



Watershed Protection and Improvement

**Appalachian LCC Steering Committee Mtg
July 14, 2015
NCTC, Shepherdstown, WV**

TVA Watershed Protection and Improvement

- ◆ Provide adequate data for sound decision-making
- ◆ Identify and build partnerships
- ◆ Partner to prioritize watersheds and projects
- ◆ Implement projects to protect water quality and biodiversity



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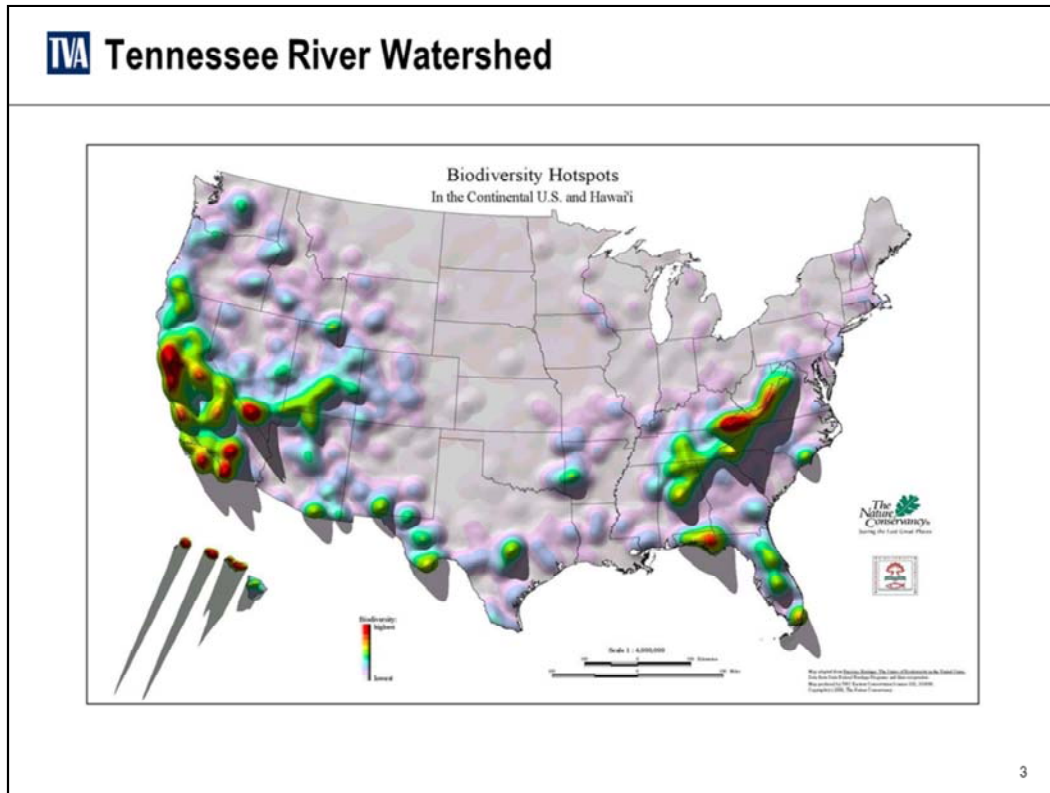
I am very excited about the watershed protection and improvement work TVA along with partners are conducting throughout the Tennessee River Watershed.

The overall scope supports TVA's Natural Resource Plan by:

