



## **Watershed and Ecosystem Services Finance Case Studies in the Southeast**

*Prepared by the Southeastern Partnership for Forests and Water*

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### **Introduction**

The purpose of this report is to provide information about the types of watershed and ecosystem services financing tools and mechanisms available to watershed partners, including drinking water utilities, as well as to provide examples of Southeastern watersheds and utilities that are making use of these funding and financing mechanisms for their watersheds. Having this information in an easily accessible format may enable watershed partners to make educated choices about how to ensure perpetual funding for their important work.

Watershed protection efforts around the country and in the Southeast are achieving significant natural resource benefits by utilizing partnerships and funding. It's no surprise that the most successful watershed protection efforts are also the ones with dedicated local funding mechanisms in place that can be used to leverage grants and loans and to continue the costly long-term work of watershed stewardship and protection. A significant driver of the need for watershed stewardship and protection funding is the fact that drinking water infrastructure

around the country in many cases is reaching the end of its life cycle – treatment plants, pumps, pipes and other “grey” infrastructure will need to be replaced to continue to provide safe and reliable drinking water to a growing population, which will cost more than \$1 trillion over the next 25 years leading many water utilities to explore other means of achieving holistic drinking water protection (WRI 2017). Water utilities and other partners focused on source watershed protection are looking to sustainable local funding to provide drinking water security, flood mitigation, stormwater management, green infrastructure, recreation benefits, wildlife and habitat protection, and other benefits.

One of the first and most important requirements for developing a strong source water protection program and making the case for ecosystem services financing is to develop or update the utility’s source water protection plan. Once a sound source water protection plan is in place, complete with an understanding about the threats to source water, land use and population trends, priority actions needed, and cost of those actions, utilities can better make the case to their leaders, customers, other stakeholders, and potential funders about why ecosystem services financing and financial support is required.

Watershed partners, including drinking water utilities, have a menu of choices available for their consideration to ensure continued financial support for watershed stewardship and protection. It’s a very real fact that grant funding is dwindling and increasingly requires matching funds to be competitive. However, only a handful of watersheds around the country are actively making use of ecosystem services financing mechanisms to create local, sustainable funding for watershed stewardship and protection.

### **Ecosystem Services Financing Mechanisms**

The tools or mechanisms in Figure 1 show the range of funding and financing options available to watershed stewardship and protection partners, including drinking water utilities.

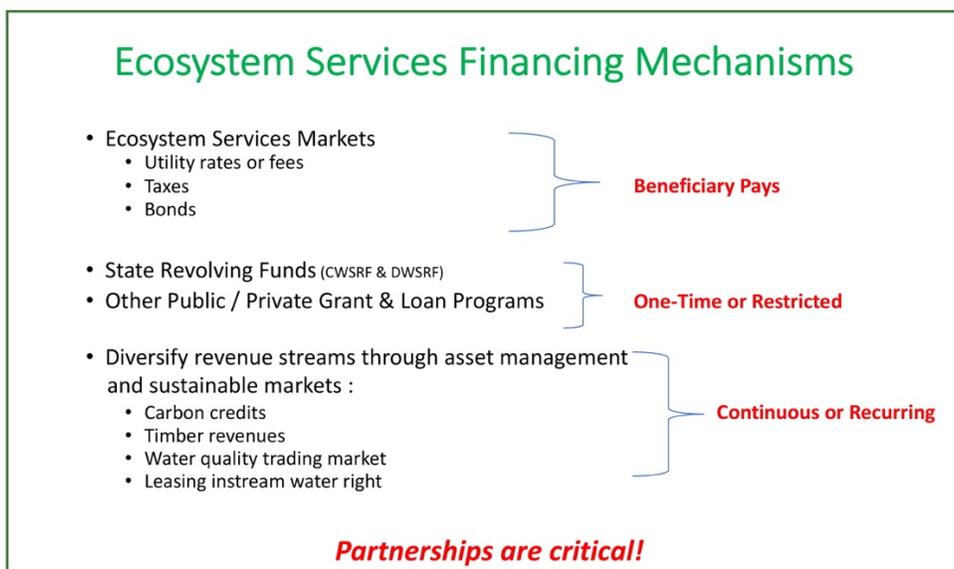
Traditionally, utilities and others have relied upon one-time or restricted grants and loans to finance drinking water infrastructure replacement or repair, source water protection projects (including land purchase or easements, best management practices implementation, and source watershed planning), and education/outreach. While grants and loans are certainly still a viable tool for funding watershed stewardship and protection work, they can no longer be relied upon to pay for the lion’s share of watershed stewardship and protection needs because grant and loan dollars are dwindling and there is increasing competition for these limited funds. And grant/loan funding is usually provided as a one-time award with government restrictions on usage of the funds. They are not considered flexible funding sources, but are still an important piece of the funding puzzle.

