Cleaner Rivers for the National Capital Region:
Sharing the Cost

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"Clean water is non-negotiable and expensive. To ensure the success of the Clean Rivers Project, the region needs a better financing system beyond D.C. Water's narrow rate base."

Summary

- **D.C. Water, formerly the D.C. Water and Sewer Authority (WASA), has embarked on a 20-year, $2.6 billion Clean Rivers Project initiative to nearly eliminate sewage discharge into area waterways.** Like many cities, Washington is partially served by a combined sewer system (CSS) that carries both storm water and sewage. The District's CSS is the legacy of the federal government, which built the system and governed the city until limited home rule in 1973. Today, heavy rains that exceed the capacity of the combined system trigger the release of overflow storm water and sewage into area rivers, ultimately flowing into the Chesapeake Bay. The Clean Rivers Project, mandated by a 2005 consent decree with the U.S. Environmental Protection Agency, will build underground tunnels to store overflow storm water and sewage during rainstorms until it can be sent to a treatment plant.

- **D.C. Water will finance the Clean Rivers Project by issuing long-term bonds backed primarily by revenue from water usage and a new "impervious area" charge.** It is also exploring the extent to which "green infrastructure" can contribute to reduced storm water. The federal government has supported the project, but its contributions are not guaranteed nor have the amounts been predictable. Despite D.C. Water's active and forward-looking management, the Clean Rivers Project raises multiple concerns. These include the burden it will place on District rate payers; the possibility of crowding out D.C. Water's other maintenance and improvement projects; whether and how the beneficiaries of cleaner water downstream should contribute to the cost; the project's interaction with other expensive pollution-reduction mandates in the city and region; the lack of financing forecasts for the second half of the project; and the possibility that D.C. Water ultimately may not be able to afford the project as currently structured.

- **D.C. Water and the Metropolitan Washington Council of Governments should convene a regional coalition to discuss options to pay for the Clean Rivers Project in the context of other water quality mandates in the region.** The regional coalition should discuss options to expand the project's payment base to include a broader range of clean water beneficiaries, in addition to calling for the federal government to make regular and predictable contributions towards the Clean Rivers Project.

I. Combined sewer overflows are a major problem in the District and are a legacy of federal control and neglect.

The nation's capital, like other older American cities, is partially served by a combined sewer system (CSS) in which pipes carry both storm water and sewage or waste water. In dry weather, waste water flows to the Blue Plains Advanced Wastewater Treatment Plant at the southern tip of the District along the Potomac River. After heavy rains, however, the capacity of the combined sewer is often exceeded, and a mixture of sewage and storm water—combined sewer overflows (CSOs)—discharges into the Anacostia and Potomac rivers and Rock Creek, leading ultimately to downstream destinations, including the Chesapeake Bay.

Both storm water and waste water present serious water quality challenges. Storm water is dirty, no matter how it is conveyed. It picks up oil, grease, sediment, and animal waste from streets, gardens, and roofs and sends it untreated to surrounding waterways. Prolonged development has increased the amount of surface areas—rooftops, roadways, and parking lots—that do not absorb water. These impervious surfaces increase the runoff of storm water and snowmelt, making the clean water task more urgent, as well as causing erosion and other environmental problems. Untreated sewage leads to multiple problems: it compromises the safety of drinking water, makes water unfit for swimming or fishing, and causes offensive odors. Actions to improve water quality must address both storm water and waste water, but this paper focuses on sewage in storm water, specifically the need to identify fair and sustainable options to pay for the very expensive infrastructure improvements already underway to reduce CSOs.

Washington's sewers date back to the nineteenth century, when the federal government built an 80-mile CSS that still survives today. Most of what Americans think of as the federal government—the Capitol, the Supreme Court, the Mall and museums, the major monuments, and the White House—lies in the oldest one-third of the city covered by the CSS. Separate storm sewers, which also are old, serve the remaining two-thirds of the city.[2]

Today's combined sewer overflows are the direct result of a federal decision in the nineteenth century to design, build, and then retain the combined sewers. The federal government was responsible for the District's infrastructure until the institution of limited home rule in 1973. A recent study by D.C. Appleseed asserts that the original Army Corps design and construction of the CSO system has proved "significantly defective," with resulting damage to the regional watershed's ecosystems.[3]

Responsibility for water distribution, sewer pipes, and sewage treatment now rests with D.C. Water, formerly known as D.C. Water and Sewer Authority (WASA). D.C. Water is an independent authority with a regional board of directors appointed by the District; Montgomery and Prince George's counties in Maryland; and Fairfax County in Virginia. In addition to serving the District and its residents, D.C. Water also serves the suburban counties represented on the board by treating waste water at Blue Plains from these jurisdictions. A separate entity, the Department of the Environment (DDOE), is responsible for the city's separate sewer system, which covers two-thirds of the city and channels storm water only, and not waste water. The somewhat complicated relationship between D.C. Water and the DDOE is discussed in Appendix A.

The District's status as the nation's capital significantly reduces its tax base and fiscal capacity. Previous analysis has addressed the fiscal constraints imposed on the District by its lack of a state and the special relationship between the District and the federal government.[4] A high proportion of property and sales are exempt from taxation (government, diplomatic, educational, nonprofits, among others). Congress prohibits the District from taxing the earnings of workers living in the suburbs and working in the city. The city's high poverty rates and long-term population decline (recently reversed for the first time in decades) further erode the tax base, limiting the city's ability to meet its fiscal needs, including the ability to maintain and improve its infrastructure. When serious mismanagement and economic downturn led to financial crisis in the 1990s, the federal government imposed a Financial Authority, which balanced the budget and restored fiscal solvency. Throughout this period, the District suffered from restricted spending and, often, further deferrals of needed maintenance, capital replacement and modernization of infrastructure.

Recognizing the need for a long-term solution, President Clinton in 1997 proposed a Revitalization Act to help address the underlying structural causes of the District's fiscal crisis. Highly visible needs,

as well as the significant limits and constraints on the city's ability to fund capital projects, led Clinton to include a National Capital Infrastructure Authority (NCIA) to fund $1.4 billion in repairs and construction. Unfortunately, it did not survive into the final Revitalization Act.[5]

However, a 2008 report by the Congressional Budget Office (CBO) recognized the strong case for federal investment in infrastructure, such as the Clean Rivers Project, whose benefits "accrue to broad geographic areas and are not restricted to a class of users that can be charged more directly." The CBO specifically cited as an example "wastewater treatment plants for communities whose water eventually flows into a major resource such as the Chesapeake Bay."[6]

II. In response to federal mandates to reduce combined sewer overflows, D.C. Water developed the "long-term control plan," which will take 20 years at an estimated cost of $2.6 billion.

National policy, beginning with the Clean Water Act (1972),[7] requires localities to obtain permits to discharge CSO flows into surrounding waters, monitor CSO releases, and implement a long-term control plan (LTCP) for minimizing the impact of CSOs on water quality.[8]

In March 2005, D.C. Water reached a legal agreement with the Environmental Protection Agency (EPA), which enforces environmental policy, to reduce CSOs. The LTCP, now known as the Clean Rivers Project, was slated to reduce CSOs by 96 percent by building three large-scale tunnels to store rain overflows until they can be conveyed to Blue Plains for treatment. The Clean Rivers Project is estimated to cost $2.6 billion over 20 years and is part of D.C. Water's Ten Year Capital Improvement Plan. The capital plan addresses infrastructure, including facilities, pipes, tanks, machines, and technology. D.C. Water's revenue— user fees and charges and federal grants— pays for the capital plan and its operating budget, which covers the day-to-day plant operation and equipment. This arrangement means that future improvements and daily operational needs compete for the same income and drive the rates, fees, and charges paid by customers.

The debt service to pay for the current capital plan is a main reason for D.C. Water's budget increases. The Clean Rivers Project is a substantial part of the capital plan. Other mandated improvements, such as the enhanced nitrogen removal project and new technology to recycle bio-solids, are also costly, as is replacing the aging water and sewer pipes.[9] According to D.C. Water, 44 percent of the FY 2010–2019 capital plan is meeting federal mandates (court orders, regulatory standards, permit requirements); 13 percent is to address potential facility failures.[10]

Although the Clean Rivers Project is a 20-year initiative, the capital plan provides annual estimates of the costs and spending only through FY 2019. From FY 2010–2019, D.C. Water expects to spend $1.25 billion on CSO infrastructure, accounting for 30 percent of the capital plan expenditures through FY 2019.

