

Philadelphia Water Department
Stormwater Charge Allocation
Community Advisory Committee

Final Report, Findings,
and
Recommendations

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July 1, 1996

EXECUTIVE SUMMARY

This report presents the findings and recommendations of the Stormwater Charge Allocation Community Advisory Committee (CAC) to the Philadelphia Water Department (PWD), the Mayor's Office, the City Council, and the community at-large.

The stormwater component of PWD's costs has been recovered since 1968 using a schedule of charges based on the size of water meter connection to each PWD customer. This approach has been challenged by intervenors during water and wastewater rate hearings, leading to the City's decision to seek a technically more appropriate methodology for recovery of stormwater costs that would also be politically acceptable to the community.

The CAC was established in June, 1994 to research the issue of stormwater funding and, in particular, to examine the structure of the PWD's user charge rates which allocate the cost of stormwater management across the community. The City's primary objective in forming the CAC was to resolve perceived deficiencies in the existing method of charging for the stormwater component of the PWD sewer charge.

The recommendations contained in this report will, if enacted by the City, introduce a new approach to calculating the stormwater component of the sewer charge for each customer. The amount of revenue collected will not change, only the basis for charges will be modified. The principal conclusion and recommendation resulting from the CAC's discussions is that the stormwater charge should reflect each property's service demands on the PWD's combined stormwater and sanitary sewer systems and separated stormwater systems. To accomplish this, the CAC recommends that stormwater charges be based on two factors, the total (gross) area and the impervious coverage (roofs, paving, walks, etc.) of each property, rather than on the water meter size.

Gross area and impervious area are the most important factors influencing the peak rate, total volume, and pollutant loading of stormwater runoff. By using these parameters to calculate the stormwater user charges to the more than 550,000 properties in Philadelphia, the assessment of stormwater user charges across the city would more closely approximate the cost of providing stormwater services and facilities.

The recommended approach fully satisfies the City's objective of identifying a more rational stormwater user charge rate structure. Some properties would pay more under the new approach, some less. However, regardless of the impact on individual PWD accounts, the equity of the cost allocation would be enhanced by the change to a user charge rate structure more closely associated with cost causation.

The CAC followed a well defined and logical process of policy consideration and policy statement development. Each policy statement was developed by consensus among the CAC and reflect the agreement of all parties. The process of the CAC's deliberations is explained in this report as well as its conclusions. The process clearly demonstrates the thoroughness of the CAC's investigation and discussions.

Philadelphia Water Department Stormwater Charge Allocation

Community Advisory Committee

Final Report, Findings, and Recommendations

Purpose

This report presents the findings and recommendations of the Stormwater Charge Allocation Community Advisory Committee (CAC) to the Philadelphia Water Department (PWD), the Mayor's Office, the City Council, and the community at-large.

To assist in understanding the technical terms in this report a glossary of terms is included in Appendix 7 to this report.

Historical Background

Stormwater management has been a recognized component of the PWD's cost of sewer services and facilities since 1968 when responsibility for inlet cleaning passed to PWD. Prior to 1968 stormwater costs were borne by the City's General Fund. Since then they have been borne by the PWD's sewer fund, with user charges for the stormwater component calculated on the basis of water meter connection size.

In the 1980's a challenge was mounted during water and wastewater rate hearings taking issue with this approach. The PWD decided that reconsideration of the rate methodology was needed. It was determined that a community advisory committee could offer valuable insights and guidance in assessing the acceptability of funding and rate options.

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The stormwater component of PWD's costs has been recovered since 1968 using a schedule of charges based on the size of water meter connection to each PWD customer. This approach has been challenged by intervenors during water and wastewater rate hearings, leading to the City's decision to seek a technically more appropriate methodology for recovery of stormwater costs that would also be politically acceptable to the community.

CAC Composition and Format for Meetings

The PWD sought representation from a broad cross-section of interests in Philadelphia that have a stake in decisions on stormwater funding and particularly the design of user charge rates. A complete list of those contacted for participation is available from PWD.