Beneficiary Pays funding mechanisms recognize that certain watershed users realize a benefit from the watershed’s natural resources. For example, a city or town’s drinking water customers may rely on a watershed’s drinking water resources, while others may recreate or hunt and fish in the watershed. Those who benefit from a watershed’s natural resources in some way are beneficiaries, and they rely upon the watershed’s relative health, including forest lands, to provide them with what they need. In some cases, around the southeast and beyond, water utilities and others are creating ecosystem services markets that generate funding through local rates, fees, taxes or bonds. These markets can generate significant local, perpetual funding that

can then be invested in the watershed to make it more resilient and healthy, to compensate forest landowners for keeping forests as forests, and to also leverage grants and loans.

Continuous or recurring funding for watershed stewardship and protection includes revenues generated from sources such as forest carbon sequestration for carbon markets, timber revenues from managed forests, water quality credit trading where such markets exist, and leasing instream water rights. These types of revenue streams (with the exception of timber harvesting revenues) are often considered to be relatively new approaches that are cutting-edge, experimental, and not always applicable in every watershed. Several innovative examples in the Southeast provide some guidance for how these revenue streams might be developed in some watersheds.

FIGURE 1



### **One-Time or Restricted Funding Sources**

One-time or restricted funding sources such as grants and loans for watershed stewardship and protection have been the mainstay historically to pay for projects such as public education and outreach, land management and acquisition, infrastructure improvements (drinking water treatment and distribution), research, and other efforts. Grants and loans from sources such as the Drinking Water State Revolving Fund (DWSRF), Clean Water State Revolving Fund (CWSRF), Clean Water Act Section 319 (CWA 319), Natural Resource Conservation Service Resource Conservation Partnership Program (NRCS RCPP) continue to be funded by the federal government, but at a lower level than in the past, with much more competition for existing funds. A new NRCS grant program, the National Water Quality Initiative Source Water Protection (NWQI SWP) Program is anticipated to assist with protecting and stewarding lands in priority source watersheds for municipal drinking water supplies.

DWSRF, CWSRF and CWA 319 funding are federal funds managed by individual states, and the way each state decides to use these funds for watershed stewardship and protection may vary. Every state maintains these funds as a revolving loan program, with repayments (including interest) going back into state coffers as state funding. Traditionally, these loan programs have

been used for drinking water and wastewater treatment infrastructure, but in recent years some of these funds are required to be used for “Green Infrastructure” projects, and for low-income community benefit as “Principal Forgiveness Loans” which essentially makes the loan into a grant for communities that qualify. In addition, the federal government provides additional DWSRF and CWSRF funding to states as “Set-Aside” funds for program administration and management. There is flexibility in how states can choose to use these “Set-Asides,” and some states such as Washington, Georgia, and Kentucky have set up source water protection grant programs using some of these funds.

Below are some examples of how Southeastern states have used DWSRF, CWSRF and CWA 319 funding for source watershed protection and stewardship.