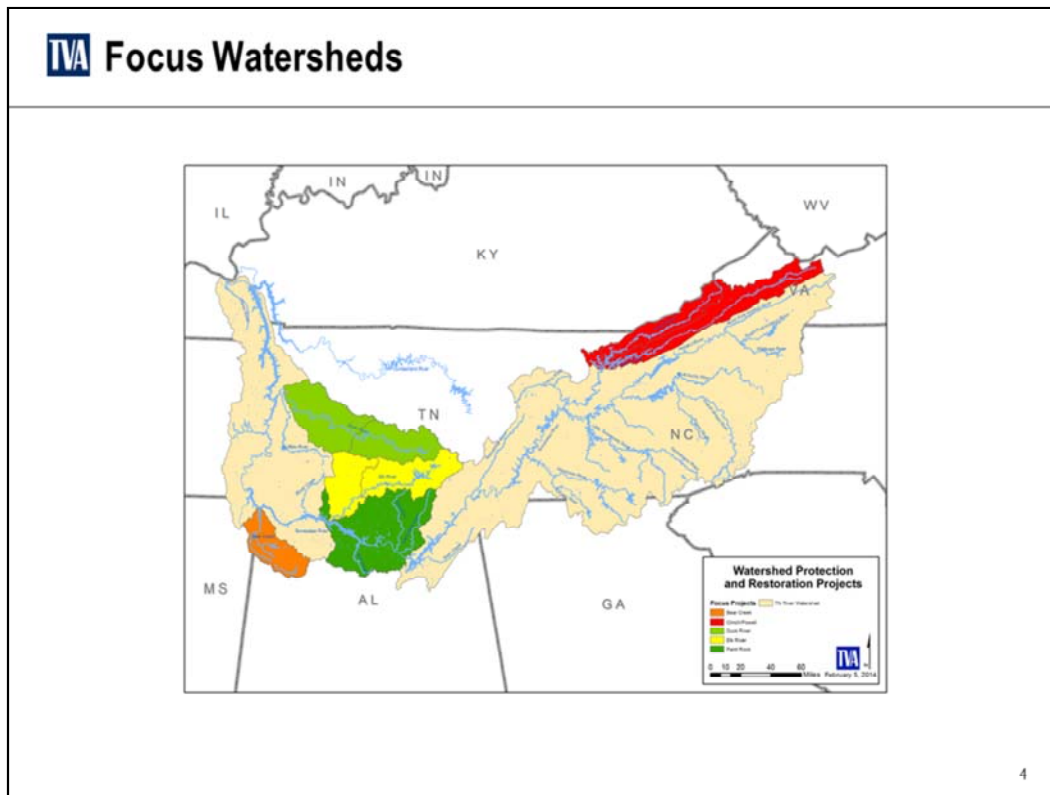
Provide fish and benthic community monitoring to help TVA and partners to target and track water quality improvement efforts.

Working with partners, by using TVA and other data to prioritize watersheds and projects to for implementation.

Then working with those partners to implement projects that protect and improve water quality and biodiversity throughout the watershed.



The Tennessee River watershed special, it is one of the most biologically diverse watershed in North America. Meaning that there are more aquatic species in the watershed in North America. The watershed is home to 241 fish and over 100 species of mussels. To compare, Wisconsin, which includes Upper Mississippi River, Lake Superior, and Lake Michigan only has 140 fish species. In addition, there are only 60 species of mussels in China and 12 in Europe.



Even though we realize the entire Tennessee River is important for biodiversity, for FY14 we focused on five watersheds: Clinch/Powell, Duck River, Elk River, Paint Rock and Bear Creek watersheds.

We selected these based on importance of protecting biodiversity and partner's interests.

All these watersheds have active partnerships working to protect and improve water resources. This is one of the main reasons we selected these watersheds. As you know, TVA can not implement watershed improvements on their own, to be effective we and other partners have to pool resources.

The Upper Clinch, Powell, and Upper Duck, and Upper Elk are ranked by The Nature Conservancy as the top 4 watersheds to preserve in the US based on the number of fish and mussels at risk. The Clinch has 50 species, Upper Duck has 32, Powell has 30, Upper Elk has 27.

FY14 Projects

- ◆ Partnered with over 30 different agencies and organizations
- ◆ Implemented \$700K in protection and improvement projects
- ◆ Projects included: conservation easement, streambank stabilization, buffer establishment, barrier removal, in-stream habitat improvements




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In FY14, TVA partnered with over 30 agencies across the Tennessee River watershed to protect and improve water quality and biodiversity.

TVA will provided \$700K and partners provided an additional \$700K for implementation.

The partnerships implemented or in the process of implementing a variety of protection/improvement measures which includes: purchasing conservation easements, implementing streambank restoration, establishing buffers, removing aquatic barriers, and creating in-stream habitat.