III. Paying for the Clean Rivers Project is a major challenge.

To meet the Clean River Project's multi-billion-dollar mandate, D.C. Water issues bonds to pay for the capital construction. Revenues will service and pay off these bonds as D.C. Water continues to provide normal water and sewer services and upgrades its ongoing operations. Given that the utility's traditional revenue source is fees on users within the District as well as regional wholesale users of water treatment services, some creative thinking about new revenue sources is in order. Both D.C. Water and city residents should consider whether the revenue is adequate to cover not only the debt service to bondholders over this lengthy period, but also ongoing maintenance, new technology, and other needs. No one wants the general maintenance budget to be starved, causing deferred maintenance problems down the road.

A. D.C. Water's revenues are primarily from fees and charges paid by retail and wholesale users, including a new Impervious Area Charge dedicated to fund the Clean Rivers Project.

Most of D.C. Water's revenue comes from charges on retail customers in the District, described further below. In addition, D.C. Water collects slightly less than 20 percent of its revenues from wholesale charges to several surrounding jurisdictions for waste water treatment. Beginning in FY 2011, wholesale payers also annually contribute 7.1 percent of the costs of the Clean Rivers Project, pursuant to the principles of the Intermunicipal Agreement governing their relationship with D.C. Water.[11]

In recent years, operating revenue from retail customers has been growing only as a result of rate increases (in part required by bond covenants). Water use per household has been steadily declining, the result of conservation and low-flow technology. D.C. Water charges a metering fee, which is unrelated to water use, but it is small and cannot be counted on for substantial additional revenue.

To lessen dependence on rate increases for water use, D.C. Water instituted a new Impervious Area Charge (IAC) in 2009, which it deems appropriate for financing the reduction of CSOs. Economic development has increased the amount of surface areas—rooftops, roadways, and parking lots—that do not absorb water. These impervious areas have increased storm water and snow runoff, making CSOs more frequent and the task of reducing and treating them more expensive. By charging the owners of impervious areas, the payment burden is on those thought to be most responsible for run-off. It is expected to encourage rate payers to install "green roofs," porous parking surfaces, and other innovations designed to reduce runoff, which could reduce the volume of CSO needing treatment.

B. D.C. Water fees and charges will increase sharply over the next decade, yet these funds may not keep up with the costs of the Clean Rivers Project and D.C. Water's other ongoing obligations.

The IAC is designed to more fairly reflect responsibility for storm water pollution and encourage cleaner alternatives. It is dedicated to addressing the CSO infrastructure problem and represents the first time D.C. Water has directly linked any of its revenue to any particular part of its operating or capital program. All retail customers pay the IAC, including D.C. households and businesses, traditionally tax-exempt organizations, such as universities, hospitals, the federal and District governments, and the D.C. Housing Authority. Even those without water charges, such as parking lots, are covered by the IAC.

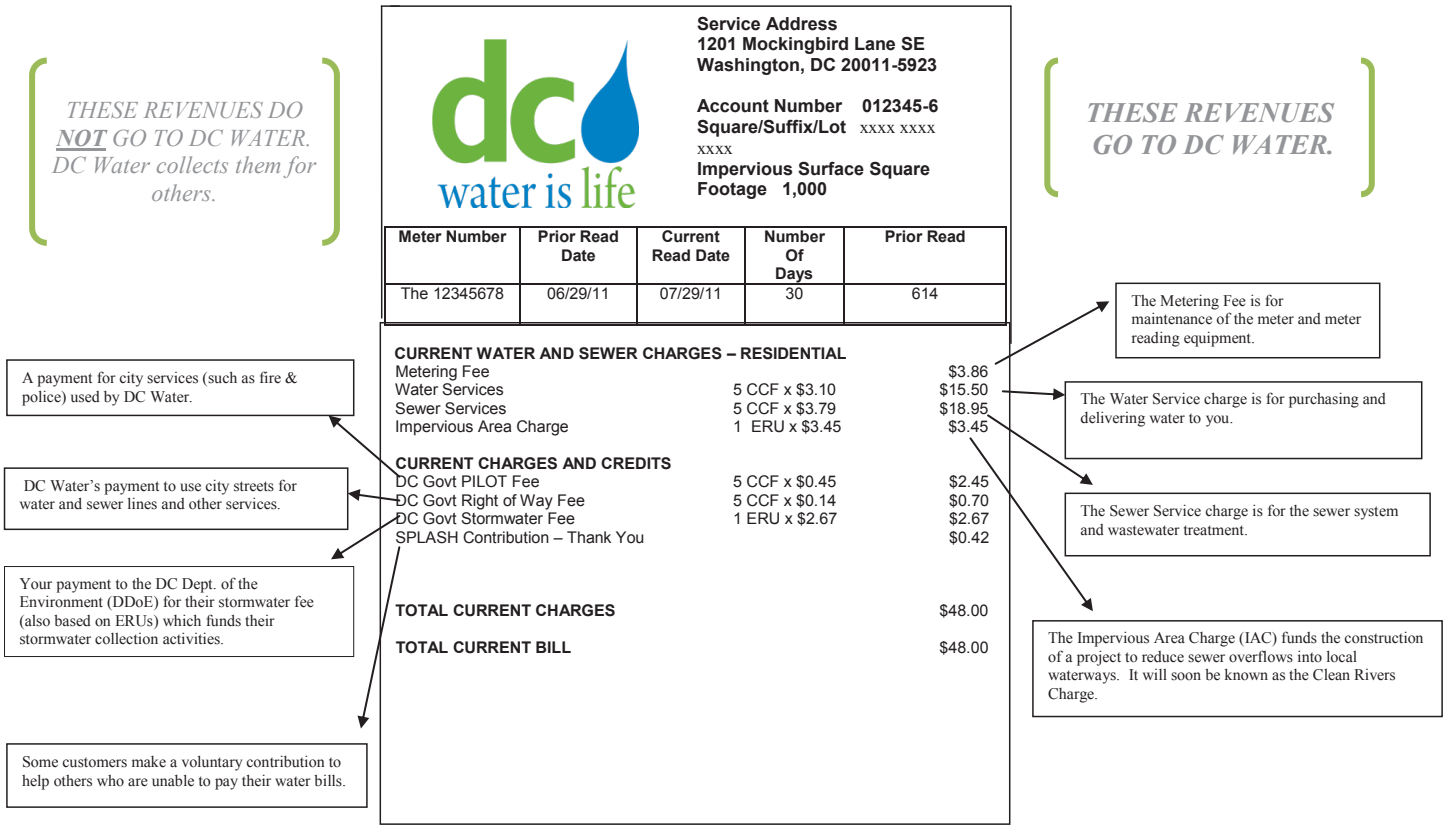
However, revenue from the IAC falls far short of covering the debt service on the bonds for the Clean Rivers Project. D.C. Water estimates that the IAC will generate about $250 million from FY 2010 to FY 2015, with debt service extending for a considerably longer period.[12] The budget projects annual IAC revenue of $15.5 million in FY 2011, growing to $134 million in FY 2019. Annual debt service, in contrast, is projected to rise from about $100 million to more than $250 million over this same period.[13] There are no publically available estimates of the annual revenue from the IAC beyond 2019 or over the entire 20 years of the Clean Rivers Project.

D.C. Water introduced the IAC in spring 2009 at a low rate, intending to increase it annually by significant amounts. In 2010, D.C. Water changed the residential IAC from a single amount to a six-tiered charge depending on the size of the property's surface area. Small to moderate sized residential properties will bear the bulk of the residential charges. D.C. Water forecasts that the 92 percent of residential properties that constitute the lowest two tiers (up to 2,000 square feet of impermeable surface) will pay 78 percent of the residential IAC bill.[14]

The IAC rose from $1.24 per month in FY 2009 to $3.45 per month in FY 2011. In FY 2012, the fee is $6.64 per month, more than quadrupling in four years. The metering fee has also nearly doubled. As a result, even though water use fell and water/sewer rates rose about 9 percent per year, the typical D.C. Water residential monthly bill grew about 13 percent per year over this period.

