



# Using DWSRF Funds to Comply with the Filter Backwash Recycling Rule

The Drinking Water State Revolving Fund (DWSRF) program was established by the 1996 Safe Drinking Water Act (SDWA) Amendments and authorizes grants to states to capitalize revolving loan funds. The states provide low-interest loans to eligible systems for infrastructure improvements needed to ensure compliance with the SDWA and protect public health. The DWSRF program can play a significant role in helping systems, especially small systems, to meet the challenges of complying with new drinking water standards.

The Environmental Protection Agency (EPA) published the Filter Backwash Recycling Rule (FBRR) in 2001. The FBRR improves public health protection by requiring systems to assess and change, if necessary, recycle practices to control risks from microbial contamination. The FBRR will impose a financial burden on some water systems. The DWSRF can provide assistance to systems to help ease this burden, increase compliance, and protect public health.

## WHY DID EPA CREATE THIS RULE?

The 1996 SDWA Amendments required EPA to promulgate a regulation which “governs” the recycling of filter backwash water within the treatment process of public water systems. The FBRR requires that recycled filter backwash water, thickener supernatant, and liquids from dewatering processes be returned to a location such that all processes of a system’s conventional or direct filtration are employed. Systems may apply to the state for approval to recycle at an alternate location. By establishing the FBRR, EPA hopes to improve public health performance at conventional and direct filtration plants by reducing the likelihood that recycling practices would allow microbes, such as *Cryptosporidium*, to pass through to finished drinking water. The FBRR will help ensure that the microbial removal improvements of the Interim and Long Term 1 Enhanced Surface Water Treatment Rules are not compromised by backwash recycling practices.

## TO WHOM DOES THIS RULE APPLY?

The FBRR applies to all systems that use surface water or ground water under the direct influence of surface water (GWUDI), practice conventional or direct filtration, and recycle spent filter backwash, thickener supernatant, or liquids from dewatering processes.

Source Type	System Type	Population Type
Surface Water ✓	CWSs ✓	< 10,000 ✓
Ground Water ✓	NTNCWSs ✓	10,000 - 100,000 ✓
GWUDI ✓	TNCWSs ✓	> 100,000 ✓

## CRITICAL RULE DEADLINES & REQUIREMENTS

FOR SYSTEMS		FOR STATES
	States submit FBRR primacy revision application to EPA (triggers interim primacy).	<b>June 8, 2003</b>
<b>December 8, 2003</b>	Submit recycle notification to the state.	
<b>June 8, 2004</b>	Recycle flows must be returned through the process of a system's existing conventional or direct filtration system or at an alternate recycle location approved by the state (unless granted a 2-year extension by the state). Collect recycle flow information and retain on file.	
<b>June 8, 2006</b>	Complete all capital improvements associated with relocating recycle return location (if necessary).	
	Primacy extension deadline – states with extensions must submit primacy revision applications to EPA.	<b>June 8, 2005</b>

## HOW WILL THIS RULE IMPACT SYSTEMS?

Total capital costs for the rule are estimated to be over \$45 million. In addition, the annual O & M and reporting costs will be more than \$2.5 million. Most of the capital costs will fall on the shoulders of systems serving more than 100,000 people (see Figure 1). Only a very small percentage of transient noncommunity water systems (TNCWSs) and nontransient noncommunity water systems (NTNCWSs) will be subject to the FBRR because most of these systems are ground water systems and very few use conventional or direct filtration.

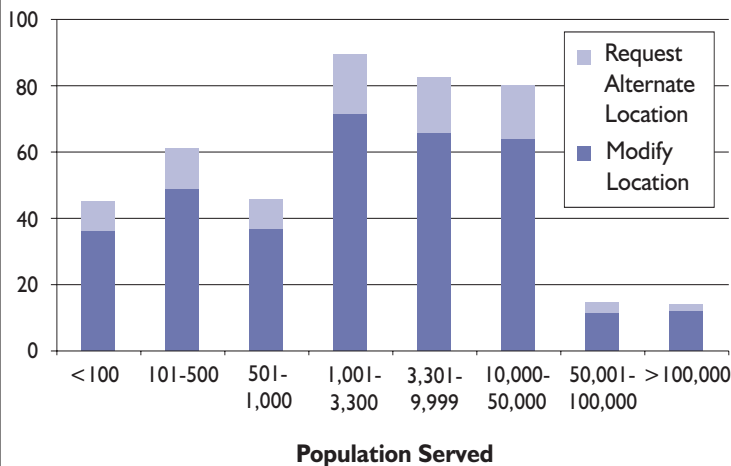
Figure 1: TOTAL FBRR PRICE TAG (in thousands of January 1999 \$)		Total Capital Costs by System Size for Recycle Return Provision	
Capital Costs for Recycle Return Provision	\$45,207	< 100	\$260
		101-500	\$713
		501-1,000	\$539
		1,001-3,300	\$1,411
Annual O & M Costs	\$2,487	3,301-10,000	\$2,284
Recycling Reporting	\$92	10,001-100,000	\$9,460
		> 100,000	\$30,540