Clinch-Powell Watershed

Lower Copper Creek

Partner – US Fish and Wildlife Service

- ◆ Conduct landowner outreach events
- ◆ Remove fish barrier and install single span bridge
- ◆ Create 1.0 mile of in-stream habitat
- ◆ Establish 5.0 acres of riparian buffer



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An Example is the Lower Copper Creek Project which is located in Scott County VA.

It is one of the “healthiest” tributaries in the Clinch River and serves as a refuge for aquatic species if water quality impacts occur in the Clinch.

We are working with the Clinch Powell Clean Rivers Initiative, a partnership with over 25 agencies and organizations. But the main drivers of this project is the US Fish and Wildlife Service and UTRR.

The project consist of working in the lower reaches of the watershed providing landowner outreach, fish barrier removal, creation of 1.0 mile of in-stream habitat, and 5.0 acres of riparian buffer.

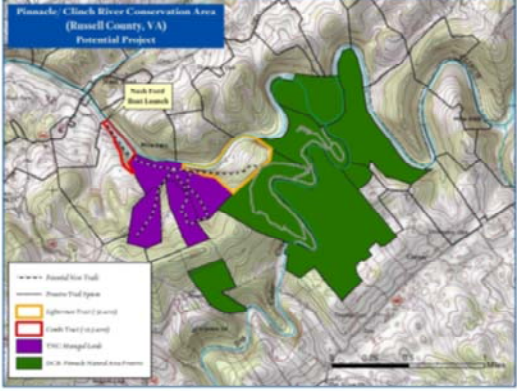
TVA is providing \$120K . FWS, UTRR, and landowners will provide \$120K in match.

TVA Clinch-Powell Watershed

Clinch River Protection and Enhanced Recreational Use

Partner – The Nature Conservancy

- ◆ Acquire 65 acres of land
- ◆ Establish riparian buffer
- ◆ Establish educational trails



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In FY15 we plan to continue these efforts. In the Clinch River, we are implementing the Clinch River Restoration, Protection, and Enhanced Recreational Project.

This project is located in Russell County VA. This project is one of many that the Clinch Powell Clean Rivers Initiative is implementing to protect water resources in the Clinch/Powell Rivers.

TVA is mainly working with TNC and Virginia Department of Conservation and Recreation to acquire approximately 65 acres of land. This tract includes one mile of river frontage on the Clinch River. The property is located adjacent land already protected by TNC and VA DCR. These preserves lie within some of the most critical miles of the Clinch river for protecting rare fish and mussel species, 27 globally or state rare species

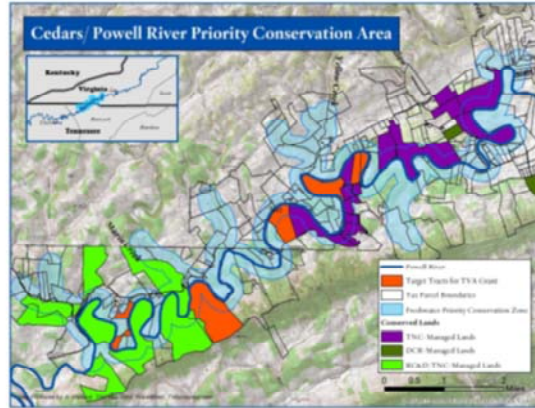
As you see in the picture plans are to establish purchase 65 acres of land and establish approximately 1 mile of riparian buffer. In the future, there are also plans to establish a river access area on the site.

TVA Clinch-Powell Watershed

Powell River Protection and Restoration Project

Partners – TNC and Natural Resource Conservation Service

- ◆ Create buffer initiative
- ◆ Educate Landowners
- ◆ Establish approximately 50-100 acres of riparian buffer



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The Powell River Project is located in the designated Priority Conservation Area on the Virginia and Tennessee border.

This stretch of river is considered the most critical 12 miles of the Powell river for protecting rare fish and mussel species, including 13 federally endangered species.