D.C. Water is projecting that the monthly IAC will be $28.77 by FY 2019, which represents phenomenal growth (more than 2,000 percent from its initial small payment). D.C. Water's customers will notice the impact. By FY 2019, the IAC will account for about 28 percent of D.C. Water's typical residential water bill, as its growth surpasses that of the basic water and sewer rate. District residents can expect to see monthly charges of about $104 in FY 2019, up from typical monthly charges of about $40 in FY 2009.[15]

Figure 1. Sample D.C. Water Bill Explained



Note 1: Water use is billed in CCF. 1 CCF = 100 cubic feet, or 748 gallons. Average D.C. residence uses 6.69 CCF/month.

Note 2: For environmental charges, D.C. residential properties are billed for the amount of impervious area on their property. This is calculated in units of 1,000 sq. ft. – known as an Equivalent Residential Unit, or ERU. 1 ERU=1,000 sq. ft. of impervious surface area. Most D.C. residential properties are classified as 1 ERU.

Moreover, D.C. Water's monthly bill also includes additional charges that the authority collects and passes through to the District government, so the dollar amounts noted above understate the total amount that residents pay for water and sewer services. In addition to this estimated $104 each month in FY 2019 (including D.C. Water's IAC, water services, sewer services, and the metering fee), customers also pay several other fees to the District government. They pay a separate District government storm water fee, also based on impervious surface area; a Payment in Lieu of Taxes (PILOT) for D.C. Water's use of city services; and a Right of Way fee for D.C. Water's use of city streets to access water and sewer lines. D.C. Water does not project these District pass-through charges into the future, and that portion of the bill is ignored here, as it does not represent revenue to D.C. Water. In short, complete reliance on fees, including the IAC, to finance the new costs of the CSO project may be unrealistic.

Figure 1 describes a typical D.C. Water bill. Table 1 in Appendix B presents D.C. Water's projections for their rates and charges (generating their revenues) through FY 2019 as of the start of FY 2012.

C. The water/sewer burden on low-income customers will double.

The IAC is yet another monthly utility payment for households. At some point, customers, especially those with low or fixed incomes, are likely to protest. On average, utility payments represent 6 to 7 percent of household spending. However, they represent a much larger share for low-income households.[16] Compared to households with average incomes, those in the lowest quintile pay 45 percent more of their income towards utilities.[17] Spending on utilities is regressive and recent data indicate it is becoming more so.[18]

Affordability is a real concern in the District, given its 20 percent poverty rate. The District has a persistent group of low-income residents, earning at or below $24,475 a year for a family of three.[19] Moreover, the District's income distribution is becoming more unequal. As a result, in constant dollars, the D.C. Water bill burden will double, from 2.5 percent to 5.2 percent of the top earners in the lowest quintile by 2019.[20] This is a conservative estimate because it focuses only on the charges by D.C. Water and not those that the utility collects on behalf of the District government.

D.C. Water (and by law, the EPA) must pay close attention to the burden of these payments. EPA guidelines suggest that water or sewer charges greater than 2 to 4 percent of median household income are a strain on household budgets.[21] In 2008 (prior to the introduction of the IAC), payments to D.C. Water represented less than 2 percent of District median income for three-fourths of the District's residents.[22]

However, the degree of hardship that D.C. Water bills, including the new IAC, impose on the District's low-income residents is hard to discern. Many low-income residents of the District are not direct customers of D.C. Water. Renters who live in multifamily apartment buildings or Housing Authority apartments are not direct D.C. Water customers. The landlord pays the water and sewer bill, which is covered in the rent. According to D.C. Water, an in-house analysis in 2009 determined that roughly 25 percent of low-income customers receive a D.C. Water bill.[23]

D.C. Water's Customer Assistance Program (CAP) helps low-income homeowners who face payment hardship.[24] Introduced in 2000 for those meeting income eligibility requirements, it has been expanded several times and is administered as part of the District's utility relief programs.[25] To qualify, the rate payer's income must be below 150 percent of the poverty line. Participation in CAP has grown from an average of about 2,680 households annually in 2001–2005 to 6,458 customers in 2010, about 6 percent of residential customers.[26]

D.C. Water spent $1.9 million in FY 2011 supporting low-income District households through CAP, and it expects to spend $2.3 million in FY 2012. These costs are covered with higher rates on all payers. With the growing payment hardship, D.C. Water will face pressure to expand this subsidy, particularly as landlords face pressure to contain the pass-through of rising water bills into rents. All of this will bring further, marginal, pressure on D.C. Water to contain rates, or operating costs, or both.

D. The federal government contributes to the long-term control plan through charges and periodic earmarks.

Federal agencies with buildings and other facilities in the District are D.C. Water customers, paying both water/sewer charges and the IAC.[27] Federal water/sewer payments, from more than 500 accounts, total about 9 percent of D.C. Water's operating revenue. With respect to water charges (not the IAC), D.C. Water's 10 largest government customers provide about three times the revenue as the 10 largest commercial customers, which are universities, hospitals, real estate companies, and other commercial enterprises.[28] All nonresidential IAC assessments are based on estimated square footage of impervious surface areas. Information on the breakdown by payer type of the nonresidential IAC payments is not available, so we are not able to judge the size of the federal agency payments relative to major commercial customers.

In addition to agency payments, federal appropriations have contributed $153.5 million to the Clean Rivers Project to date. According to D.C. Water, the federal contribution equates roughly to a 3.7 percent reduction in the retail rates.[29] The 10-year capital plan, very conservatively, assumes no separate federal money for the Clean Rivers Project. Yet, D.C. Water is upfront about its need for additional federal help:

> In FY2010 D.C. Water received federal funding of $20 million for the CSO LTCP and $25 million has been proposed for FY2011 of which $8.5 million has been received. However, as the total

project spending increases over the years, so does the projected IAC rate. *If additional federal assistance is provided, the Clean Rivers IAC would increase at a slower pace than this ten-year plan proposal assumes.* As noted earlier, this plan assumes jurisdictional contributions to the CSO LTCP under the IMA of 7.1 percent beginning in FY2011.[30] [emphasis added.]

IV. D.C. Water is actively exploring "green infrastructure" to improve water quality and reduce the need for expensive "gray infrastructure," as well as other strategies to raise revenue and reduce costs.

D.C. Water, like water authorities and other jurisdictions around the country, is moving toward greater reliance on "green" infrastructure, which may be cheaper than the "gray" infrastructure (holding tanks, wider pipes, and so forth) at the heart of the Clean Rivers Project. This approach, also known as "low impact development" (LID) and "source controls," prevents and ameliorates some of the serious runoff during storms, by limiting it at source or capturing it into the ground. The approach also offers the aesthetics of green roofs, tree canopies, road greenways, and wetland improvements as well as the promise of local jobs. Its uses are expanding rapidly, although it remains a complement, not a complete substitute, for gray infrastructure. Green infrastructure is easiest to implement with new development, which is relatively rare in D.C. However, green infrastructure is also being used successfully in both the redevelopment and the retrofitting of existing buildings and sites.[31]

The EPA recognizes the benefits of green infrastructure and is working with the National Association of Clean Water Agencies (NAWCA), where D.C. Water is an active member, to give direction for demonstration projects, best practices, and guidelines for its use in long-term control plans and consent decrees.[32] A number of municipalities have already required storm water source controls for new development, and many are embarking on pilot programs for retrofitting (often on public property).[33]

D.C. Water, working under the requirements and time lines of the consent decree, anticipates using a hybrid approach of gray and green infrastructure.[34] To prove that low-impact development can reduce reliance on the more expensive gray infrastructure, D.C. Water is seeking EPA permissions for a multi-year demonstration project, estimated (not yet budgeted) to cost between $10 million and $30 million.[35] The EPA, recognizing the difficult financial conditions state and local governments face as well as significant gains with green initiatives, recently has allowed some cities to include green infrastructure demonstrations in new and amended CSO consent agreements.[36] D.C. Water, if successful, will seek to move forward (with federal consent) with a hybrid approach for the two remaining elements of the Clean Rivers Project: the Potomac River and Rock Creek projects, most of which have not begun; all must be completed by 2025. (The first phase, already underway, is a combination of Anacostia River projects and would not be affected.) The consent decree allows downsizing, but not elimination, of the remaining Potomac and Rock Creek tunnels.[37] This offers the potential of having more time to solve the issues than allowed in the consent decree.[38]