PWD and City staff representatives also served as members of the committee and contributed professional and technical perspectives that proved valuable to the citizen and business members. The PWD provided staff support for the CAC, including scheduling and logistics of the meetings and distribution of materials.

The CAC represents a broad cross-section of interests in Philadelphia that have a stake in decisions on stormwater funding

The CAC met on twenty occasions over a twenty-four month period. Each meeting was in the early evening and of two hours duration. Each session followed a set agenda. Minutes of the meetings were kept, and are available upon request from the PWD. Those who participated through the conclusion of the project were:

Rob Dubow; Budget Office	City Finance Department
Barbara Flowers; Allied Signal	Large Lot Industrial
Bob Haines; Friends of Pennypack	Water Resource Protection
Leon Johnston; Citizens Utility Board	Citizens Advocacy Group
(Janet Althouse - Alternate)	
Dean Kaplan; Deputy Commissioner	PWD
(Bernie Brunwasser - Alternate)	
Paul Kleindorfer; Wharton School	Technical Resource
Jack Kramer; Catering Service	Small Business
Rita Lederer; Kensington South NAC	Neighborhood Group
Wayne Lee; Jackson Cross	Building Owners/Managers
Daniel Linker	Water-only Customer
Hydie Miller; Research	Philadelphia City Council
Mathew Trzepacz; SEPTA	Transportation Sector
Joseph Van Sciver	Large Lot Residential
Lou Visco; U of Pennsylvania	Large Non-profit Institution
(Richard Cipollone - Alternate)	
Ross Wilson; Parkway Corp.	Parking Garages and Lots
(Jake Winigrad - Alternate)	

Those participating on a more limited bases were:

Joe Barberio, Action Alliance of Senior Citizens	senior centers, groups
Andre Dasent, Esq.	technical resource
Heshimu Jaramongi, Haddington Dev. Corp.	community group
Joel Kurihara, Conrail	transportation
John Rania, S. Phil. Civic Assoc.	community group
Annette Thomas, Wister NAC	community group
Advisory Member: Steve Hershey	Community Legal Services

CAC Protocol and Procedures

The Water Department planned to have an assisted negotiation with all affected parties. This approach, which retained the services of a trained professional mediator, was used to remove PWD from control of the discussions. The firm of PennACCORD, a project of the Pennsylvania Environmental Council, was employed to: identify potential participants, convene the group, facilitate the meetings and mediate differences.

The organizational meeting of the CAC was convened on June 27, 1994. The first order of business was to draft a set of protocols and processes whereby the CAC would address its charge. Topics included consensus decision-making, implementation, purpose and parameters, members and alternates, attendance, the conduct of the meetings, and confidentiality and media contacts. Discussion ground rules were spelled out.

The first few meetings focused on discussions of the CAC participants' varied perspectives on stormwater charges and stormwater operations. Meetings during the summer and autumn of 1994 focused on information gathering and broadly ranging discussions of the local situation, practices in other communities, and the perspectives of the individuals and interest groups represented on the CAC.

The CAC decided to use the PWD rate consultant, Black & Veatch, as a consultant to provide information on the PWD cost and rate practices, taking advantage of that firm's lengthy involvement and familiarity with the PWD's current approach.

Brainstorming brought forth discussions of a variety of topics, such as identifying users of the stormwater systems, the importance of impervious area in stormwater runoff, proportionality of charges, affordability, and exemption of classes of properties serving the public good. Activities and presentations included:

- The PWD staff provided a slide presentation explaining how the stormwater systems work and the impacts that stormwater has on conveyance system capacity, treatment plants, and receiving waters.

- The PWD staff explained the pollution problems caused by trash, oil, and chemicals carried in the stormwater and the existence of state and federal mandates.
- The CAC discussed how other cities charge for stormwater management, how property characteristics affect equitable allocation of stormwater costs, and how exemptions, impervious area, and detention basins might be accounted for in charge allocations.
- Black & Veatch presented slides and explained how the PWD charges for stormwater management are currently calculated.
- The status of the City's existing property database and its applicability to stormwater cost allocation and user charge needs was discussed.
- The potential for using a geographical information system (GIS) to generate the necessary impervious area, gross area, and other information that might be used for a new stormwater charge methodology was discussed.
- Black & Veatch also presented information to the CAC on stormwater rate development, the current status of the stormwater charge and other related issues.

