

Franklin's Harpeth Restoration is National Model



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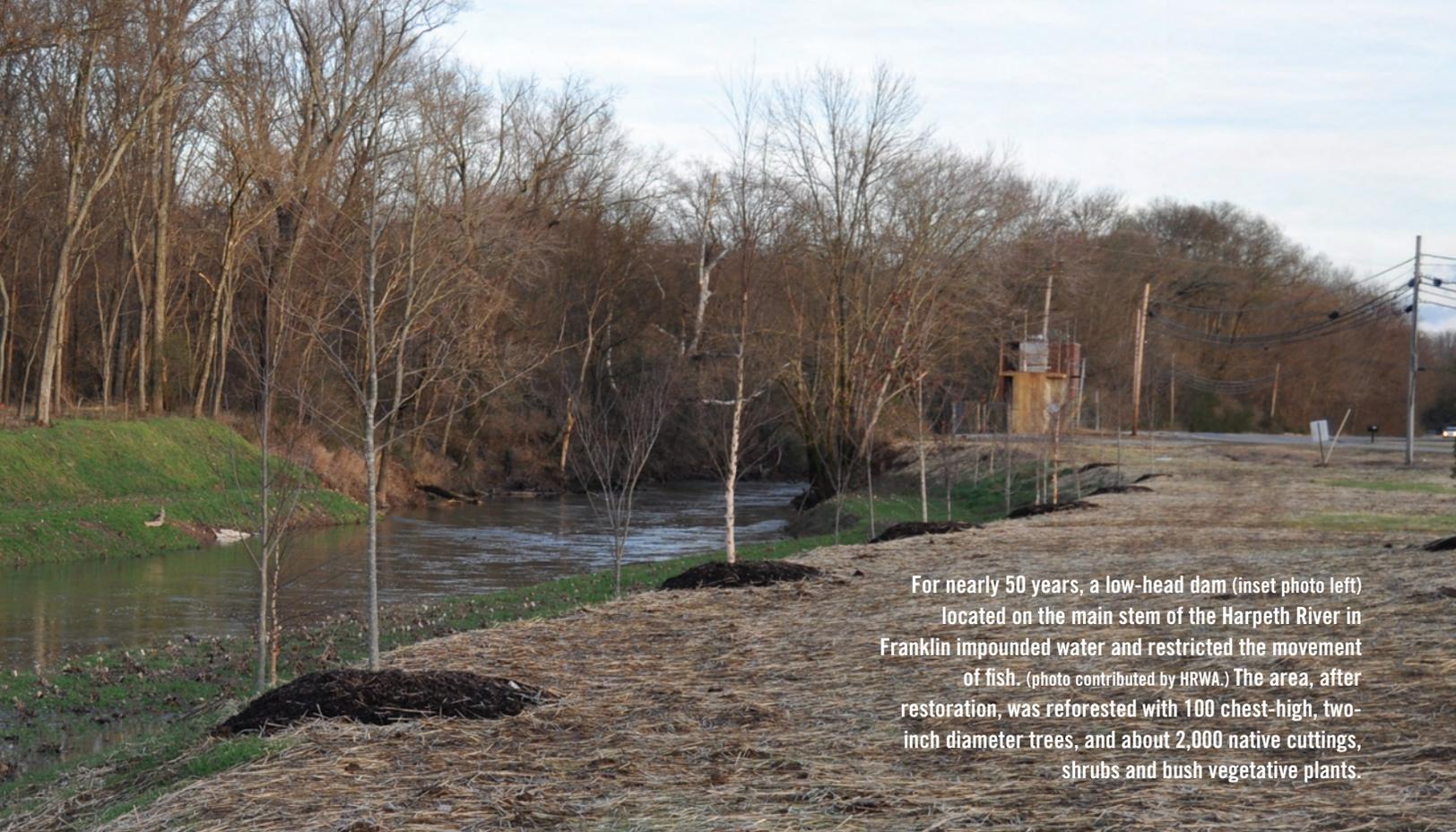
The Harpeth River Restoration project garnered national attention in May 2012 when it was selected by Secretary of the Interior Ken Salazar to serve as a model of the America's Great Outdoors River Initiative. The Rivers Initiative identified 51 projects, which included one from each state and the District of Columbia, to serve as models of how to conserve and restore key rivers, expand outdoor recreational opportunities and support jobs in local communities. The Harpeth was chosen to represent Tennessee because of its natural beauty, high value habitat, cultural significance and drinking water resource. The size and scope of the project entailed many partners using modern river restoration design approaches for successful completion and challenged their expertise to complete the project while protecting the valuable drinking water resource. An existing Memorandum of Agreement among Williamson County, the city of Franklin, the Harpeth River Watershed Association, TDOT and TDEC to identify and prioritize water improvement projects across the watershed solidified the partnership.

