rock quarries or tributary reservoirs and storage facilities."

The 2000 TVA report presented several options for supplying more water to the Duck River, including:

* transfer of water from Tim's Ford Reservoir to Normandy Reservoir by pipeline,

* building another reservoir in the downstream part of the Fountain Creek watershed southeast of Columbia,

* constructing a water supply intake on the Duck River downstream from the mouth of Catheys Creek northwest of Columbia

* or raising the pool level of Normandy Lake.

Murphy said that at the next DRA workshop, set to be held on Dec. 2, they hope to "weed out" some of the alternatives that are currently on the table.

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CORRECTED: Area's future water supply to be focus of open houses

Tuesday, March 2, 2010
By BRIAN MOSELY ~ bmosely@t-g.com
The open house times have been corrected.

Where are we going to get our water in the future?

That important question is to be discussed at two open houses set for later this month to let the public know about long term planning with regards to the area's water supply.

The Duck River Agency, in conjunction with other organizations such as area utilities and environmental groups, has been holding workshops since last year to work out alternatives to their Comprehensive Regional Water Supply Plan.

The two open house events are scheduled for March 24 at the Conference Lodge at Henry Horton State Park, from 1-3 p.m. and 5-7 p.m.

Citizens will get to take a look at four project ideas (see related story) that could be used to relieve any projected water shortage that may occur.

Duck River Agency director Doug Murphy points to a TVA study released last July that stated that the future demand for water on the Duck River between Shelbyville and Columbia could exceed the current supply.

Recent projections by TVA and the U.S. Geological Survey indicate the Tennessee River watershed will add about 1.2 million more residents to the existing 4.7 million by 2030.

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Additionally, the federal utility says growth in urban areas around the region, some of which are already facing water-supply challenges, will increase pressure on the Tennessee Valley's water resources.

The recommendations are being shared with the public so they can understand more about the ideas, Murphy said, but the open houses will not be in the format of a public meeting.

The plan has been drawn up for Bedford, Coffee, Marshall, Maury, and southern Williamson counties with the idea to develop a plan with a 50-year projection and a 100-year planning horizon.

It is slated to "provide direction to the DRA for the management of available water resources, including the implementation of specific water supply infrastructure projects."

The plan will also include specific recommendations, including budgets and implementation time lines, on water supply and water management projects.

Two workshops held last year focused on the goals and feasibility of the ideas, while the latest workshops over the past three months concentrated on analyzing the region's alternatives for water. The final two workshops to be held later this year will be centered on the implementation of the plans.

The entire process is slated to be completed by July 1.

Materials from the workshops can be found at the Duck River Agency's Web site at http://www.duckriveragency.org/.

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Pool level change

Tuesday, March 2, 2010
By BRIAN MOSELY ~ bmosely@t-g.com
What's the best way to prepare for future water supply issues for the Duck River watershed?

The public will get a chance to see four possible ideas at an upcoming open house to be held at Henry Horton Park (see related story).

Four of the ideas are considered "cornerstone" plans while others are either labeled backup plans or ideas that are "highly unlikely."

Doug Murphy, the head of the Duck River Agency, said there were originally 26 different plans and the current four concepts "have moved into a higher level of recommendation."

But, Murphy also said that the four "cornerstone" ideas are not the final plans and "are not set in stone"

"We could see variations of them, or we could go to the backup plans," Murphy said, but he said the ideas in their current form are slated for "detailed discussion".

However, Murphy emphasized that the current plans were "still a work in progress."

Eventually, a timeline will be established to meet the area's water demands over the next 50 years, he said.

Pool level change

One idea is to raise the winter and spring pool level at Normandy Reservoir by 5 feet to preserve water storage needs for the drier summer and fall months.

Estimated cost of such a project would be $15 million, which would include an allowance for the



acquisition of 2,000 acres of flood-prone areas downstream from the reservoir.

This idea would satisfy the entire river deficit of 32 million gallons a day that is projected for the year 2060, and would increase the storage supply by 5 billion gallons.