This initiative is made up of over 25 partners. The buffer initiative idea was an outgrowth of the Elk River Buffer Initiative. TNC will have a 10 year contract with the landowner.


Plans are to establish 50-100 acres of buffers along streams and rivers in the Powell.

TVA Paint Rock Watershed

Burk Creek Barrier Removal

Partner – The Nature Conservancy and FWS

- ◆ Remove stone dam
- ◆ Install five in stream structures
- ◆ Stabilize approximately 700 feet of streambank



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The Burk Creek Barrier Removal is located in Paint Rock Watershed in Middle Tennessee and Northern Alabama. As with the other watersheds the Paint Rock is a hotspot for biodiversity, with over 27 species of fish and mussels at risk.


In 2014, TVA working with TNC to assessed 85 miles of Paint Rock watershed to identify and prioritize protection/restoration projects. The Burk Creek project is one that was identified as in need of improvement. A manmade stone dam will be removed which has caused stream bank erosion throughout the reach. In addition, the stream will be stabilized by installing: (1) five in-stream structures (2 Cross Vanes & 3 modified J-Hooks); (2) Re-graded stream banks to an appropriate slope (2.5:1 or 3:1); (3) and stabilize banks with coconut coir matting, live staking, an/or root wads; and (4) Riparian buffer will be planted with appropriate native vegetation.

TVA Bear Creek Watershed

Bear Creek Stabilization

Partner- Bear Creek Partnership

- ◆ Create a Strategic Habitat Unit Plan
- ◆ Stabilize 400 feet of streambank
- ◆ Conduct fish and benthic community monitoring



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The Bear Creek Watershed is in northwest Alabama and northeast Mississippi. Bear Creek watershed includes TVA's Bear, Little Bear, and Cedar Creek reservoirs. It is home to 4 federally listed and 29 state listed species.

TVA is working with the Bear Creek Partnership, over 15 different agencies and organizations including ADEM, GSA, USFWS, and Alabama Clean Water Partnership.

The partnership is working to develop a Strategic Habitat Unit Plan, identifying watershed conditions and restoration measures.

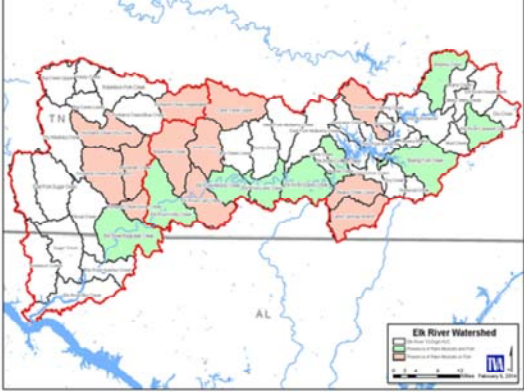
As a component of the SHU, the partnership will stabilize 400 feet of streambank and conduct before and after, above and below fish and benthic community monitoring.

TVA Elk River Watershed

Elk River Nutrient Reduction Project

Partners – TDEC, UT, NRCS

- ◆ Select Priority Watershed
- ◆ Implement BMPs
- ◆ Measure nutrient reductions
- ◆ Conduct Nutrient Trading Workshop



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The Elk River Buffer Initiative is located on the Elk River from Tim's Ford Dam in Tennessee downstream to Wheeler Reservoir in Alabama.

The Elk River is home to rare aquatic species including 27 at risk fish and mussel species.

This initiative is made up of over 25 partners. The Nutrient Reduction Project came from TDEC and will focus on implementing Tennessee's Nutrient Strategy.

The partnership is prioritizing watersheds with EPA's Recovery Potential Tool and the USGS SPARROW model.

Projects will be identified and nutrient reductions will be measured.

In addition to the project TDEC will host a Nutrient Trading Workshop this spring at the AWRA Conference to identify interest in establishing a program in TN.

TVA Additional Projects

- ◆ Hidden Rivers Hidden Film Documentary
- ◆ Stream Monitoring Data Book/Web Page
- ◆ Tennessee Healthy Watershed Initiative
- ◆ Little Tennessee Native Fish Conservation Area
- ◆ Tennessee River Network/Champion Event