The CAC determined that it wished to secure the involvement of a second consultant to review Black & Veatch information and recommendations along with the CAC. It was agreed that PWD would pay for a second consultant of the CAC's choosing. An independent consultant team (Ogden Environmental and Energy Services Co., Inc./Water Resource Associates, Inc.) was selected by the CAC to assist it in assessing the information provided by the PWD and Black & Veatch, identifying issues and options, and attaining closure on recommendations that could be forwarded to the PWD, the Mayor's Office, and City Council, and the community. The Ogden team worked with PWD staff and Black & Veatch throughout the remainder of the project to serve the CAC's information and analysis needs.

Policy Resolution Process

The addition of the Ogden team to act as the CAC's consultant introduced a different approach to identifying and resolving the key issues related to the allocation of stormwater costs. The approach proposed by the Ogden team emphasized a "policy resolution" process for identifying, discussing, and reaching closure on a series of issues associated with the allocation of stormwater costs and the development of user charges to recover the costs.

The policy resolution process featured three steps.

- First a policy paper was drafted and

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distributed to the CAC for review.

- Second, the policy issue was discussed at a CAC meeting and guidance provided. Consensus was reached on each policy issue.
- Finally, a policy statement was drafted, distributed to the CAC for review and comment, and finalized.

This approach provided a well-defined process, thorough documentation of the discussions, and a reporting mechanism in the form of the policy statements. The policy statements developed by consensus through the CAC's discussions and deliberations make up the recommendations contained in this report.

The policy resolution process was undertaken in thirteen CAC meetings from April, 1995 to June, 1996. A logical sequence of issues was identified. The policy issues addressed by the CAC include the following.

1. Program Mission
2. Program Strategy and Priorities
3. Annual Revenue Requirements
4. Utility Approach to Funding
5. Combined Sewer Area and Separate Sewer Area Distinctions
6. Distribution of Costs through User Charges
7. Rate Methodologies
8. Rate Methodology Modifying Factors and Secondary Funding Methods
9. User Charge Credits
10. User Charge Appeals and Adjustments

The policies had to be workable within the containment of certain *givens* under which the CAC operated and *objective criteria* defined by the committee members to test the group's conclusions and recommendations.

The foundation for the policies consists of the program mission, existing functions and priorities, and future program costs, all of which were defined for the CAC at the outset of its deliberations. A basic groundrule was that stormwater costs would continue to be billed and collected

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as part of the water/sewer user charge. Other givens included maintaining the revenue requirement of \$75 million annually for at least three to five years, revenue neutrality, continued use of user fees rather than general taxes to pay for stormwater management, and the requirement that stormwater management remain a function of the PWD.

The objective criteria are the CAC's own standards for stormwater cost allocation and charges which the committee wished to achieve through its discussions. They determined that the charge should:

- be clear and understandable;
- promote stormwater revenue stability;
- reflect what has been learned from other places;
- promote good stormwater management behavior;
- not harm the City (residents or businesses);
- be efficient;
- be cost effective;
- be revenue neutral;
- be equitable and fair; and
- promote good stewardship of both financial and environmental resources.

Schedule and Other Activities

Additional studies were conducted concerning, (1) the potential impact of CAC recommendations on various categories of stormwater customers and (2) how the new rates should be best communicated to various stakeholders, political leaders and the general public.

The first report concluded that there were six categories of ratepayers which should be addressed by outreach and educational activities. Informing and educating the Stakeholders, in a concise and targeted manner, should facilitate understanding and acceptance of the new allocation and rate methodology. Each category was characterized in terms of the message or approach used to communicate the new rate methodology with them.

