



FACT SHEET

Green Infrastructure Approaches to Managing Wet Weather with Clean Water State Revolving Funds

This fact sheet identifies several ways in which states, communities, and individuals can use the Clean Water State Revolving Fund (CWSRF) to finance green infrastructure projects. A general overview of green infrastructure and the CWSRF program are provided, as well as case studies highlighting specific projects from across the country.

What is green infrastructure?

“Green infrastructure” is a relatively new and flexible term that has been used in a variety of contexts. For the purposes of this factsheet, the term “green infrastructure” refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspire (the return of water to the atmosphere either through evaporation or transpiration), or reuse stormwater. Examples of green infrastructure approaches currently in use include green roofs, trees and tree boxes, rain gardens, vegetated swales, pocket wetlands, infiltration planters, permeable pavements, riparian buffers, and floodplains. Green infrastructure also includes decentralized harvesting approaches, such as the use of cisterns to capture water for flushing toilets or subsequent outdoor irrigation. These approaches reduce the amount of runoff discharging to surface waters and keep rainwater out of our sewer systems so it does not contribute to sewer overflows.

What are additional benefits of green infrastructure?

In addition to reducing the overall volume of stormwater runoff and the frequency of sewer overflows, green infrastructure can help communities enjoy a number of additional

environmental and economic benefits, including:

- Cleaner Water
- Enhanced Water Supplies
- Cleaner Air
- Reduced Urban Temperatures
- Climate Change Benefits
- Increased Energy Efficiency
- Source Water Protection
- Community Benefits
- Cost Savings



Vegetated swales capture and infiltrate runoff along this "green street" in Portland, Oregon.

These benefits make green stormwater development an attractive option for towns and cities looking to upgrade their infrastructure systems. Nevertheless, many local governments lack the financial resources needed to implement green infrastructure projects in their communities. This is where the CWSRF can help.

What is the Clean Water State Revolving Fund?

The CWSRF is a powerful financing program that provides loan assistance for wastewater treatment, stormwater management, nonpoint source abatement and estuary protection projects. Today, all 50 states plus Puerto Rico operate successful CWSRF programs that have provided over \$68 billion in financial assistance since 1988. This funding is provided in the form of low interest loans at an average of 30% below market rate. In 2007 alone, the CWSRF financed \$5.3 billion in national water quality projects. At present, only a small percentage of the CWSRF has financed green infrastructure. However, as demand for green infrastructure projects increase, we expect CWSRF funding to be used more.

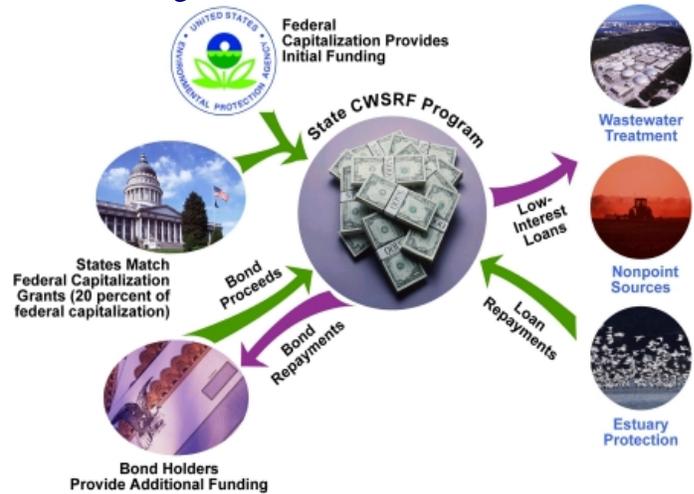


Downspouts that are not connected to the sewer system allow stormwater to be absorbed into landscaped areas.

- *Framework of CWSRF* - CWSRF programs are capitalized with a grant from the EPA, plus a 20% match from the state. The revolving nature of the program is perpetuated with loan repayments, interest, and federal capitalization grants that are used to fund new projects.

What are the benefits of using Clean Water State Revolving Funds?

The CWSRF is an attractive financing option for several reasons. For one, CWSRF money is readily available and can be used for a wide variety of projects. State managers of the CWSRF program are very innovative and can often leverage available resources to meet fluctuating demands.



- *Affordable Funding* – Although CWSRF money is not free, it is affordable. CWSRF loans can have interest rates as low as 0%, and cover up to 100% of a project’s costs with no matching requirement on behalf of the borrower. This is different from a grant, which typically requires the grantee to provide matching funds that must be available at the start of a project. In some cases, the savings accumulated with a CWSRF loan are comparable to a partial grant.
- *Flexible Repayment Options* - States have flexibility to set interest rates and repayment terms. Loans are usually paid off over 20 years or the useful life of the project - which ever is less - with repayment commencing within one year of project completion. In many cases, funds to repay CWSRF loans are generated by the project itself or from unrelated revenue sources. Some examples of repayment sources are listed below.