Questions remain about using green infrastructure in the Clean Rivers Project. Will it result in meeting water quality standards? Will it capture enough runoff to reduce CSOs at the same level? Will it prove to be cheaper than gray infrastructure? Will these questions be answered by the 2025 deadline? Cost savings provide the incentive for a concerted effort to answer these questions positively. The window for planning and implementing the green infrastructure for the Clean Rivers Project is very tight.[39]

There may, of course, be other cost efficiencies at D.C. Water. For example, the authority is turning waste into energy to reduce fuel costs.[40] It has an impressive record of minimizing unpaid bills and collecting revenue.[41] Realistically, though, the Clean Rivers Project is the major cost driver behind customers' mounting bills, with the Nitrogen Removal Project (dedicated to sustainability for the Chesapeake Bay area) also carrying a heavy price tag ($1 billion). These costs are not going away nor likely to be significantly abated.

V. Recommendations: D.C. Water, regional stakeholders and the federal government should develop other funding options.

The estimated 20-year cost of the Clean Rivers Project has already grown from the initial $2.2 billion in 2005 to the current $2.6 billion by 2025. Our examination of the payment burden extends only as far as D.C. Water's forecasts: 2019. Costs are likely to continue to escalate. The current trajectory may be unsustainable.

Two options to reduce the burden on D.C. rate payers include: reduce the cost of the Clean Rivers Project; or, spread the costs out among more payers and beneficiaries of clean water. Neither is easy.

DC Water's proposed low impact development demonstration project would lengthen the timeline for the Clean Rivers Project.[42] The proposal will require agreement among a number of actors, including the federal government, the District government, and D.C. Water, which will be a delicate and difficult conversation. Unfortunately, it is not clear, yet, how much D.C. Water's actions to develop green infrastructure might reduce the costs of meeting the goals of the consent decree, or whether the proposal will be approved. So, we focus on strategies to pay for the long-term control plan, as currently configured, more fairly and efficiently.

Below are several recommendations.

A. D.C. Water and the Metropolitan Washington Council of Governments should convene a coalition of regional stakeholders, including the federal government, to discuss options to pay for the Clean River Project, in the context of regional federal water quality mandates, such as the Chesapeake Bay cleanup.

A broader regional coalition is needed for long run cleanup of the Potomac and Anacostia watersheds. A regional conversation would contribute to a shared understanding of the various water cleanup efforts, requirements, and funding pressures throughout the region and how they relate to one another. Such a coalition could lead to more effective regional cooperation and problem-solving related to cleaning up the rivers flowing into the Chesapeake Bay.

The Metropolitan Washington Council of Governments (COG) is well positioned to serve as convener or co-convener. The draft 2012 policy priority for COG's Chesapeake Bay and Water Resources Policy Committee is to "support policies that supplement local funding and provide local governments and utilities with the flexibility needed to meet EPA's and state wastewater, septic, and storm water requirements for restoration of the Chesapeake Bay, Potomac River, and local waters."[43]

In addition to D.C. Water and its customers, other localities in the region face spending pressures in meeting environmental standards, many tied to the Chesapeake Bay. For example, preliminary capital cost estimates to meet the Total Maximum Daily Load requirements to clean up the Chesapeake Bay equal a little less than $1 billion for Frederick County, MD, about $1 billion for Montgomery County, MD, and $845 million for Fairfax County, VA.[44] The federal government does not provide much support for storm water funding, so localities primarily bear these burdens.[45]

The federal government's active and engaged participation is essential. It should not take much persuasion. The EPA, strongly supporting "integrated" approaches, seeks to "encourage regions to work with the states to engage…local partners…", and, in support of recent green infrastructure efforts, is promoting these approaches around the country.[46] The spiraling costs of meeting tighter environmental standards to address pollution from storms are a widespread problem, generating mounting burdens on rate payers and localities throughout the country.[47] Federal, state, and local cooperation in the Capital region, to address funding for the myriad of water quality efforts and mandates, would be a demonstration for the whole country.

The federal government should acknowledge its role in creating the CSO problem and make regular and predictable contributions toward the Clean Rivers Project.

CSO cleanup is a federal mandate; in the case of D.C. Water, the mandate is directed at the system that the federal government built and maintained for years. Although the federal government has contributed about $150 million to the Clean Rivers Project to date through earmarks, these one-off payments are not a dependable, recurring revenue stream. The federal government's impact is regional. In

addition to the legacy of the old capital district's aging sewers, federal buildings, laboratories, military installations, and their impervious surfaces are spread throughout the larger suburban region. The impact on the region of the nation's capital city justifies a special federal contribution to D.C. Water's resolution of the CSO problem.

The regional discussion should rethink the "polluter pays" principle and examine other governance and financing methods to support the Clean Rivers Project and other regional water quality initiatives that benefit all parties.

There has been little analysis or public discussion of how the burden of paying for the Clean Rivers Project will be shared among D.C. Water users and other beneficiaries, or how it interacts with other water quality improvements throughout the region. Current plans (to reduce CSOs and other water quality efforts) are based on the principle that the polluter pays. However, clean water is a public good. Like rivers, the benefits from cleanup flow downstream. All users benefit from it. Unfortunately, manmade, artificial borders obscure the benefits from being recognized, appreciated, and paid for. D.C. Water, as established, was not as "regional" as is needed now to match the costs with the benefits of the cleanup. Governance was designed to oversee fee-for-service sewage treatment, not broader clean water concerns.

As Figure 2 illustrates, the District's CSOs affect the entire region, through the Anacostia and Potomac Rivers, which are part of the Chesapeake Bay watershed. The District generates some storm water pollution, including the worst CSOs, but localities upstream and downstream from the District in the Anacostia and Potomac watersheds also generate pollution.

Regardless of the origin of the problem, all residents and visitors to the region benefit from the cleanup. In a regular market, they would pay for these benefits, but the nature of a public good offers no mechanism to charge them. The mismatch between payers and beneficiaries extends beyond D.C. Water. For example, 80 percent of the Anacostia watershed is in Maryland, upstream of the District. As Maryland works to clean the streams and tributaries to the Anacostia, its efforts risk being neutralized by the District-based CSOs.

The Clean Rivers Project is a mammoth undertaking, but it is only a fraction of the action needed in coming years to ensure the region's water quality. Eliminating the District's CSOs must be supplemented with measures to reduce agricultural runoff, storm water runoff, and other sources of pollution in the Anacostia and Potomac watersheds, leading ultimately to the Chesapeake Bay. Other local jurisdictions are also currently grappling with how to implement and pay for storm water reduction and green infrastructure to comply with their own water quality mandates.[48]