Detailed environmental studies of the flow alteration would be required, including consultation with U.S. Fish and Wildlife Services. There also could be a negative impact due to a higher frequency of flooding.

This alternative would need to be combined with a modified release of water from Normandy to satisfy part of the projected deficit for downstream users. This idea could also be implemented in multiple phases, according to a draft summary.

Earlier refill

This concept has been combined with a similar idea -- to start the refilling of the reservoir at the first of February instead of a month later in March in order to capture high flows of water prior to the dry weather conditions that begin in June.

Last month, TVA began spilling water from Normandy after heavy rainfall resulted in the reservoir measuring some 7 feet above winter pool and as of yesterday, TVA began withholding water to start the build up to summer pool levels.

Higher dam

Another idea for Normandy Reservoir would be to increase the height of the dam by 5 feet, along with raising the winter pool level by the same amount and keeping the summer pool at its current level of 875 feet.

The estimated cost of this alternative ranges from $15 to $30 million and would depend on the need to raise roads and bridges.

Releases of water from Normandy could be increased to meet the needs of both Shelbyville and Columbia but there could be potential impacts to boat ramps and campgrounds as a consequence.

One issue with this idea is the impact it could have on the Short Springs Natural Area outside of Tullahoma, as well as the loss of shoreline vegetation due to flooding. Detailed environmental studies would also be required if this plan was used.

Monsanto use

The use of Monsanto Lake outside of Columbia for water storage is another option being explored.

The idea is to purchase the lake, a 5-billion gallon offstream storage reservoir off Duck River, and upgrade the existing pumping station in Columbia, building a 10-mile, 42-inch pipeline from the reservoir to Columbia's water treatment plant.

The proposed idea would cost an estimated $45 million, which would include an allowance for $7 million of potential improvement to the dam and spillway that already exist there.

Direct ownership would maximize the control of the water supply, it would reduce the reliance on Normandy Lake for water downstream and having the new offstream reservoir would also provide recreational opportunities for the region.

New intake

Building an intake near Williamsport and pumping the water back to Columbia's treatment plant is another concept being examined.

The project would cost an estimated $56 million and would require an intake and pumping station at River Mile 108 near Williamsport and a 17-mile, 42-inch pipeline to the water treatment plant in Columbia.

The plan is considered droughtproof and reliable and would result in a minor reduction to downstream flows due to uses in Maury County and south Williamson County, as well as reducing the reliance on Normandy.

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Water plans will flow

Tuesday, August 10, 2010
By BRIAN MOSELY ~ bmosely@t-g.com
Regional utility managers and others will gather for a final workshop on Wednesday at Henry Horton State Park to plan for the area's future water supply needs.

Since June 2009, the Duck River Agency, along with area utilities and environmental groups, has been holding workshops to work out alternatives to a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties.

The idea has been to develop a plan with a 50-year projection and a 100-year planning horizon, with the group holding five workshops since last year to examine alternatives to relieve any projected water shortage that may occur.

According to a TVA study released last July, future demand for water on Duck River between Shelbyville and Columbia could exceed the current supply.

Recent projections by TVA and the U.S. Geological Survey indicate the Tennessee River watershed will add about 1.2 million more residents to the existing 4.7 million by 2030.

Also, TVA says growth in urban areas around the region, some of which are already facing water-supply challenges, will increase pressure on the Tennessee Valley's water resources.

Normandy changes?

Currently, the group have four ideas considered "cornerstone" plans and one backup plan. One idea is to raise the winter and spring pool level at Normandy Reservoir by five feet to preserve water storage needs for the drier summer and fall months.



There is currently no estimated cost of such a project, which would include an allowance for the acquisition of flood-prone areas.

This idea would satisfy the entire river deficit of 32 million gallons a day that is projected for the year 2060, and would increase the storage supply by 5 billion gallons.

Detailed environmental studies of the flow alteration would be required, including consultation with U.S. Fish and Wildlife Services. There also could be a negative impact due to a higher frequency of flooding.

Another idea would be to raise the height of Normandy Dam by five feet, while retaining the summer pool level at 875 feet and increasing the winter/spring level of the lake by five feet.