- “Flush” Fees
- Stormwater Fees
- Homeowner Fees
- Recreational or License Fees
- Dedicated Portion of State, County, Town, or Special District Fees or Taxes
- Community General Obligation Bond Authority
- Donations or Membership Dues made to Nonprofit Organizations
- Individual or Business Revenues

Helpful Hint: EPA has developed several useful tools for evaluating a wide range of project financing options, including:

EPA’s Financial Assistance Comparison Tool (FACT), available at:

www.epa.gov/owm/cwfinance/cwsrf/fact.htm

EPA’s Guidebook of Financial Tools, available at:

www.epa.gov/efinpage/guidebook.htm

EPA’s Overview of Green Infrastructure, available at

www.epa.gov/npdes/greeninfrastructure

Is my green infrastructure project eligible for Clean Water State Revolving Funds?

The CWSRF has broad authority to fund watershed projects directly related to (1) Publicly Owned Treatment Plants (POTWs), (2) states’ Nonpoint Source Management Plans, and (3) the National Estuaries’ Comprehensive Conservation Management Plans (CCMP). Green infrastructure projects located within a community that is regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program must abide by NPDES requirements.

- Permitted Communities – If a community is permitted for stormwater, it is considered a point source, and therefore projects may be

funded as POTWs. These types of projects must be publicly owned. If a community is permitted and the project is not specifically required by a draft or final NPDES permit, it may be funded as a nonpoint source project if it is consistent with a state’s Nonpoint Source Management Plan. Nonpoint source projects may be publicly or privately owned.

- Non-Permitted Communities – If a community does not have a draft or final NPDES stormwater permit or is exempt from permitting, the project may be funded as a nonpoint source project under a state’s Nonpoint Source Management Plan and can include publicly or privately owned projects. Additionally, any public or private project may be funded as an estuary project if the project is located in a National Estuary Program’s watershed and is sanctioned by the estuary’s CCMP.

What kinds of green infrastructure projects can the CWSRF pay for?

- Eligible Projects – The CWSRF can fund the “capital costs” of water quality improvement. Capital costs include traditional infrastructure expenditures (such as pipes, pumps and treatment plants), as well as unconventional infrastructure costs (like land conservation, tree plantings, equipment purchases, planning and design, environmental cleanups and even the development and initial delivery of environmental education programs). One of the few things the CWSRF cannot fund is the operation and maintenance costs of a project (i.e. mowing the grass in an urban park or paying operator salaries). Grey stormwater infrastructure, such as traditional pipes and pumps, continue to be eligible for CWSRF assistance. Grey infrastructure can be improved and upgraded by implementing green infrastructure development, such as:

- | | |
|-----------------------------------|--|
| Tree Boxes | Green Roofs |
| Vegetated Swales | Riparian Buffers |
| Vegetated Median Strips | Parks & Greenways |
| Cisterns & Rain Barrels | Permeable Pavements |
| Land Conservation & Reforestation | Wetland & Floodplain Construction |
| Downspout Disconnections | Rain Gardens & Bioinfiltration Practices |

- **Assurances** – The CWSRF can also help reduce risks associated with the performance of green infrastructure practices. Some communities may be reluctant to try these relatively new stormwater management technologies because of concerns that they may fail to perform as expected. Fortunately, there is a simple way to ease these concerns. States may charge additional fees on their CWSRF loans, known as non-program income, which can be used for a wide range of purposes. Using this additional source of income, states can pay for insurance that cover the risk associated with the performance of newer green technologies. If there is sufficient non-program income, states can also use the funds to replace a particular technology that fails to perform adequately. The practice of providing assurances is not widely utilized by states. Contact your state for more information.

Helpful Hint: By incorporating green infrastructure into traditional stormwater infrastructure projects, POTWs can use CWSRF funds to pay for land acquisitions in public right-of-ways that would not otherwise be authorized. Here is how:

Under current regulations, POTWs cannot receive CWSRF funding for land, including right-of-ways, unless that land is integral to the wastewater treatment process. However, percolation of stormwater through the soil matrix is often essential to the operation of green infrastructure practices, many of which can be conveniently located in public right-of-ways. Thus, because green infrastructure practices can utilize the soils and plants in a right-of-way to clean and infiltrate stormwater, the land in that right-of-way becomes integral to the treatment process and is therefore eligible for CWSRF funding.

How have other communities used the CWSRF to finance green infrastructure projects?

A growing number of communities are now using the CWSRF to pay for green infrastructure projects that improve water quality while providing additional economic and environmental benefits. The following case studies provide examples of the ways in which the CWSRF has been used to facilitate green infrastructure implementation.

- **Seattle Plans Redevelopment while Protecting Salmon** – Seattle Public Utility's High Point project will use a 20 year, 1.5% CWSRF loan of \$2,715,000 to install innovative natural drainage elements, such as bioswales, compost-amended soil reservoirs, and porous pavement. These green infrastructure additions have been designed to improve stormwater management in the 303(d) listed Longfellow Creek Watershed, an important watershed for spawning salmon. The 120-acre redevelopment plan for low-income communities is along one of Seattle's most important urban creeks. Upon completion of the project, 10% of the Longfellow Creek watershed will be restored to drainage conditions comparable to rural pastures. The development project has been designed to provide significant benefits to water quality, wet weather flow reduction, habitat protection, and public outreach and education in the 34 block community.
- **Cohasset, Massachusetts Wins 2006 Smart Growth Award** – The Town of Cohasset, Massachusetts used a \$479,500 CWSRF loan with a 2% interest rate to retrofit its stormwater drainage system to implement recommendations identified in the Drinking Water SRF funded Source Water Protection Plan. This two-year project included the construction of more than 40 rain gardens and several vegetated swales to reduce the amount of runoff entering the town's

FACT SHEET

stormwater collection system. The rain gardens were strategically placed within township right-of-ways and are designed to capture the first 0.9 inches of rain during wet weather events. A winner of the 2006 Massachusetts Smart Growth Award, the project provides an excellent example of how low-cost and low-maintenance green infrastructure techniques can improve stormwater quality and protect drinking water sources.