- I. Residential Landowners
Promote the positive impact upon residential users whose rates will decrease.
- II. Small Landowners
Organizations within the City, including the Mayor's Business Action Team, the Philadelphia Chamber of Commerce and numerous business associations, can be accessed to reach this group of business owners in a comprehensive manner.
- III. Large Landowners with Large Meters
Certain of the landowners can be addressed on a case-by-case basis depending upon the particular property user.
- IV. Large Landowners with Small or No Meters
Those classifications of landowners with no meters can also be addressed on a case-by-case basis by classification.
- V. Non-Profit and Charitable Organizations
These organizations are not too numerous. They may be addressed as they raise questions and concerns.
- VI. City of Philadelphia
Outreach must include the Mayor's office, MBAT, City Council on an individual basis providing information and being prepared to provide more detailed information as requested.

All outreach programs must focus on the policy statement methodology implemented by the CAC and the overriding rationale of enhanced fairness and equitability.

The second study concentrated on the outreach activities and the appropriate messages and methods of message delivery. This study identified five phases of public education and outreach which would match the activities conducted by PWD to pass an ordinance, develop the billing database, and send out the first modified bill.

The schedule table below presents an overview of the anticipated schedule for developing the billing database and sending out the bill over a three-step phased in process spanning three years. This three-step process will enable those customers receiving large increases in their stormwater charges under the new methodology, or those receiving a stormwater bill for the first time, to adjust to the new stormwater charges. The public education and outreach phases are shown at the bottom of the table.

Task	96		97		98		99		00		01		02
Create Digital Map	■	■	■	■									
Create New Parcel Maps	■	■	■	■									
Link Maps Geographically			■	■	■								
Upgrade Mainframe Bill. Sys.	■	■	■	■	■	■							
Create Master Billing File					■	■							
Teat File						■	■						
Training and Dry Runs						■	■	■					
Send Bills (three steps)								■	■	■	■	■	■
PR Phase I	■	■											
PR Phase II		*											
PR Phase III			■	■	■	■	■	■					
PR Phase IV								*					
PR Phase V									■	■	■	■	■

The public outreach and education phases are:

I. Pre-legislation Submission

Preparation for passing an ordinance. Activities include:

- training PWD management and staff
- coordinating with the Administration
- building informed political allies

II. Ordinance to Clarify Standards and City Code re: PWD Responsibility for the Management of and Charging for Stormwater Service

An event campaign with the following characteristics:

- meeting with key leaders
- preparing spokespeople
- developing a "reactive capability" to public debate

III. Public Education Prior to Sending Out Bill

The outreach during this period will include:

- reaching all water and sewer customers
- "pampering" new stormwater customers
- partnering with facilitators trusted within the community

IV. Billing Begins

Activities will include much of the foregoing but in a "digested" version.

V. On-going Maintenance of Public Education

This phase will include separate activities for each of the next three to four billing periods to explain the stormwater rate changes and the three-year phasing of the new rates.

Policy Recommendations

The following is a list of policy statements. Each of these statements was arrived at during the three-step consensus building process through the CAC.

Policy Statement 1:

Program Mission

It is recommended that the *mission of the stormwater management program*, administered by the PWD, be to safeguard public health and safety, comply with the mandated provisions of the Clean Water Act, prevent damage to public and private property, and protect the City's water resources from environmental degradation in the most cost-effective manner. One of the "givens" in the CAC process was that stormwater management responsibility would be retained by the PWD.

To further this mission, it is recommended that the PWD plan, develop, implement, and adequately and equitably fund a comprehensive stormwater program that addresses the effects of both stormwater quantity and stormwater quality. This recommendation is consistent with the PWD's overall water resource management mission.

**Policy Statement 2:
Program Strategy and Priorities**

The PWD's *strategy for managing stormwater is part of a larger water resource strategy.* That strategy guides programs that construct, maintain, and regulate a diverse system of water supply, combined sanitary/stormwater sewers and treatment plants, and, in some areas of the City, separate sanitary and stormwater systems. The stormwater management program strategy and priorities must be capable of operational and capital investment integration with the overall PWD water resource management strategy.

A "given" governing the CAC's scope of investigation is that the strategy of the current PWD stormwater management strategy will include the following:

- maintain the existing combined and separate sewer systems and related program activities;
- construct improvements; and
- improve operations to solve the most pressing stormwater flooding and combined sewer overflow problems as quickly as practical.