### ***Shaw’s Creek Watershed Based Plan, Aiken, SC***

[https://www.dhec.sc.gov/sites/default/files/media/document/Shaws%20Creek%20WBP\\_2017.pdf](https://www.dhec.sc.gov/sites/default/files/media/document/Shaws%20Creek%20WBP_2017.pdf)

City of Aiken received a \$40,000 Watershed Based Planning Grant (DWSRF Set-Aside funds) from South Carolina Department of Health and Environmental Control to prepare the Shaw’s Creek Watershed Based Plan to protect and steward the drinking water source watershed for City of Aiken, SC. The watershed is part of the larger Edisto River Basin, and provides drinking water for 17,584 residential customers and 1,773 business customers. City of Aiken matched the grant with \$16,000, and funds were used to hire a consultant to prepare the plan with input from local agencies and stakeholders. As a result of completing the plan, the City was able to gain an additional Clean Water Act Section 319 grant for \$576,879 to implement the watershed plan. The City is matching the grant with federal funds of \$346,027 and their own internal funds of \$230,852.

### ***The Conservation Fund and Georgia Environmental Finance Authority***

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The Conservation Fund used CWSRF to finance land conservation activities for source water protection in Georgia in 2014. The Conservation Fund closed a \$25 million loan with a repayment timeline of 15 years. They were able to repay the loan in three years with multiple sources of funding. The project included substantial forestry management to reach wildlife goals and drinking water protection goals. They were able to save \$2.2 million over market rate interest over the life of the project.

### ***Beneficiary Pays Watershed Funding***

Beneficiary pays watershed funding approaches include using utility rate structures or customer fees to fund source water protection activities; and local taxes, bonds or other revenue-generating mechanisms. Significant work is needed to educate the public and elected officials about the need for dedicated source water protection funding to both create a relevant and timely plan with priority actions, and implement that plan. It can take many years to make the case for dedicated local funding – in the Savannah River Watershed (in Georgia and South Carolina), it took over 10 years to get support for the Savannah River Clean Water Fund, and in Beaver Water District (northwest Arkansas) it took almost five years to make the case and get public and commission support.

Using rates, sales tax, and bonds to fund source water protection is uncommon, but makes good financial sense. With a source water protection reserve account, utilities can leverage

federal, state, and private grant and loan funding to pay for high-priority projects. In the long term, utilities realize costs savings by protecting their drinking water supply from contamination that might result in costly treatment or source replacement. It is critical to educate customers and decision-makers about the need for local funding to protect and maintain high quality drinking water sources. A key aspect of this education is making the case that the cost of protecting and maintaining a high quality source will likely save the utility and customers money over the long term, by avoiding expensive additional treatment costs or replacing the source.

**Making the case** for dedicated local funding mechanisms to support source watershed protection and stewardship also requires research and analysis to demonstrate the economic, social and natural resource benefits of such an investment. These types of analyses, such as *Triple Bottom Line Analysis* and *Benefit Transfer Method* take time and financial resources to complete (average time needed is approximately six months to a year; average cost of analysis is approximately \$50,000 to \$75,000). Traditional cost-benefit analyses often don't consider benefits that may be difficult to measure (such as forested watershed contributions to drinking water quality and quantity). Triple Bottom Line analyses in particular are tailored to the specific drinking water utility and source watershed, and factor in benefits from source water protection, including ecosystem services, social and environmental benefits, and inter-generational benefits. Triple Bottom Line analyses also include risk assessments and evaluation of utility and source watershed resilience where appropriate. Beaver Water District in northwest Arkansas used Triple Bottom Line analysis effectively to make the case for local investment in source water protection (see this link: [Cost-Benefit Analysis of the Beaver Lake Watershed Protection Strategy 2016](#)). Some utilities and their stakeholders (including Savannah River Watershed and Catawba-Wateree Watershed) are electing to evaluate the temporal land-use changes to their watersheds and determine what impacts to the water supply can be expected over time if no action is taken (see this link: [Preserving Water Quality in the Savannah River](#)). Other utilities such as the City of Raleigh used the Benefit Transfer Method to quantify the economic benefits of water quality improvements for drinking water production in the Neuse River Basin in North Carolina (see this link: [Valuing Drinking Water Provision as an Ecosystem Service 2010](#)).