Removal of Dam Primary Goal

For nearly 50 years, a low-head dam located on the main stem of the Harpeth River in Franklin impounded water and restricted the movement of fish. The dam was originally created

for drinking water withdrawal purposes, which required consideration in the redesign. The primary goal of the project entailed removal of the dam to reconnect fragmented habitat and provide additional recreational opportunities. J. Case Davis, president of Beaver Creek Hydrology, was responsible for the project design which used modern techniques of natural channel design. A core design element is a double invert boulder cross vane—a low profile, in-stream structure that maintains the river's natural flow, replacing the need for the low-head dam. Carefully selected boulders were configured in the river to create two pools, one larger and deeper and the other smaller with no impedance to natural flows.

The Harpeth River has long been a key source of drinking water for the city of Franklin, strategically using the low-head dam site and resulting reservoir as an intake for its drinking water. Upon project completion, the city continued withdrawal from the pool created by the low profile, in-stream boulders. The Harpeth's water level at this section was lowered to restore the natural "riffle/run and pool" habitat. The pool allows water plant operators to withdraw the city's drinking water while affording fish and other aquatic life passage to all parts of the river. Since project completion almost seven months ago, no withdrawal concerns have been cited by the city.



For nearly 50 years, a low-head dam (inset photo left) located on the main stem of the Harpeth River in Franklin impounded water and restricted the movement of fish. (photo contributed by HRWA.) The area, after restoration, was reforested with 100 chest-high, two-inch diameter trees, and about 2,000 native cuttings, shrubs and bush vegetative plants.

Harpeth Now Free-Flowing

The Harpeth River is now free-flowing. It is about 115 miles in length and only one of three free-flowing rivers in Tennessee. The project's significance with regard to biodiversity cannot be underestimated, as this river is one of a very unique system of Southeastern rivers that together hold more biodiversity than anywhere else in the world, according to the U.S. Fish and Wildlife Service. As a project partner, TWRA agreed to monitor fish populations in the Harpeth River prior to and after the dam removal. The post-alteration survey will be conducted a few years after project completion to ensure the habitat has time to stabilize.

The health of water quality evident in a river's eco-system is assessed by its ability to support communities, wildlife, aquatic life and organisms. With hydrology advancements over the last 25 years, it is believed that free-flowing rivers offer increased ability to recharge aquifers, supply wetlands and help maintain balance in soil nutrients—all staples to a sustainable, healthy river ecosystem. A benefit of the project is that re-establishment of uninhibited flow is expected to increase dissolved oxygen levels that have been measured far below state standards in certain areas.

“Benching” Boosts Erosion Control

The restoration project also included stabilization of a 2,000-foot section of riverbank located near Lewisburg Pike in Franklin and improved access points for recreationists. The river helps support the local economy by providing opportunities for boating, fishing and hunting, hiking, camping, swimming and numerous other outdoor activities. A technique called “benching” was used to help with erosion control. Benching the stream banks on both sides of the river effectively slows the water during high flows. Soil socks, a natural fabric stuffed with organic material and native grass seed, were used, and the area

was reforested with 100 chest-high, two-inch diameter trees, and about 2,000 native cuttings, shrubs and bush vegetative plants.