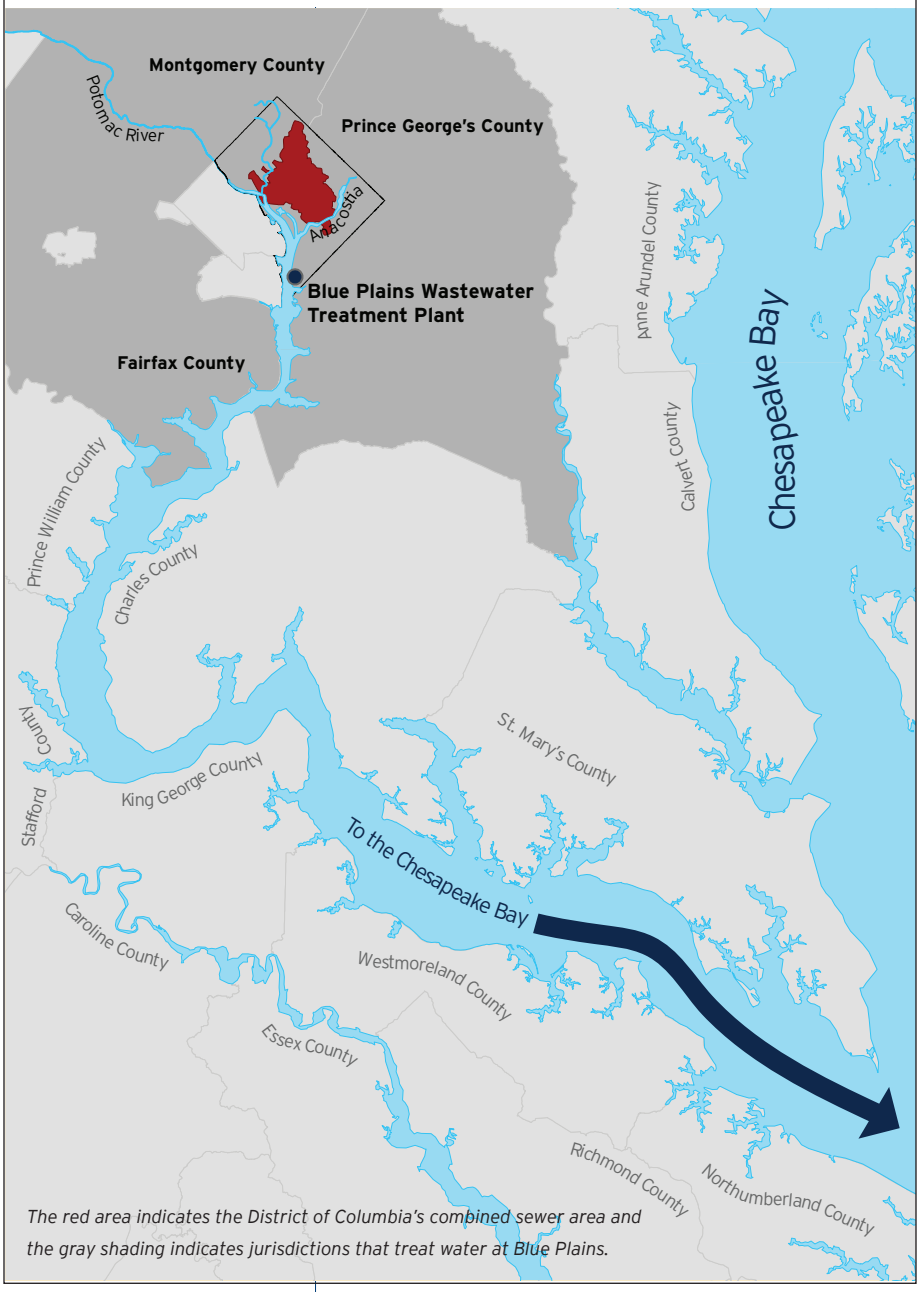
D.C. Water is an independent authority with regional participation and reach. Unfortunately, the regional representation is limited to three suburban counties that use Blue Plains' sewage treatment services: Fairfax County, VA, Prince George's County, MD, and Montgomery County, MD. But a number of other Virginia and Maryland municipalities are downstream of the District and have no links to D.C. Water or the Clean Rivers Project.

A focus on the benefits of clean water also leads back to increased investment by the federal government. The CBO's report, as noted earlier, identified scenarios such as the Clean Rivers Project as a worthy candidate for federal investment owing to the broad geographic areas that benefit from clean water and the difficulty in directly charging the beneficiaries.

B. D.C. Water should expand its city-based revenue by fine-tuning the impervious area charges.

D.C. Water's user charges, including the impervious area charges, capture customers exempt from property taxes (of which there are many in the District). The IAC has the added advantage of not being linked to (declining) water use. Certainly, D.C. Water should look for new fixed charges, even if they cover fewer customers.[49] It should also re-examine the IAC, which is intended to reflect in a direct way the link between development and resulting polluting storm water. There are several possible concerns with the present IAC structure. First, the square footage measure is only a rough approximation to the development-pollution link, which may be subject to challenge as the charge grows. D.C. Water should explore whether square footage alone is sufficiently related to runoff levels.

Figure 2. Downstream Beneficiaries of DC Water's Clean Rivers Project



The red area indicates the District of Columbia's combined sewer area and the gray shading indicates jurisdictions that treat water at Blue Plains.

The second concern is how the charge is distributed among payers. The introduction of the six tiers for the residential customers was meant to introduce a less regressive charge for the residential class. As for the other payers, the IAC is a cost of doing business, which businesses, landlords, and the federal and District governments pass on to customers (or tenants or taxpayers). It may make sense to place a larger burden on them. Certainly these customers have the ability to spread the charge over a broader group of payers, many of whom are beneficiaries of the cleanup. D.C. Water should also examine the IAC component of the charges paid by commercial and federal agency payers to determine how that distribution differs from the burden of the water and sewer user charges. In particular, D.C. Water might want to focus on the aggregate size of the runoff and the ability or inability of some of these payers to make environmental improvements or adjustments. In the case of water/sewer fees, the top "commercial" customers are dominated by universities, hospitals, property developers, hotels, the Soldiers Home, and Amtrak. By far, however, the federal government pays the most to D.C. Water. In 2010, Georgetown University, the top ranking "commercial" payer of water/sewer fees at $2.1 million, was on par with the eighth placed "government" payer, Bolling Air Force Base. D.C. Water's top government customer is the General Services Administration at $6.6 million. Focusing only on IAC payments by governmental and commercial entities along with direct onsite inspection of impervious surfaces and runoff flows may provide a coherent and fairer environmental charge.[50]

Finally, in the interest of transparency, D.C. Water should make public the total annual revenue received from the IAC payments, the distribution by non-residential payers, and the forecast of IAC revenues, by payer, over the 10-year period for which they are projecting IAC rates. Currently, the financial statements combine the revenue from IAC payments with the water and sewer fees by category of payer. Making this information public, as the IAC rate grows over the course of the Clean Rivers Project, will allow District residents to better understand their share of this environmental charge relative to the share being borne by businesses, the federal and District governments, and other large properties.

VI. Conclusion

The Clean Rivers Project and the health of area waterways may be at risk if financing depends solely on D.C. Water's rate structure. The present approach puts the burden to pay for this project on District residents, businesses, and property owners based on the "polluter pays" principle. Such a financing principle could be risky, judging by the projections of costs through FY 2019. What if rate payers' will or ability to pay fails? Using D.C. Water's projections for water and sewer rates and the IAC (which is dedicated to the project), water bills as a share of income for the lowest-income retail customers will more than double by 2019. Utility payments are the biggest proportionate burden for households at the lowest income levels. Will this project continue through to completion at a cost that can be borne by the District's economic and household base alone?

Further, there is no indication of how much more the IAC and water and sewer rates will have to rise between 2019 and 2025 to complete the long-term control plan and meet the stipulated water quality. Over time, there will be pressure to ease rate increases. Any inability to sustain rate and IAC increases may jeopardize project completion. It may also result in deferred maintenance, or the shrinking, delay, and postponement of other basic improvements.

To minimize these risks to a project that will be of enormous benefit to the capital region, the time has come to ensure that all the beneficiaries pay their fair share. Water, like transportation, is inherently cross-jurisdictional. The entire region benefits from cleaner water and must be part of planning, implementing, and funding the cleanup strategy. The current fragmented efforts do not allow for a match between the scale of the problem and its response.

D.C. Water has no authority outside of its narrow rate utility and it has no state government to protect its interest. It needs help to ensure that all who will benefit from this expensive and lengthy project pay for it. The federal government has contributed, but not enough. Every additional federal dollar for CSO clean-up is a dollar in the pocket of D.C. rate payers. The federal government is far from a disinterested party. It is a major beneficiary of cleaner rivers and has championed a cleaner Chesapeake watershed. It was the historic designer, builder, and operator of the District's combined sewer system, which generates the CSOs. It is also the originator of the mandate to clean them up and a party to the consent decree. Through the Bay cleanup, the EPA has put the entire D.C. region on a pollution diet. Part of that diet limits D.C. Water's nitrogen and sediment allocations for CSOs, providing the scientific evidence that the long-term control plan affects the long-term health of the Chesapeake Bay. As such, every jurisdiction in the region has an interest in ensuring that the long-term control plan is funded securely through its completion.