Below are examples of how utilities in the southeast and beyond have created ecosystem services financing mechanisms to pay for watershed protection and stewardship activities in their source watersheds:

**Beaver Water District – rate structure example**

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Beaver Lake in Northwest Arkansas is the sole source of drinking water for 330,000 customers in four cities. The watershed is primarily forest and agriculture, with increasing urban and suburban development. In 2016, Beaver Water District's Board of Directors voted to dedicate \$0.04 for each 1,000 gallons sold to a source water protection fund, generating about \$750,000 a year. Funds are used to implement the Beaver Lake Watershed Protection Strategy, providing core funding for the Beaver Watershed Alliance to work with landowners on land stewardship projects. The fund was created after a study revealed that the utility, public, and environmental benefits of watershed protection outweighed the costs.

**Central Arkansas Water – water utility fee example**

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Lake Maumelle and Lake Winona provide a high quality and abundant supply of drinking water at a reasonable cost for approximately 400,000 customers in Central Arkansas. The surrounding Ouachita National Forest and private forest lands provide priceless protection for these two vulnerable surface water sources. Development in the watershed threatened priority forests for drinking water recharge and protection. City of Little Rock city limits expanded three times between 1975 and 2012, and began to encroach on the drinking water source watershed. Two major subdivisions were proposed in 2003-2004 that were very close to the drinking water intake, on a high slope, and in a high risk areas for erosion and drinking water contamination. This development threat drove CAW's source water protection plan, water utility fee, and land acquisition priorities. In 2009, Central Arkansas Water's Board of Commissioners approved a \$.45 per month surcharge on each customer's drinking water bill (per 5/8 or 3/4 inch meter) for forested watershed management (a little over one percent of the average water bill). This generates about \$1 million a year for their watershed management program which focuses on preventing sediment and other possible contamination of the raw drinking water. The land originally proposed for development is now under conservation easement (held by local land trust), and some land has been purchased. City of Little Rock also created zoning ordinances to better protect forest lands. Other projects include developing relationships and agreements with landowners, and site restoration.

### **Central Arkansas Water - Lessons Learned and Guiding Principles**

- 💧 Question: How did CAW arrive at 45 cents per month to fund the source water protection efforts? Did they create the land protection budget first and then decide how much they needed that way? Or did they figure out how much people would be willing to pay first (through a survey or focus groups)? CAW's answer: 45 cents isn't 50 cents – 50 cents cuts into people's dollar. That is a magic number for rates. CAW used trial and error process to test out the amount charged. Stakeholder and interest groups were the initial champions of creating a source water protection fund. Originally CAW charged 45 cents across the board – then they adopted an amendment to create a graduated scale depending on meter size (up to \$36). The original proposal was to cap the watershed protection reserve at \$3 million then stop charging until they spent \$1 million. However, they passed an amendment in 2012 that took off the spending cap so the fee became permanent.
- 💧 In terms of finances – no new staff were needed. Later they hired full time legal counsel. Watershed Protection Manager position handles land acquisition rankings. Finance position handles the reserve account finances. The fund shows up in the budget as its own fund – a reserve account.
- 💧 Lessons learned:
  - Don't need to spend a lot of money and own land outright to be successful
  - JUST DO IT!! Get some citizen champions to help you and build a good case.
  - Keep it simple to start – get it passed, then amend it later once the program is proven.