The PWD's traditional strategy for controlling sanitary sewage pollution has been to collect wastewater and treat it prior to discharge to receiving waters in large complex facilities. In areas served by combined sewers the systems also collect and treat stormwater. Practical capacity limitations result in combined sewer overflows during intense storms when large amounts of stormwater enter the sewer systems.

The PWD's strategy for reduced combined sewer overflows has been to optimize the functionality of the existing systems. In areas served by separate sanitary and stormwater systems the PWD's strategy has been to collect and convey stormwater to receiving waters, primarily through storm sewers, without treatment. It has focused on flood prevention rather than water quality management.

It is expected that the current stormwater quantity control strategy will be continued and will be augmented by a stormwater quality strategy in compliance with the conditions of a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges, which will incorporate the operational, monitoring, and regulatory activities mandated by the permit into the PWD program.

The following program priorities are recommended to implement this strategy:

- continue to make substantial reinvestment in the systems through repair and renewal of aging components and additions as needed;
- perform routine and remedial maintenance;

- implement the NPDES stormwater quality program;
- achieve a transition in the method of allocating costs associated with and charges for stormwater ;
- • identify and institute technological innovations which enhance the efficiency and effectiveness of the program; and
- adjust the organizational structure and management practices and systems as necessary to improve the program.

Policy Statement 3: Financial Requirements

A large portion of Philadelphia's stormwater system is a combined wastewater and stormwater collection system conveying both sanitary wastewater and stormwater runoff to the City's three wastewater plants for treatment. However, portions of the northwest and northeast areas of the City have separate wastewater and stormwater systems. These two systems pose differing financial and well as physical demands.

Among the "givens" influencing the CAC's scope of investigation are several that bear specifically on financial requirements. *The annual capital and operating costs of providing stormwater management presently total \$75 million.* This includes annual capital cost of \$53.4 million, primarily for principal and interest on outstanding debt and annual cash financed capital additions and replacements. Annual operation and maintenance expenses amounting to \$21.6 million are incurred in the conveyance and treatment of stormwater and in cleaning and maintaining stormwater inlets in City streets.

It is also a given that the stormwater management revenue recovery objective will remain at \$75 million for the foreseeable future. Any change to the stormwater charge must be revenue neutral. Stormwater responsibility is to remain within PWD and will continue to be funded as a component of the PWD enterprise (utility). In support of these givens, it is recommended that the PWD continue to pursue and investigate cost-effective measures in operating, maintaining, and replacing its stormwater systems facilities.

Policy Statement 4: Funding Philosophy

Utility Approach

Another "given" in the CAC's scope of investigation is that *stormwater management responsibility will remain within PWD and will continue to be funded as a component of the PWD enterprise (utility).* The CAC accepts this given and recommends that the PWD stormwater management program be managed, funded, and accounted for as a utility.

Service, Benefit, and/or Demand on the System

The long-term cost of stormwater services and facilities in Philadelphia is primarily a function of peak demand (system capacity), and to a lesser degree stormwater quality control. In light

of the courts' historically broad perspective of the philosophy supporting municipal user charges in general and the latitude allowed to local elected officials in funding enterprise utilities, *it is recommended that the City adopt a funding philosophy and a rate methodology that reflects "cost of service principles" associated with capacity demands and treatment of stormwater to meet water quality objectives.*

It is recommended that the stormwater charge methodology should recognize that, while there may be standard categories of ratepayers, there is also room for rate adjustments for special classifications of ratepayers or for other special cases, and that these adjustments may be handled through the stormwater rate structure or through secondary funding methods or rate modification factors.

**Policy Statement 5:
Distribution of Costs through User Charges**

It is recommended that the current policy of not distributing costs on the basis of whether property is located in a combined or separate sewer area be retained in designing and applying any new or amended stormwater charge methodology to recover the stormwater management component of the PWD costs of service. The following are cited as primary reasons for this recommended policy.