Not surprisingly, no one wants to pay for something if they do not have to. As noted above, other localities are also facing increased costs from storm water management mandates tied to Chesapeake Bay and other water quality policies, leaving them feeling squeezed. A regional convening organized by the Metropolitan Washington Council of Governments and D.C. Water offers a major opportunity for the federal government, the states of Maryland and Virginia, the District of Columbia, and local jurisdictions to sort out a more rational distribution of costs and payments for the benefits associated with clean water, a public good. There is also the need for greater education about the side effects and benefits of this expensive, long-term cleanup. Finally, greater regional participation in future decisions should be encouraged, as the EPA appears ready to do. Options and technology will change over time. Regional transportation planning groups hammer out similar issues; such an approach can work for clean water issues.

Without an active, involved regional effort, D.C. Water's narrow payment base may be stretched too thin to carry out the Clean Rivers Project and meet its legal requirements. If the long-term control plan lacks affordable, dependable financing through 2025, completion may be threatened, putting improved water quality in the region at risk. No one wants that to happen.

Appendix A. The District Department of the Environment (DDOE)

In 2006, the District created its own Department of the Environment (DDOE), with storm water responsibilities for the two-thirds of the District's area covered by the Separate Sewer System. In managing these separate storm sewers DDOE coordinates the Municipal Separate Storm Sewer System (MS4) permit issued by the federal government for storm water.

DDOE also was mandated to levy a fee into an Enterprise Fund to pay for storm water pollution prevention and remediation, which they did in 2009. Like D.C. Water, DDOE's storm water fee is based on impervious surface area. Today, D.C. Water collects both sets of fees—paid by all D.C. rate payers—remitting the storm water charge back to DDOE. The DDOE fees are directed to their Enterprise Fund, dedicated to supporting D.C.'s compliance with the terms of the MS4 permit, and are segregated from other District and D.C. Water accounts.[51]

The DDOE is also enabled by law to offer discounts and grants to property owners to reduce the physical size of impervious surfaces, promote green roofs, rain gardens, rain barrels, low impact development, and downspout disconnections to reduce the flow of storm water. DDOE posted a new rulemaking in August 2011 for a credit program, but currently they offer no such program. The law also requires D.C. Water to coordinate with DDOE to implement their program, and the D.C. Water Board of Directors is on record that there will be an incentive or credit program for the IAC in the future.[52]

In theory, the more successful the DDOE might be in reducing impervious surfaces in the future (arguably incentives and rebates should make a difference in behavior), the more such concessions would bite into the base of D.C. Water's IAC. While one cannot know yet how significant such an impact might be, the impact on revenues would have to be made up by the ratepayers.

The District would seem to be a small territory to have two sewer and wet weather clean-up operations.[53] While jurisdictional and administrative concerns are not the focus of this paper, issues of DDOE/D.C. Water cooperation, coordination, overlap and redundancies might offer fruitful territory for future work and even eventual consolidation and cost savings. Given the District's history, one assumes this might not be easy. However, time often makes the once-unthinkable even possible. It is useful, perhaps, that D.C. Water's current general manager, George Hawkins, is the former DDOE director.

Appendix B. D.C. Water Rates, Charges & Typical Bills

D.C. Water projects water and sewer rates for ten years for planning purposes. The actual rates are set annually through a public process, and may differ from the projections as a result.[54] As shown in Appendix Table 1, the impervious area charge (IAC), introduced at a monthly fee $1.24 in FY 2009, was $3.45 in FY 2011, and $6.64 in FY 2012, more than quadrupling in four years. D.C. Water projects the IAC to climb to a monthly $28.77 by FY 2019. This represents phenomenal growth—more than 2,000 percent from inception; more than 700 percent from FY 2010; and more than 300 percent from the latest, $6.64, rate. For what began as a small payment, the IAC will now have a noticeable impact on the bills facing D.C. Water's customers.

In the four years since the introduction of the IAC (FY 2009 to FY 2012), the typical monthly water-related bill grew about 13 percent per year. This reflects a combination of water and sewer rates increasing about 9 percent per year, plus substantial growth in the other two smaller charges: a more than quadrupling of the IAC; and an almost doubling of the metering fee.

The utility's board and management in mid-2011 marginally reduced the water and sewer rate increase for the following two years. The D.C. Water portion of the typical customer bill grew almost 11 percent in FY 2010 and more than 18 percent in FY 2011. The reductions lower growth in the typical bill to 10 percent in FY 2012 (from what would have been a 13 percent increase).

D.C. Water projects average annual increases in the water and sewer rate of 6 to 6.5 percent from FY 2013 to FY 2017, and then 4.5 percent for FY 2018, and 3.5 percent for FY 2019. Even so, the D.C. Water portion of the typical residential bill will increase by double digits in FY 2013 (10.6 percent) and in FY 2014 (12.1 percent), driven by a more than doubling of the IAC. In the remaining five years through FY 2019, the annual rate of growth of the IAC is projected to double or triple that of the water and sewer rates, resulting in the typical monthly bill growing almost 8 percent per year.

The annual growth in the average D.C. Water-related bill strongly outstrips forecast inflation and expected growth in taxable income over the coming period. Please see Appendix Table 1 for details.

Appendix B Table 1. D.C. Water's Current Projections for Average Residential Monthly Bills, FY 2009-2019 (based on adopted FY2012 rates)*

													Share of D.C. Water bill		
	FY 09	FY 10	FY 11	FY 12	FY 13f	FY 14f	FY 15f	FY 16f	FY 17f	FY 18f	FY 19f	% change, 09-19	FY 09	FY 12	FY 9
D.C. Water Retail Rates*	37.53	40.94	46.09	48.17	51.31	54.39	57.67	61.41	65.09	68.04	70.45	88	0.92	0.82	0.68
D.C. Water IAC*	1.24	2.20	3.45	6.64	9.73	14.52	17.66	20.33	23.19	25.49	28.77	2,220	0.03	0.11	0.28
D.C. Water Customer Metering Fee*	2.01	2.01	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86		0.05	0.07	0.04
Subtotal Rates & Charges	**40.78**	**45.15**	**53.40**	**58.67**	**64.90**	**72.77**	**79.19**	**85.60**	**92.14**	**97.39**	**103.08**	**153**			
Change $/month from prior year	2.84	4.37	8.25	5.27	6.23	7.87	6.42	6.41	6.54	5.25	5.69				
% Increase in D.C. Water's Portion of Bill		**10.7**	**18.3**	**9.9**	**10.6**	**12.1**	**8.8**	**8.1**	**7.6**	**5.7**	**5.8**				
General Inflation % CY (GDP Price Index)^		0.9	2.1	1.2	1.4	1.6	1.6	1.6	1.6	2.0	2.0				
Growth of D.C. Water bill in excess of inflation		**9.8**	**16.2**	**8.7**	**9.2**	**10.5**	**7.2**	**6.5**	**6.0**	**3.7**	**3.8**				
CY Economic Indicators: % Change Annual															
CBO Real Growth in GDP^	-3.5	3.0	2.3	2.7	3.6	3.6	4.9	4.2	3.3	2.8	2.5				
CBO Taxable Income^^	-3.6	0.0	4.7	3.3	3.0	4.1	6.6	7.2	6.6	5.8	5.2				

** Source: D.C. Water June Retail Rate Committee Actions 6-28-11, "Projected Average Residential Monthly Bill", page 39.*

Other Sources:

^ CBO Budget and Economic Outlook: January 2012. (CY; 2010, 2011 actuals.)

^^ Taxable Income forecasts: supplement to Chapter 4, Budget and Economic Outlook, January 2012 //www.cbo.gov/doc.cfm?index=12699

Actual taxable income growth CY2009 from Table 4.2,CBO Outlook January 2010

Actual taxable income growth CY2010 from Table 4.2, CBO Outlook January 2011

Endnotes

1. Carol O'Cleireacain is a Non-Resident Senior Fellow in the Brookings Metropolitan Policy Program.

2. In the 1890s, President Benjamin Harrison decided extensions into new areas would have separate waste and storm water pipes, while the combined system would remain at the heart of the District.