### **City of Austin, TX – watershed protection bonds**

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Since the 1990's City of Austin, Travis County, and Hill Country Conservancy have worked with various partners and voters to pass several bonds raising funding for watershed protection and

stewardship of the City's drinking water source watershed (including the Hill Country and Barton Springs). All partners recognized the need to protect drinking water quality in the watershed, before it reaches the treatment plants. A recognition of increasing growth and development in the watershed spurred strong citizen support and demands for environmental protection, particularly for water quality and open space. To date, 45,000 acres of the city's source watershed are protected for drinking water quality and endangered species habitat. Grassroots campaigning initially helped to pass a watershed bond ballot initiative in 1998, raising \$65 million to purchase 15,000 acres of the Barton Springs watershed. Over the years, voters in Travis County, Hays County and the City of Austin have passed additional bonds, the latest one in 2018 for \$72 million for watershed protection and stewardship, demonstrating that successful watershed stewardship programs start locally, and that bond referendums and water rate surcharges are widely supported by citizens and ratepayers. Over time, these local funds have been leveraged with state and federal grant and loan programs including the US Farm Bill's NRCS Agricultural Conservation Easement Program, the Texas Farm and Ranch Lands Conservation Program, Clean Water State Revolving Fund, and Healthy Watersheds Consortium Grant Program.

### ***City of Raleigh, NC - Upper Neuse River Basin – rate structure example***

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The Upper Neuse Clean Water Initiative was founded in 2005 to help protect drinking water supplies through strategic upstream land conservation. Fifty-six percent of the watershed is forested, and nine drinking water supply reservoirs serving over 600,000 customers are located within its boundaries. City of Raleigh's City Council approved a rate increase in 2011, recognizing that this region is one of the fastest growing in the country and significant development pressures threaten the watershed's forests as private forest landowners consider their financial options. Customers are charged 1.5 cents per 100 gallons of water used, generating \$2.2 million a year for the program. The program focuses on active forest management through payments to forest landowners to develop and implement sustainable timber practices. Nearby Durham instituted a fee for the same purpose (1 cent per cubic foot), which generates about \$100,000/year. Raleigh has received estimates of up to \$150 million to install a new water filtration system if impairment in the water supply exceeds certain levels. Working to develop passive, natural water treatment via sustained conservation efforts, the Initiative has helped the City to avoid this potential cost.

### ***City of San Antonio, TX – sales tax example***

<https://www.sanantonio.gov/EdwardsAquifer/About>

City of San Antonio's 1.3 million customers rely on drinking water supplies primarily from the Edwards Aquifer and increasingly from surface water (Trinity River). The City's source watershed includes both forested and urban areas. City of San Antonio recognizes that the Edwards Aquifer provides an abundant source of groundwater that is vital to the livelihood of the area's growing population and expanding economy. The aquifer stretches across thousands of acres over several counties in South Central Texas. The City also recognizes that rapid growth and development are impacting the aquifer, reducing the number of recharge areas needed to maintain the City's primary water resource. According to the City, "while rules are in place to regulate development and pollution, the best way to protect the aquifer is to conserve the sensitive and irreplaceable land located over its recharge and contributing zones." To do this, the City has a strong watershed protection program that includes land acquisition and conservation easements on key sensitive lands. To fund their program, in 2000 voters approved

a 1/8 cent sales tax that raised \$45 million from 2000 to 2005. In 2005 voters approved increasing the sales tax another 1/8 cents raising another \$90 million from 2005 to 2010. In 2010 voters approved continuation of the sales tax, with a cap of \$90 million (City of San Antonio 2016).

### ***Savannah River Clean Water Fund – water fund example***

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The Savannah River Watershed is 2.8 million acres, 78 percent of which is forested. It serves more than 1.5 million people in Georgia and South Carolina with safe, reliable drinking water and water for agricultural and industrial water uses. The largely rural nature of the watershed is threatened by urban development and contaminants. In early 2009, recognizing the explicit connection between the land resources of the Savannah Basin and their impact on raw drinking water supplies, the South Lowcountry (SOLO) Task Force consisting of state and federal government agencies, NGO's, business and private interests came together around the issue. They agreed the largely rural character of the Savannah basin, a great example of green infrastructure, should be preserved. The Lower Savannah sub-basin is at a critical juncture. Forest cover is still sufficient to assure raw water quality for drinking water, and development pressures are still relatively low. Given these conditions, the SOLO Task Force agreed to make protection of the river corridor and watershed a top priority. Using GIS analysis, the Task Force identified priority forest lands for drinking water protection, and estimated that about \$150 million will be needed to preserve and maintain forest cover goals of 70 percent.

