

# 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

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

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

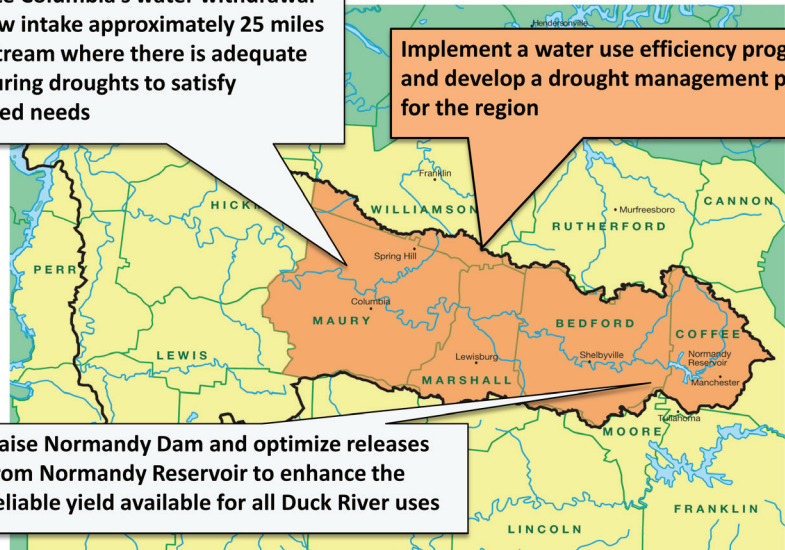
### Cost and Financing

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.

**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**



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](http://www.duckriveragency.org) or contact:

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