3. D.C. Appleseed, "A New Day for the Anacostia: A National Model for Urban River Revitalization" (2011).

4. See Carol O'Cleireacain and Alice M. Rivlin, "A Sound Fiscal Footing for the Nation's Capital: A Federal Responsibility" (Washington: Brookings, 2002), which presents a three-pronged argument for a federal payment to the District based on (1) its status as the nation's capital; (2) its lack of a state government; and (3) compensating for a legacy of neglect. See also Carol O'Cleireacain, "The Orphaned Capital: Adopting a Revenue Plan for the District of Columbia" (Washington: Brookings, 1997); and "Bolstering D.C.'s Fragile Fiscal Recovery" (Washington: Brookings, 1998). The District's lack of a state government is relevant in this context, as some states are defending their localities in response to expensive clean-water mandates. For example, Kentucky passed a legislative mandate on the state regulator to look beyond the Environmental Protection Agency's narrow concept of rate burden to the community's economic status, such as poverty and unemployment, when meeting federal clean-water mandates. (KY: HB504) Similar legislation has been tabled in Ohio. The District does not have state sovereignty, so it cannot even raise that flag.

5. D.C. Appleseed and Our Nation's Capital, "Building the Best Capital City in the World" (2008).

6. Congress of the United States, Congressional Budget Office, "Issues and Options in Infrastructure Investment: Federal Capital Spending on Transportation and Water Infrastructure" (May 2008), p.12.

7. Relevant legislation includes the Water Quality Act (1987) and the Wet Weather Water Quality Act (2000).

8. CSO permits from the National Pollutant Discharge Elimination System (NPDES) are managed by the Environmental Protection Agency in conjunction with state environmental agencies. The CWA (1972) created a system of federal grants for municipal sewage treatment plants to help pay for the mandated improvements. The WQA (1987) eliminated them and provided initial capitalization for state revolving loan funds, which offer subsidized loans to local utilities for infrastructure improvements. Today, the funding model for these mandated infrastructure improvements is that users, that is, rate payers, are responsible for repaying these loans and the bond holders who provide the capital.

9. See D.C. Water, "Operating Budgets Revised FY2011|Adopted FY2012, Section 5: Capital Programs" (2012), available at www.dcwater.com/investor_relations/budget_sections/2011/FY_2010-FY_2019_Capital_Program.pdf.

10. See D.C. Water, Operating Budgets Revised FY2011|Adopted FY2012, Section 1: Budget in Brief" (2012), p.11, available at www.dcwater.com/investor_relations/budget_sections/2011/Budget_in_Brief.pdf.

11. The IMA details the understanding between the District and its suburban neighbors that share use of D.C. Water's wastewater treatment capacity. The IMA also prescribes the cost allocation methodology between jurisdictions of projects related to Blue Plains. The contribution to the LTCP was the result of agreement between the chief administrative officers of the jurisdictions.

12. D.C. Water, "Official Statement Public Utility Subordinate Lien Revenue Bonds" (October 20, 2010), p. 77.

13. D.C. Water, "Projected Clean River IAC Charges FY2010-FY2019." In presentation to D.C. Water Retail Rate Committee (June 28, 2011), p. 34., available at www.dcwater.com/news/publications/DCWSR%20Committee%20Material%2006-28-11.pdf

14. D.C. Water, "Official Statement Public Utility Subordinate," p. 63.

15. About $75 will cover water and sewer services and the meter; almost $30 will cover the impervious area charge, according to D.C. Water's projections. See Appendix for detailed annual amounts.

16. Generally, utility spending is measured as a share of household spending, rather than income, because total household spending may exceed pre-tax income for lower-income households. See Janice A. Beecher, "Consumer Expenditures on Utilities in 2009." Research Note (East Lansing: Michigan State University Institute of Public Utilities Regulatory Research and Education, February 2011), available at http://ipu.msu.edu/research/pdfs/IPU%20Expenditures%20on%20Utilities%202009%20%282011%29.pdf (Accessed January 23, 2012).

17. Based on BLS 2005 consumer spending patterns; see Jeff Rexhausen, "The CSO Financial Challenge: Economic Forces and Other Factors." Presentation to the National Association of Clean Water Agencies, April 26, 2007, available at www.nacwa.org/index.php?option=com_content&view=article&id=465%3A2007-cso-workshop-ppt-presentations&catid=18%3Aconference-archive&Itemid=38 (accessed January 23, 2012). See also "Paying for the Rising Cost of Clean: A University Researcher's Perspective." presentation to the National Association of Clean Water Agencies, January 21, 2007, available at www.nacwa.org/index.php?option=com_content&view=article&id=464%3A2007- winter-conference-ppt-presentations&catid=18%3Aconference-archive&Itemid=38 (accessed January 23, 2012).

18. According to Beecher, "Consumer Expenditures" (p.2): "[O]ver time, there is a persistent regressivity in the nature of household spending on utilities; households in the lower income quintiles have seen a more rapid rise in the proportion of expenditures required for utilities." Note that this effect is understated, since the BLS survey method counts as zero any utility payments that are not made directly by the household, which is often the case with water.

19. Jenny Reed, "Who Is Low Income in D.C.?" (Washington: DC Fiscal Policy Institute, 2010). In addition, our examination of household income and tax data indicates that a conservative measure would be that everyone in the bottom quintile ($20,000 in 2009 and estimated to rise to $22,000 by 2019) could qualify as being burdened by these growing D.C. Water payments.

20. In 2009, top household incomes in each quintile were $20,000 for the lowest bracket (in 2011 dollars); $46,000 for the next bracket; just over $79,000 for the next tier; and $140,000 for those in the 80th percentile of earners. If incomes in each quintile grow from 2010 to 2019 as they did from 2002 to 2009, the income of the lowest quintile will increase on average annually by 0.7 percent, while those just above them will increase by 1.3 percent, and those in the middle and top quintiles by about 1.9 percent.

21. The Safe Drinking Water Act requires the Environmental Protection Agency (EPA) to make a finding if their rules are "affordable." [(42 U.S.C. 300g-1(b)(15)(A)]. To determine affordability, EPA adopted a policy that families can afford annual water rates of 2.5 percent of median household income (or $1,000 per household or a quadrupling of water bills). EPA has stated that the purpose of their affordability determination is to "look across all the households in a given size category of systems and determine what is affordable to the typical, or middle of the road household" (*Federal Register*, January 22, 2001, 6975-7066).

22. See D.C. Water, "Operating Budgets Revised FY2011." Unfortunately, the data measure median income of all residents, whether or not they are a paying customer. The 24 percent of customers paying more than 2 percent of "District median income" appears to parse with a highly polarized income distribution in the District (income is concentrated at the low and the high ends). D.C. Water's CAP data would help to identify the most vulnerable, but the District's Dept. of the Environment, which administers the CAP could not provide us detailed information on the participants. D.C. Water should perform a sensitivity analysis to determine the affordable threshold among the low-income population for rates and fees under a variety of economic growth assumptions.

23. Analysis provided by Yvette Downs, Finance and Budget Director, D.C. Water, July 2011.

24. In addition, D.C. Water encourages voluntary contributions to its SPLASH program (Supporting People by Lending a Supporting Hand), which helps in emergencies and is administered by the Greater Washington Urban League. In FY 2010, the contributions totaled just under $100,000. In the past five years, SPLASH has served approximately 200–500 customers annually, with about 300 appearing to be the norm. See D.C. Water, "Operating Budgets Revised FY2011: Rates and Revenue."

25. In FY 2004, CAP was expanded to include tenants in primary residences separately metered. In 2009, the rate discount was deepened. In 2010, it was expanded to include the costs of the PILOT/ROW fees.

26. Figures are published annually in D.C. Water budget books. The fee history from 2001 to 2008 was also included within the FY 2008 public hearing on the expansion of the CAP program.

27. User charges to the federal (and District) governments are the same as those for retail customers. Unfortunately, appropriation lags generate some cash-flow issues, hindering the ability to match up the federal government customer payments with other customers for identical years.