Of the 4,650 systems subject to the FBRR, the EPA estimates that fewer than 400 systems are expected to require capital improvements to modify the location of their recycle return (the remainder are subject to the reporting requirements only). Generally, systems affected by the FBRR will not be required to make significant modifications to their treatment processes to meet the rule's requirements. The majority of systems that will have to modify the location of their recycle return serve less than 50,000 people (see Figure 2).

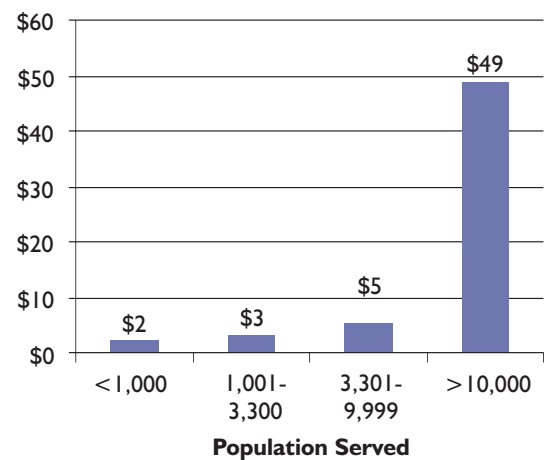
Figure 3 shows the average annualized capital and O & M costs for systems that must install a new recycle return location. For most of these systems, the annual capital and O & M costs will be under \$5,000. Although a fewer number of systems serving more than 10,000 people will face capital costs from the FBRR, the costs per system will be much more expensive (almost \$50,000 on average).

EPA estimates that the total annual cost per household will be less than \$1.70 for 99% of the 31.4 million households potentially affected by the FBRR. The remaining 1% of affected households will experience a range of costs between \$1.70 and \$100 per year. Costs for the FBRR will place a slightly more significant burden on small systems because costs must be paid from a much smaller revenue base.

**Figure 2: Number of Systems That Will Need to Modify Location or Request Alternate Location**



**Figure 3: Average Annual Costs for Installing New Recycle Return Location (in thousands of 1999 \$)**



Note: Costs based on total costs amortized over 20 years at a 3% discount rate.

## WHAT TYPE OF TREATMENT WILL SYSTEMS HAVE TO PUT IN PLACE?

During routine filter operation, particles such as metals, coagulants, and pathogens become trapped within system filters. The process of backwashing filters removes these particles and is crucial in the proper operation of conventional and direct filtration plants. The FBRR will ensure that the resulting spent filter backwash, if recycled, is handled with at least the same level of multi-barrier treatment as raw source water.

The FBRR addresses spent filter backwash and two additional recycle flows – thickener supernatant and liquids from dewatering processes. Recycle streams may contain significant concentrations of pathogens, such as *Cryptosporidium*, and pose a significant public health threat if not treated appropriately (see Exhibit 1). Under the rule's first provision, systems are required to return their recycle flows through all processes of a system's existing conventional or direct filtration system. By passing the recycle flows through all treatment processes at the facility, the FBRR helps to ensure the integrity of the chemical treatment.

Systems facing infrastructure improvements to redirect recycle flows to pass through the processes of a system's existing conventional or direct filtration may require additional piping and pump capacity. O & M costs for such infrastructure improvements include the annual cost of painting the pipes, replacement of pipe sections and fitting, and pump and motor service.

The EPA acknowledges the value of having the recycle flows pass through all treatment processes. However, the Agency also recognizes unique site-specific conditions. As a result, the FBRR's recycle return provision provides flexibility by allowing the state to approve an alternate recycle return location for systems on a case-by-case basis.