Increased releases from the reservoir would meet the needs at Shelbyville and Columbia, and would cost an estimated $15 to 30 million, depending on the need to raise roads and bridges.

But this idea could have an impact on the Short Springs Natural Area outside of Tullahoma, as well as the loss of shoreline vegetation due to flooding. Detailed environmental studies would also be required if this plan was used.

Columbia ideas

Two of the cornerstone options are located in Maury County, with one plan calling for the purchase of Monsanto Lake near Columbia for water storage.

The lake is a 5 billion gallon offstream storage reservoir off the Duck River, and the idea is to upgrade the existing pumping station in Columbia, building a 10-mile, 42-inch pipeline from the reservoir to Columbia's water treatment plant.

The proposed idea would cost an estimated $34 million, not including land costs and wetland replacements.

Direct ownership would maximize the control of the water supply, reduce the reliance on Normandy Lake for water downstream and having the new offstream reservoir would also provide recreational opportunities for the region.

The final "cornerstone" plan is to build an intake near Williamsport and pump the water back to Columbia's treatment plant at a cost of $38 million, requiring a 17-mile, 42-inch pipeline, or two 30-inch pipes to the plant in Columbia.

The plan is considered drought proof and reliable and would result in a minor reduction to downstream flows due to uses in Maury County and south Williamson County, as well as reducing the reliance on Normandy.

The back-up plan would involve building a 24-inch pipe line seven miles to move water from a cooling lake at Arnold Air Force Base to discharge into Normandy Lake.

An alternative to this idea would involve a nine-mile pipeline from Woods Reservoir pumped directly into the Duck River Utility Commission's water treatment plant, with an estimated project cost of $8 million for the Normandy idea and $10 million to run the pipe to DRUC.

An open house is also planned in the future so that the public can understand more about the ideas, but a date has not been announced.

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Grow with the flow: DRA hopes to keep water supplies adequate

Sunday, August 15, 2010
By BRIAN MOSELY ~ bmosely@t-g.com

Recommendations to increase the capacity of Normandy Reservoir, along with other water saving ideas, are to be presented to the public next month by the Duck River Development Agency (DRA).

On Wednesday, DRA held its final workshop to work out a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties.

The DRA has been working on the plan for over a year now, according to executive director Doug Murphy, and the plan addresses water needs for a planning period of 50 years, while looking forward 100 years down the road.

The recommendations are:

*Raise the winter pool of Normandy Reservoir by five feet to increase water storage for use during droughts and boosting flood protection.

*Implement a water use efficiency program.

*Develop a regional drought management plan.

*Optimize the releases for Normandy to preserve storage in the reservoir for when its needed the most.



Raising the winter pool of Normandy Reservoir during the winter months is just one of the recommendations from a Comprehensive Regional Water Supply Plan that will be before the Duck River Agency's board in October. The public is invited to comment on the recommendations at Henry Horton State Park on Sept. 9. (T-G Photo by Brian Mosely)

[Click to enlarge]

*Relocate Columbia's water withdrawal to a new intake approximately 25 miles downstream where an adequate flow exists during droughts to satisfy projected needs. [Order this photo]

A public meeting is due to be held on Sept. 9 at Henry Horton State Park so citizens can comment on the recommendations, although the exact time has yet to be worked out.

Murphy said there will likely be two public sessions that day to allow time for all to participate. Comments from the public will be incorporated, as appropriate, into the plan, and the DRA board will then vote whether to endorse the plan in October.

More capacity

The first project would involve working with TVA to change the flood guide operation for Normandy Reservoir.

Currently, the winter pool level is 864 feet above sea level and the recommendation is to raise that by five feet. Murphy said that this could be done in increments or not even go up the full 5 feet. Summer pool level for Normandy is 875 feet.

However, filling the lake more in the winter means more space would be needed for seasonal flood storage, and that leads to having to raise the dam and the capacity of the reservoir.

Murphy said putting that much water into the winter pool would add five billion gallons of water to the reservoir, which would get the region through a multi-year drought and keep flows into the Duck River for a longer period of time.