As a result of this work, Savannah River Clean Water Fund was formed in 2014 to help facilitate a holistic approach to land protection for the region's drinking water supplies. Several Georgia and South Carolina drinking water utilities contribute to the Fund from their general funds for a total combined contribution of about \$1 million a year. Utilities contributing to the fund include the Cities of Augusta and North Augusta, City of Savannah, and Beaufort-Jasper Water and Sewer District. These funds are used to leverage foundation funding, and state and federal grants. To make the case for financial investment to water utilities and water users, SOLO Task Force engaged Water Words That Work (WWTW), a nationally recognized marketing and public relations firm specializing in water. In 2019 the Savannah River Clean Water Fund and its partners protected critical forest lands with permanent conservation easements on two privately-owned properties, totaling 14,165 acres in South Carolina on the Groton Plantation and Big Snooks – the first conservation easements purchased with the Fund. “The permanent protection of these two properties helps the Savannah River Clean Water Fund meet our goals to protect the health of the river, maintain drinking water quality and supply for the public, and enhance the economic prosperity of the region,” said Don Dyches, Chairman of the Savannah River Clean Water Fund.

### ***Other Examples from Outside the Southeast***

The McKenzie River is the sole source of drinking water for about 200,000 customers in Eugene, Oregon. To protect the many watershed services provided by the McKenzie River, in particular water quality, the drinking water utility, Eugene Water and Electric Board (EWEB) developed an innovative rate-based voluntary incentives program to provide funding for source water protection projects. A portion of customer water rates are placed into a watershed investment fund which is used to compensate landowners (either by purchasing their land, or paying them to implement best management practices for drinking water protection) (Earth Economics 2016, Nielsen-Pincus 2013). While the focus of this particular program is on land

acquisition and stewardship, the program could be replicated to pay for other projects such as stormwater management and hazardous waste minimization.

One of the most innovative and effective source water protection programs in the country is City of Bellingham's Lake Whatcom Watershed Protection Program. Lake Whatcom in northwest Washington provides drinking water to 80,000 customers. The watershed is composed primarily of public and private forest lands, most of which is actively managed for timber harvest. In 2000, after a strong grass-roots effort to raise awareness about drinking water threats (primarily from land clearing and residential development), the City Council passed an ordinance adding a \$5 per month watershed management surcharge to customer water bills. The surcharge was raised to \$12.63 per month in 2012, and generates about \$4.8 million annually for watershed protection and management. The program is focused primarily on land acquisition and conservation easements to protect high quality forest lands from being converted to other uses. Program funds are also used for forest land maintenance, enforcement, and public education/stewardship. To date, the City has purchased and restored 2,059 acres of priority land in its source water protection watershed (City of Bellingham 2004, Fogelsong 2016). For more information, contact: Clare Fogelsong, Natural Resources Policy Manager, (360) 778-7965, [cfogelsong@cob.org](mailto:cfogelsong@cob.org)

### **Continuous or Recurring Funding Via Revenue Streams, Asset Management & Sustainable Markets**

Increasingly, water utilities and others who are interested in creating sustainable watershed protection and stewardship funding are turning to using watershed assets (such as timber and clean water) to create reliable revenue streams. This type of fund creation is relatively new and considered cutting-edge, and includes such methods as carbon sequestration and participating in the national and global carbon credit market; utilizing timber revenues for source watershed protection and stewardship projects; valuing green infrastructure; water quality trading; and other mechanisms, some of which are described below.