28. D.C. Water, "Consolidated Annual Financial Report FY2010: Statistical Section"

29. Testimony of George S. Hawkins to the Council of the District of Columbia, D.C. Water Oversight Hearings, April 30, 2010.

30. D.C. Water, "Operating Budgets Revised FY2011: Financial Plan" http://www.dcwater.com/investor_relations/budget_sections/2011/FY_2010-FY_2019_Financial_Plan.pdf

31. Kaid Benfield, "Living City Block, Retrofitting a DC Neighborhood to Become an Environmental Model," December 8, 2010, Switchboard, Natural Resources Defense Council Staff Blog, http://switchboard.nrdc.org/blogs/kbenfield/living_city_block_retrofitting.html

32. NACWA has an entire campaign on this issue called "Money Matters." http://www.nacwa.org/images/stories/public/2011-02-24-MM-whitepaper.pdf

33. Pioneering examples include Minneapolis, which requires source controls to treat the first 1.25 inches of rainfall and requires system wide downspout disconnection from its combined sewer system; and, Philadelphia, which requires all new developments greater than 15,000 square feet to manage the first inch of rainfall through infiltration or other techniques that improve water quality and also has a program to convert vacant lots to storm water parks that infiltrate into the ground. Kansas City has a consent decree that includes a designated pilot area in which storm water is controlled by intensive LID installations. Much information on this topic is available online, e.g., www.nyc.gov/html/ planyc2030/ downloads/ pdf/sustainable_stormwater _plan.pdf.; or www.nacwa.org.

34. D.C. Water's consent decree includes elements of "green infrastructure" in the new construction or reconstruction of its own facilities up to a total of $3 million. It has also committed to $1.7 million in storm water pollution

prevention projects and $300,000 for a green roof demonstration project.

35. Letter from George S. Hawkins, General Manager, D.C. Water to the Honorable Lisa P. Jackson, Administrator, U.S. Environmental Protection Agency, August 1, 2011. See http://www.dcwater.com/education/pdfs/LID_Letter_EPA_AdministratorAug2011.pdf

36. U.S. EPA (2011). "Protecting Water Quality with Green Infrastructure in EPA Water Permitting and Enforcement Programs," prepared by Acting Assistant Administrator Nancy Stoner, Office of Water, and Assistant Administrator Cynthia Giles, Office of Enforcement and Compliance Assurance, April 20, 2011. Accessed at http://www.epa.gov/npdes/pubs/gi_memo_protectingwaterquality.pdf.

37. The Anacostia River Projects include building a large tunnel to transport flows to the Blue Plains Plant, rehabilitating the Main, O Street, and Eastside pumping stations, and replacing the Poplar Point pumping station. The Rock Creek Project consists of three different tasks: sewer separation, creating a diversion structure, and building a large tunnel at Piney Branch. The consent decree requires completion by 2025. The Potomac River Project consists of three different tasks: Replacing inflatable dams, rehabilitating the Potomac pumping station, and building the large Potomac Storage Tunnel. The CD requires these tasks to be completed by 2025. See General Manager George Hawkins, "Comments at LID Summit," George Washington University, Marvin Center, March 14, 2011.

38. http://www.dcwater.com/education/pdfs/green_infrastructure_brochure.pdf and http://www.dcwater.com/education/pdfs/LID_Letter_EPA_AdministratorAug2011.pdf

39. Ibid.

40. Blue Plains, the largest consumer of electricity in the District of Columbia, embarked in 2011 on a project to burn methane from its waste treatment to generate enough power to save one-third of its annual electricity costs by 2014. The "digester project" costs about $400 million. It will also reduce solids (and thus trucking and disposal costs) and produce a better class of bio-solids for agricultural use. See D.C. Water, "Operating Budgets/Budget in Brief," p.13.

41. In April 2008, WASA published an independent review to "identify ways for WASA to contain rising rates for D.C. (retail) customers and suburban (wholesale) customers." The report gives high marks to WASA for operations efficiency and notes that "revenue collection…rivals the performance of investor-owned utilities (I-3)." D.C. Water and Sewer Authority, "Independent Comprehensive Budget Review, Final Report, URS Corporation, Amawalk Consulting Group, April 2008.

42. General Manager George Hawkins, "Green Infrastructure Summit 2012," Blue Plains Advanced Wastewater Treatment Plant, February 29, 2012.

43. Chesapeake Bay and Water Resources Policy Committee, "2012 Policy Priorities," available at http://www.mwcog.org/committee/committee/documents.asp?COMMITTEE_ID=39 (accessed December 20, 2011).

44. Metropolitan Washington Council of Governments, "COG Board Stormwater Webinar," October 14, 2011, available at http://www.mwcog.org/0E951FA0-BBBD-44F2-8A9C-DD6D54A4D428/FinalDownload/DownloadId-7D113BFC5365F67BC609B75274490102/0E951FA0-BBBD-44F2-8A9C-DD6D54A4D428/uploads/committee-documents/b11fWI5Y20111014141846.pdf (accessed December 20, 2011).

45. Ibid, and "COG Stormwater Webinar Q&A Final," available at http://www.mwcog.org/committee/committee/documents.asp?COMMITTEE_ID=39 (accessed December 20, 2011).

46. U.S. EPA (2011). "Achieving Water Quality through Integrated Municipal Stormwater and Wastewater Plans," prepared by Acting Assistant Administrator Nancy Stoner, Office of Water, and Assistant Administrator Cynthia Giles, Office of Enforcement and Compliance Assurance, October 27, 2011. Accessed as http://www.epa.gov/npdes/pubs/memointegratedmunicipalplans.pdf

47. For example, Atlanta's bills have tripled since 2003; New York City's have more than doubled since 2002. New York City's water rates increased by double digits in each of the last four years: 11.5 percent in 2008, 14.5 percent in 2009, 12.9 percent in 2010, and 12.9 percent in 2011. Cas Halloway, "Introductory Remarks." Presented at Money Matters Summit, Washington D.C., organized by the National Association of Clean Water Agencies, March 1, 2011. Sewer rates between 2011 and 2012 are expected to rise 9.5 to 15 percent in the Kentucky suburbs of Cincinnati (Northern Kentucky Sanitation District No.1. See Cincinatti.com, "Aged Pipes, EPA Mandates Lead to Higher Sewer Rates" (January 22, 2011). In response, the National Association of Clean Water Agencies (NACWA) and the U.S. Conference of Mayors have offered a number of proposals to the federal government for regulatory adjustments. See, e.g., U.S. Council of Mayors, "Local Government Recommendations to Increase CSO/SSO Flexibility in Achieving Clean Water

Goals" (October 28, 2010), available at www.nacwa.org/images/stories/public/2010-11-09csopo.pdf; or "Trends in Local Government Expenditures on Public Water and Wastewater Services and Infrastructure: Past Present and Future" (February 2010), available at www.usmayors.org/publications/201002-mwc-trends.pdf.

48. http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/FinalBayTMDL/BayTMDLExecutiveSummaryFINAL122910_final.pdf

49. There used to be a pumping charge/fee for large buildings with basements and subbasements that collected water. However, today private contractors handle the drainage and haul the water directly to the treatment plant, bypassing the sewers. The environmental gain appears to have precluded this revenue opportunity.

50. Such work may result in a differentiated rate structure, with certain "business" rate payers or government or other public buildings having a higher rate per equivalent residential unit (ERU), which may well be both more efficient and more equitable.

51. Initially, the GSA of the federal government fought payment of the District's Dept. of the Environment IAC, arguing that because it is not linked to any direct service provision, it is a tax, from which the federal government is exempt. Ultimately, Congress disagreed, and federal law now requires federal agencies to pay such charges throughout the country.

52. http://www.dcwasa.com/customercare/iab.cfm

53. Certainly at play also are District and federal history, politics, and regulatory dominance.

54. D.C. Water's rate forecast assumes an annual 1 percent decline in water usage per person/household; operating revenue grows to cover current costs, meet bond coverage and reserves; and rate-setting policy is for moderate growth at a predictable pace, using the Rate Stabilization Fund (RSF). See D.C. Water, "Operating Budgets Revised / Financial Plan."

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