Normandy does not fill every summer, and Murphy said that computer models showed that raising the level would give the region extra water.

Another option is to look how the reservoir is managed and if there isn't enough room to hold flood waters in the spring months, then factors downstream would have to be examined, looking at frequency and duration of flooding.

Raising the level during the winter months would also prevent impacting the shorelines of the lake, Murphy said, but added that the flooding frequency and properties around the reservoir would be impacted some in the spring.

"You'll have more flood events, they may be a little bit higher than they are now, so we've got to look at all the structures and all the impacts around Normandy Reservoir," Murphy said, such as roads, campgrounds, and personal water use facilities.

Managing water

Plans that would go into effect within the next fiscal year involve developing a drought management plan for the region, Murphy said.

The plan would only be used depending on how severe any future droughts are, but a good plan is needed for Normandy "to prolong our water supply to meet all needs," he said. He expected work on this would begin in the fall.

The water use efficiency program is another non-structural component of the plan, with Murphy commenting that "I'm not sure we know how we use our water, and if we're using it wisely."

This isn't just about how utilities use water and send it to your home, but also how residents and commercial customers use it and how they can use it more efficiently, he said.

Murphy even suggested that "it maybe will change our lifestyle a bit," adding that there would be a lot of education involved in this aspect of the plan.

The other "non-structural" part of the plan is to optimize the releases from Normandy Lake, which means making sure that TVA has the best tools, gauges and forecasts to operate the reservoir as efficiently as possible.

"We don't want to waste water, we want the water in the river to meet all needs, but TVA has to do a better job," Murphy said, adding that a lot of agencies will be involved in this part of the plan helping to develop the program to optimize the releases.



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All of these programs would be implemented over the next three to five years, Murphy said, and "would serve our immediate focus."

Columbia intake

The third project looks downstream in Maury County, where the intakes for Columbia would be moved downstream some 25 miles where there is more water in the Duck River. About 17 miles of pipeline would be needed for this project.

Murphy said if the Normandy project could be done first within the next 10 years, this would help the region through an extended drought period and would meet the growth that is expected over the next 10 to 40 years.

By moving the intakes in Maury County downstream, "that increases their water capacity by a significant amount," Murphy said. Flow studies have not been done, but indications are that it could mean getting twice the amount of water from the river.

"When we see growth, that's when the intake should be moved downstream," he said, adding that this part of the plan may not happen for 10 or 20 years, depending on the housing market, the economy and how it will impact growth.

The cost

Multiple components of the plan will be addressed over the next 50 years, Murphy said, such as population growth and drought spells, adding that one plan won't fix all the long term needs of the region.

"When we mean a 100-year vision, we're really stretching it ... we're going to be working on this for a long time," Murphy said.

Murphy says that DRA is now in the implementation phase, and he says work needs to be done in completing a financial plan.

The estimated cost for the recommended plan is $62 million and more technical and environmental investigations are planned to refine the costs.

Murphy stressed that the financing approach is "growth pays for growth," where new customers would pay a one-time system development charge to offset the costs of the new infrastructure.

While rates and charges are still being developed, the proposed approach would cost current customers no more than $1.50 per household per month.

"Working together works" is another aspect of the plan Murphy stresses, saying that "as a Duck River region working together, we can make it affordable."

A year in the making

Close to 50 people from different agencies have participated in the meetings over the last year, reviewing the recommendations and providing comments from the various organizations involved.

The drought of 2007 highlighted the issue of the region's water needs, since citizens of the Duck River area depend primarily on Normandy Reservoir for much of their supply.

The drought caused record low levels in the reservoir that resulted in temporary changes in the operation of the dam to protect water uses. The weather, combined with regional growth projections, created the need for the water supply plan.

The first step of the plan was to learn what the area's water needs would be through the year 2060, using computer models of the operation of Normandy Reservoir and the Duck River's hydrology.

Population projections were used to determine what the water demands would be and the study indicated that there is a deficit of up to 32 mgd (million gallons a day.) Approximately 4 mgd of this deficit exists today and the remaining amount will result from the regions projected growth.