#### ***Berea College and City of Berea, KY – forest revenues example***

Contact: Clint Patterson, Berea College Forester, (859) 985-3587, [clint\\_patterson@berea.edu](mailto:clint_patterson@berea.edu)

The City of Berea and Berea College have a long-standing agreement and forest management plan for watershed protection and management to benefit drinking water and other natural resources in the source watershed, which is owned and managed by Berea College. Berea College actively manages their 7,000 acre forested watershed to protect the surface drinking water supply for the city's residents, the college community, and several water districts. The watershed is a working forest, managed through best management practices, land acquisition and conservation, and timber harvesting. Revenues from harvesting timber in the source watershed funds a full-time forest manager, and also provides funding for the City's source water protection and drinking water treatment program. A third benefit of timber revenues is providing scholarships for low-income students to attend Berea College.

#### ***Brosnan Forest, SC – forest carbon sequestration/carbon credits example***

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Brosnan Forest Preserve in Dorchester, SC, a forest carbon project managed by the landowner, Norfolk Southern; carbon credit developer, Finite Carbon; forest management/consultant

Milliken Forestry; and conservation easement assistance provided by Lowcountry Land Trust for the portion of the land used for the forest carbon project. To successfully manage a carbon credit project, a consulting forester and a carbon developer must be involved.

Because South Carolina's coastal plain is under significant development pressure, the partners recognized an opportunity in 2008 to enroll a portion of the 12,000-acre Brosnan Forest (9,000 acres) in the California forest carbon compliance market to permanently keep the forest land intact as managed forest and keep it from being converted to non-forest uses; and to provide natural resource benefits such as wildlife habitat (for red cockaded woodpeckers) and water quality for City of Charleston's drinking water supply. This is the largest such conservation easement in South Carolina history. The forest offers a "horseshoe" shaped buffer of forest protection around the City of Charleston.

The forest carbon portion of project includes 9,000 acres of forest, with 100 years of forest carbon credit on the California compliance market. To date, this project has realized revenues of almost \$2.5 million, or about \$300 per acre. Both standing live and dead wood are measured for carbon credits. Regular truthing, or verification, is necessary to ensure the forest carbon project is working and accurate. Verification is required every six years, and costs about \$40,000 so these costs need to be factored into the overall revenue calculation. This particular forestry operation had to get certified as sustainable under the Sustainable Forestry Initiative (SFI). They've since re-certified under Forestry Stewardship Council (FSC). The forest carbon developer, Finite Carbon in this case, is paid a percentage of the revenues. The forest management scheme used for Brosnan Forest is an uneven longleaf pine rotation system. Norfolk Southern contracts with Milliken Forestry to cut a half million dollars' worth of timber each year, which is allowed under the carbon agreement. They now have 14 years of data on this carbon project – longest of any forest carbon project in the country. A real bottleneck for forest carbon projects is regulators and verifiers – there aren't many (up from three to six now). Brosnan Forest has layers of credits – water, streamside protection, habitat, etc. It's important to try to create as many credits as possible. But it's equally important to recognize that the forest carbon part of the project has to be what is considered "additional" to existing protections/credits (known as "additionality").

### ***Forest Carbon Lessons Learned and Guiding Principles:***

-  The compliance market is geared towards landowners with larger forest tracts – 3,000 to 5,000 acres and up.
-  Carbon can be potentially lucrative for a large landowner if it fits with their goals for the property.
-  It is difficult to do an Improved Forest Management (IFM) project on loblolly pine lands, but an Avoided Conversion project may work.
-  Bottomland hardwoods and longleaf pine systems may lend themselves better to IFM projects.
-  Voluntary market projects are more flexible but need to be compelling to those involved
-  When undertaking a forest carbon project, it is important for landowners to understand the long-term responsibilities of themselves, the forester, and the carbon development group.
-  Landowners need to understand how forest certification and management impacts all of their properties, not just those acres under a carbon agreement.

- 💧 Land Trusts need to allow for potential carbon deals in their easement language if it makes sense.