Successful Partnerships

The Harpeth River State Park, Tennessee Scenic Rivers Association and Harpeth River Watershed Association partnered to develop the Harpeth River Blueway, which will further enhance public access to the river. Similar to greenways that offer nature's best in hiking, jogging and biking, the Harpeth River Blueway proposes a series of canoe and kayak access points stationed every five river miles. Paddlers will also find the river a safer experience as the dam had caused problems for some that came upon it unexpectedly. Ecotourism opportunities will be enhanced with the increased options to experience the beautiful Tennessee Scenic River flowing through one of the fastest growing regions in the country.

In July 2012, TDEC contributed to the project by assuming the lead on the dam removal process with their contractor, Science Applications International Corporation. It was a challenging process to remove the steel and concrete structure that stood six feet above the water level, but the project was an overall success. TDEC Project Manager Ronnie Bowers said, “We were very pleased to deliver an expedited dam removal process that trimmed the original estimate of two weeks to only three days, causing less impact on the ecosystem and creating a savings of approximately \$126,000 from initial projections.”

A total of \$745,000 was contributed to the project through a collaborative effort from federal, state, local, and community organizations. To help facilitate the project, the U.S. Fish and Wildlife Service, Southeast Aquatic Resources Partnership (SARP), and the National Fish Habitat Partnership (NFHAP)

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Harpeth Restoration *from page 21*

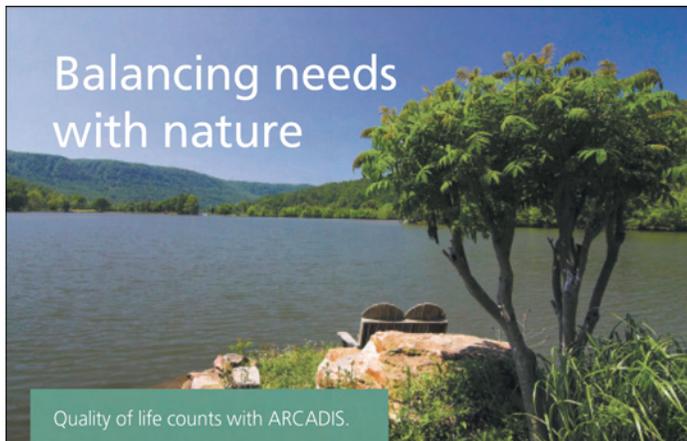
provided \$350,000 to the Harpeth River Watershed Association (HRWA) to improve fish habitat. Other project partners included TWRA, the U.S. Geological Survey, the city of Franklin, TDOT, Vulcan Materials, Beaver Creek Hydrology, North State Environmental and Waste Management. TDEC's Water Resources Director, Sandra Dudley, joined the department in July and was on-site with partners during the project implementation.

"TDEC was delighted to partner with other stakeholder organizations who value the unique habitat of the Harpeth River," said Dudley. "We are especially pleased that the project ultimately provides benefits for the environment, Tennesseans, and our economy."

Future Monitoring Key

Continued monitoring will be necessary to gauge the success of the project and identify any needs that develop for the river. According to American Rivers, the Harpeth River project is part of a national movement that has resulted in the removal of more than 600 dams across the country. In Tennessee, 25 dams have been removed in the last 40 years, but this is only the second one on a main river.

Dedication, determination and excellent communication from all partners facilitated the successful completion of the project. "HRWA is very proud to have been an integral part of the Harpeth River Restoration project," said Dorie Bolze, HRWA Executive Director. "Clearly, it's a national model of success, engaging stakeholders to partner for a thriving river which maintains a healthy ecosystem while serving the needs and desires of the community." 



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Above: Stream banks are recovering well. Inset left: A large portion of the dam was constructed into the river and was very challenging to remove. (photo contributed by EME Solutions) Inset right top: Pumps were staged upstream of the dam to divert much of the flow around the work area. (photo contributed by EME Solutions) Inset bottom: "Benching" technique was used on both sides of the river to stabilize banks. Benching the stream banks on both sides of the river effectively slows the water during high flows. (photo contributed by HRWA)

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