Curb-less roadside, equipped with stormwater drainage system in Cohasset, Mass.

- *Rockville, Maryland Wins PISCES Award for Restoration Efforts* – The city of Rockville, Maryland obtained a \$14 million, 0% interest CWSRF loan to fund the planning, design, and restoration of the main stem of Watts Branch, a tributary of the Potomac River. The project included enhancements to existing wetlands, restoration of stream buffers, stabilization of 4,000 feet of eroding stream bank and upgrades to storm drain outfalls. These improvements were designed to enhance aquatic habitat and reduce pollution from stormwater runoff in the Chesapeake Bay. Funds to repay the loan will be generated from Rockville's stormwater fee. In recognition of the project's success, the Maryland Department of Environment selected Rockville to receive EPA's 2006 PISCES Award, which is presented to communities that most effectively and

efficiently use funding from EPA's CWSRF program.

- *West Jefferson, Ohio Protects Aquatic Ecosystems with CWSRF* – The Ohio CWSRF program has provided over \$1.1 million in low interest rate loans to Hidden Creek Ltd to fund a variety of projects that protect the Big Darby Creek watershed – one of the highest quality warm-water aquatic ecosystems in the United States. Environmentalists became concerned when a large tract of highly erodible agricultural land within the Big Darby watershed went up for sale and was expected to be bought by a developer. Fortunately, a conservationist-owned company, Hidden Creek Ltd, bought the property with financial assistance from the CWSRF. Hidden Creek Ltd then designed a housing project to demonstrate that development can be both environmentally sensitive and financially profitable. With the help of CWSRF funds, a comprehensive set of actions were taken to limit the amount of runoff generated from the development project. This included the construction of vegetated swales, restoration of the wooded stream corridor, and the establishment of emergent wetland habitat. In addition, 230 acres of the riparian stream corridor have been protected via a conservation easement held by the Natural Resources Conservation Service. A program has also been developed to educate homeowners and housing contractors about watershed protection and related deed restrictions attached to each property. This project was intended to serve as a model for future development in the watershed. Hidden Creek Ltd has since received a national wetland award for land stewardship and development from the Environmental Law Institute, and has repaid the CWSRF loans with revenues from the sale of the housing lots.
- *San Francisco, California Protects 10,000 Acres with CWSRF* – In 2004, the Nature Conservancy used a \$9 million CWSRF loan

to fund the interim financing and holding of a critical portion of land, known as the Palo Corona Ranch, in Monterey Country. The Palo Corona Ranch is largely considered the gateway to California's Big Sure coastline. This project protected 9,898 acres of pristine Redwood and Monterey Pine forests from imminent development. Without the Nature Conservancy's purchase increased sedimentation and stormwater runoff would have caused severe impairment to coastal and aquatic resources. The property will be retained by the Department of Parks and the Monterey Peninsula Recreational Park District with dedicated funds over a seven year period.



Easement in Monterey Co., CA protects aquatic resources.

- Port Townsend, Washington Manages Stormwater with Wetlands Protection - The City of Port Townsend, Washington was able to meet several stormwater management and wetlands preservation objectives by obtaining a \$400,000 loan at 0% interest from Washington State's CWSRF to purchase an area known as the Winona Wetlands. This wetland provides critical

For more information, contact

U.S. Environmental Protection Agency
1201 Constitution Avenue, NW (Mail code 4204M)
Washington, DC 20460
Phone: (202) 564-1029 Fax: (202)501-2403
www.epa.gov/OW-OWM.html/cwfinance/cwsrf

stormwater attenuation for the area and maintains valuable habitat for local wildlife. Potential development of the area not only threatened the wetlands, but would also result in significant stormwater management problems. The city purchased the 6.5 acres in Phase I of the project and an additional 9 acres in Phase II. The loans were completely paid back within 5 years with a portion of the city's new \$5 per household stormwater utility fee.



The valuable wildlife in the Winona Wetlands of Washington are protected with \$400,000 loan.

Helpful Hint: Here are several ways you can work with your state CWSRF:

- Help your state CWSRF managers document the relationship between stormwater and water quality.
- Comment on the CWSRF Annual Intended Use Plan: provide written comments and attend public hearings.
- Be a Broker: bring stormwater capital projects to the CWSRF and bring the CWSRF to the stormwater community.
- Think creatively about how to target CWSRF funds at stormwater projects, e.g., loan terms, marketing, dedicated pots of money.