### **Virginia Healthy Watersheds/Forests TMDL Project – water quality credit trading example**

Contact: Greg Evans, Assistant to the Virginia Secretary of Agriculture and Forestry (804) 690-1169 and [Greg.Evans@governor.virginia.gov](mailto:Greg.Evans@governor.virginia.gov)

Although forest cover is recognized as one of the best land uses for achieving Chesapeake Bay water quality outcomes, the region's local governments have long maintained that there is little local incentive for doing so unless credit is given for retaining forestland in the region's Clean Water Act Total Maximum Daily Load (TMDL) model. This project addresses that issue and serves as a model for other regions and watersheds. The purpose of the project is to determine the economic value of forest lands with respect to nutrient and sediment reduction in the Chesapeake Bay and beyond, and to develop a forest retention credit for the Chesapeake Bay watershed's Total Maximum Daily Load (TMDL) model. The goal is to create an incentive for local jurisdictions, private landowners, and other private investors to retain high-value forest lands in the watershed. The Virginia Healthy Watersheds/Forests TMDL Project is funded by the US Endowment for Forestry and Communities, the Virginia Environmental Endowment, and the EPA Chesapeake Bay Trust. Other partners include Virginia Department of Forestry, the Rappahannock River Basin Commission, Virginia Department of Environmental Quality, the Chesapeake Bay Program, Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry, Pennsylvania Department of Environmental Protection, and Center for Watershed Protection. As a result of the project, the Chesapeake Bay jurisdictions agreed in 2017 to credit forest land retention in the Chesapeake Bay TMDL model. The project is now in its final phase of developing a forest land credit approach that works financially for the region's governments and forest landowners. The final phase of the project will design and pilot a model that incentivizes landowner action, facilitates economic development for the community, and attracts large-scale private investment in the forest land retention credit program.

### **US Forest Service Forest Resilience Bond Program – bonds example**

Contact: Tommie Herbert, Conservation Finance Lead, USDA Forest Service, (540) 905-9531 and [catherinetherbert@fs.fed.us](mailto:catherinetherbert@fs.fed.us)

USDA Forest Service is implementing the Forest Resilience Bond (FRB) initiative with World Resources Institute (WRI), Blue Forest Conservation and a host of investors. This model is being applied to accelerated forest restoration in California to address wildfires, but there is a lot of application on the east coast beyond wildfire risk reduction. Funds are directed towards restoration on Forest Service lands in collaboration with the National Forests Foundation. Projects ultimately deliver water quality and flow benefits. Forest Resilience Bonds are set up to help save 20 percent on projects. For some projects, the FRB is being augmented with state grants and local utility funding, achieving additional savings and speeding up projects.

### **Green Bonds and Private Conservation Finance Lessons Learned and Guiding Principles:**

- 💧 Ideally, the project should meet this criteria:
  - Deal of at least \$5 million (ideally \$10 million or more)
  - Investments would be made in the next 36 months
  - Process to start engaging landowners has already started

- Have money to cover time of people in the finance stuff
- Need to have a champion and capacity

- 🌱 Conservation finance mechanisms like Forest Resilience Bond and others offer potential because they can capture the full suite of benefits (drinking water, recreation, habitat, etc.). These mechanisms are large enough financially that they can open doors for land conservation and stewardship in communities pursuing economic development over green infrastructure approaches.
- 🌱 It is critical to make a compelling business case when trying to sell the concept of green infrastructure/conservation finance – you have to be able to articulate the return on investment to show your leadership/decision makers and investors why this is financially savvy.
- 🌱 Business case/cost benefit analysis should be as targeted as possible to the major beneficiaries. Simply valuing ecosystem services and how they relate to the costs of the work won't necessarily get people to pay. You must show how that affects their bottom line and how it saves them money. It is vital to figure out the risks and what they care about.
- 🌱 For successful conservation finance, blended solutions (multiple benefits and partners), and diverse investors are key.
- 🌱 Forest landowner needs should be factored into conservation finance - to engage small private landowners in watershed protection, you have to remember that water quality may not be the most important thing if you cannot put food on the table or buy medicine. That is something to remember when determining how to answer questions of communicating value to underserved communities.

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