Recent projections by TVA and the U.S. Geological Survey indicate the Tennessee River watershed will add about 1.2 million more residents to the existing 4.7 million by 2030.

Around 40 alternatives to addressing the water supply needs were examined, which were reduced to

26 that were considered worthy of consideration over a period of six months. Those options were studied extensively and narrowed to the final five recommendations.

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Water supply plan gains DRA approval

Tuesday, November 2, 2010
By BRIAN MOSELY ~ bmosely@t-g.com

The Duck River Development Agency will be bringing experts to the table to help implement a water supply plan for the region that was approved last Thursday.

DRA's board of directors voted to approve the recommendation of O'Brien & Gere Engineers, Inc. to adopt and implement a Comprehensive Regional Water Supply Plan for Bedford, Coffee, Marshall, Maury, and southern Williamson counties.

The recommendations are to raise the winter pool of Normandy Reservoir by five feet to increase water storage for use during droughts and boosting flood protection, as well as developing and enacting a regional drought management plan and a water use efficiency program.

Other parts of the plan would optimize the releases at Normandy to preserve storage in the reservoir for when it is needed the most and would relocate Columbia's water intake to a new location approximately 25 miles downstream, near Williamsport, where an adequate flow exists during droughts to satisfy projected needs.

The supply plan has a 50-year planning period with a 100-year vision to meet future water needs and how to address possible water shortages caused by drought.

Also approved was the first phase of the implementation plan which, according to DRA executive director Doug Murphy, means putting together a strategic team to start to look at the recommendations and how to begin the process.

Murphy said this will happen by DRA hiring a program manager, as well as a financial consultant for draw up a funding strategy for the projects.

"There are several experts we need ... who will help lay out a pretty detailed plan of implementation to keep it moving forward," Murphy said.

Another part of the plan that was approved was the regional drought management plan, and contracts will be approved to start developing that, which will address operations of Normandy Reservoir and the Duck River during an extended drought period, Murphy explained.

The estimated cost of implementing plan is $62 million, and according to the recommendation from O'Brien & Gere, if the schedule is not practicable, due to financing limitations, or other reasons, it can be implemented in phases.

The drought of 2007 highlighted the issue of the region's water needs, since citizens of the Duck River area depend primarily on Normandy Reservoir for much of their supply.

The drought caused record low levels in the reservoir that resulted in temporary changes in the operation of the dam to protect water uses. The weather, combined with regional growth projections, created the need for the water supply plan.

Recent projections by TVA and the U.S. Geological Survey indicate the Tennessee River watershed will add about 1.2 million more residents to the existing 4.7 million by 2030.

Plan details

Part of the plan would involve working with TVA to change the flood guide operation for Normandy Reservoir. The winter pool level is 864 feet above sea level, and the recommendation is to raise that by five feet.

Murphy has said that this could be done in increments or not even go up the full 5 feet. Summer pool level is 875 feet. Filling the lake more in the winter means more space would be needed for seasonal flood storage, and that leads to having to raise the dam and the capacity of the reservoir.

Putting that much water into the winter pool would add five billion gallons of water to the reservoir, which would get the region through a multi-year drought and keep flows into the Duck River for a longer period of time, Murphy said.

Raising the level during the winter months would also prevent impacting the shorelines of the lake, Murphy said, but added that the flooding frequency and properties around the reservoir would be impacted some in the spring.

The drought management plan for the region could be developed within the next fiscal year, which would only be used depending on how severe any future droughts are.

The water use efficiency program is another non-structural component of the plan, which not only deals with how utilities use water and send it to homes, but also how residents and commercial customers use it and can use it more efficiently, he said.

The other "non-structural" part of the plan is to optimize the releases from Normandy Lake, which means making sure that TVA has the best tools, gauges and forecasts to operate the reservoir as efficiently as possible.

Murphy said earlier this year that all of these programs would be implemented over the next three to five years, and "would serve our immediate focus."

If the Normandy project could be done first within the next 10 years, Murphy said, this would help the region through an extended drought period and would meet expected growth over the next 10 to 40 years.

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