Under the FBRR, systems are required to notify states that they recycle. In addition, systems must provide information that the state can utilize to evaluate a system's susceptibility to hydraulic disruptions as a result of recycling. Accordingly, systems must provide the state with a plant schematic showing the origin of all recycle flows, the hydraulic conveyance used to transport them, and the location where they are recycled back into the plant. They must also provide a typical recycle flow in gallons per minute (gpm), highest observed plant flow experienced in the previous year (gpm), design flow for the treatment plant (gpm), and, if applicable, the state-approved operating capacity for the plant.

Systems are also required to collect and maintain information for review by the state. After evaluating the information, states may require a system to modify its recycle location or recycle practices.

### Exhibit 1: Recycle Flows Most Likely to Contain *Cryptosporidium*

**Untreated Spent Filter Backwash Water** - Water used for filter backwash which has not received treatment to remove oocysts from the waste stream.

**Gravity Settled Spent Filter Backwash Water** - Filter backwash in which gravity settling has been used to remove solids prior to its return to the primary treatment process.

**Combined Gravity Thickener Supernatant** - A combination of the supernatant from spent filter backwash water and a gravity thickener. A gravity thickener removes water from the sedimentation and filtration backwash sludge mass.

**Gravity Thickener Supernatant from Sedimentation Solids** - This potential recycle flow is similar to that for the combined gravity thickener supernatant, but includes only the supernatant from a gravity thickener.

**Mechanical Dewatering Device Liquids** - Liquids resulting from devices used to mechanically separate water treatment plant residuals (usually thickened sludge) into solids and water. Devices used to mechanically dewater thickened sludge include belt filter presses, centrifuges, filter presses, and vacuum filters.

## HOW CAN THE DWSRF ASSIST SYSTEMS?

States use DWSRF capitalization grant monies to provide low-interest loans to publicly- and privately-owned public water systems for infrastructure improvements needed to continue ensuring safe drinking water. States may offer principal forgiveness, reduced interest rates, or extended loan terms to systems identified by the state as serving disadvantaged communities. States also have the ability to reserve a portion of their grants (i.e., set-asides) to finance activities that encourage enhanced water system management and help to prevent contamination problems through source water protection measures. Based on the fiscal year 2002 appropriation of \$850 million, capitalization grants ranged from \$8.0 million to \$82.4 million per state.

Most capital projects – including installing new piping and upgrading existing technologies – needed to comply with the new FBRR standards are eligible for funding under the DWSRF (see Exhibit 2). States can use set-aside funds from the DWSRF to assist systems directly as well as to enhance their own program management activities.

A state may use set-asides to make administrative improvements to the entire drinking water program, which faces increased costs in implementing the FBRR. States can provide training to systems on meeting the requirements of the FBRR as well as technical assistance in identifying appropriate recycle locations. In addition, states can provide assistance to small systems to cover the costs of project planning and design for infrastructure improvements.

Since the DWSRF program is managed by states, project and set-aside funding varies according to the priorities, policies, and laws within each state. Given that each state administers its own program differently, the first step in seeking assistance is to contact the state DWSRF representative which can be found on the EPA DWSRF website.

<b>Exhibit 2: Projects/Activities Eligible for DWSRF Funding to Comply With the FBRR</b>		
<b>Type of Project/Activity</b>	<b>Eligible Under Infrastructure Fund</b>	<b>Eligible Under Set-Asides</b>
<b>Capital</b>		
Install piping to move recycle to headworks	Yes	No
Upgrade backwash pumping capacity	Yes	No
Planning & Design Activities	Yes	Yes*
<b>Recycling Reporting</b>		
	No	No
<b>System Administrative Improvements</b>		
Hire Staff	No	No
Staff Training	No	Yes
Public Outreach	No	Yes
Monitoring	No	No
Rate Increase Process	No	Yes
<b>State Administrative Improvements</b>		
Hire Staff	No	Yes
Staff Training	No	Yes
Public Outreach	No	Yes
Compliance Oversight	No	Yes
Enforcement	No	Yes
Pilot Studies	No	Yes

\*For small systems only.

### FOR MORE INFORMATION...

#### DWSRF and FBRR

DWSRF Website:  
<http://www.epa.gov/safewater/dwsrf.html>

FBRR Website:  
<http://www.epa.gov/safewater/filterbackwash.html>

#### General Information

SDWA Hotline  
 1-800-426-4791

EPA's Ground Water & Drinking Water Website:  
<http://www.epa.gov/safewater/>

Office of Ground Water and Drinking Water (4606M)

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