- The PWD has historically employed uniform charges for its services regardless of property location.
- No location advantage is created for investment if location is not incorporated in the cost allocation process, so stormwater charges will not steer investment to the combined or separate sewer area.
- Less data is required for rate calculations if location is not incorporated in the cost allocation process or in the resulting charges, and implementation and upkeep costs are therefore also less.
- Most low-income areas are served by combined sewer systems, which have a higher average cost of service.
- Consistent charges regardless of location are simple and easy to explain to the public.
- Water quality in receiving water is enhanced by treatment of stormwater in the combined sewer system. In a broad sense that is a general service to the entire community, not just to the properties in the combined sewer service area.

**Policy Statement 6:
Stormwater Charge Methodology**

The following stormwater charge methodology is recommended.

- *The stormwater charge should have two components: 1) a fixed charge on each account to recover those costs which are similar for all accounts; and 2) a variable charge based on the number of "equivalent units" determined to be present on the property to recover costs which are not similar for all*

accounts. The variable charge should be set so as to recover the \$75 million revenue requirement specified to the CAC as a "given". The costs to be recovered by the fixed charge are not currently included in the \$75 million revenue requirement, and will need to be determined. These are costs that are currently being recovered through other water and wastewater charges and they are estimated to amount to be between \$3.75 million and \$ 11.25 million.

- *The equivalent unit (variable) portion of the charge should incorporate both impervious area and gross area in the calculation because those two factors directly influence the cost of stormwater services and facilities.*

* [

- One thousand (1,000) square foot equivalent units are recommended, so that the number of equivalent units on each property can be determined by dividing the impervious area and the gross area of the property by 1,000.

*]

- *Eighty (80) percent of the cost of service applicable to the equivalent unit (variable) portion of the stormwater charge should be allocated to the impervious area parameter and twenty (20) percent of the cost of service applicable to the equivalent unit (variable) portion of the stormwater charge should be allocated to the gross area parameter.*

Policy Statement 7:

Stormwater Charge Methodology Modifying Factors

It is recommended that the basic stormwater charge methodology be modified in the following ways to enhance equity and reduce the cost of implementation and upkeep of the master account files and billing systems.

A simplified schedule of charges should be applied to single-family residential properties. The schedule of charges should reflect the housing stock in Philadelphia. *Three categories of single-family residential properties are recommended* based on a sample of residential properties assembled by the CAC's consultants: 1) row houses; 2) twins; and 3) detached single-family residences.

The stormwater charge applicable to each class of single-family residential property should be based on the impervious area/gross area equivalent unit approach, with the average condition for each class being determined by sampling the universe of residential properties in Philadelphia. Residential properties should be assigned to the appropriate class based on data contained in City's property assessment, utility billing, and other files.

Other funding methods which might augment the stormwater charge were discussed by the CAC. None of the other funding methods were deemed preferable to the stormwater charge generally or in specific applications.

The CAC also recommends that the new rates be phased in to mitigate the impacts of rate increases to certain properties. The CAC recommends a three-year phase in period with the rates changing from the current rates to the newly calculated rates in three equal steps.

**Policy Statement 8:
Public Streets, Public Parks, and Other Public Properties**

It is recommended that the stormwater charge be applied to public properties generally, but consistent with existing practice public streets and the Fairmount Park System are to be exempted from the stormwater charge. The following reasons are cited to support the recommended exemptions.

- One equity objective of the stormwater charge is to place the costs of service on ratepayers rather than general taxpayers. Since the City's streets and large parks are funded primarily from general taxes, applying the PWD stormwater charge to streets would effectively shift stormwater costs to taxpayers instead of placing them on stormwater ratepayers. Thus, it is more equitable to exempt the streets and large public parks from the stormwater charge than to apply it to them.
- The public street system is designed to be part of the stormwater conveyance system and therefore should not be charged.
- The City does not have sufficient revenue to absorb a stormwater charge on the public streets and large public parks, and would have to reduce other important services.
- The vast majority of other cities surveyed have excluded streets from their stormwater charge.
- Some properties which are part of the Fairmount Park System should be evaluated on a case-by-case basis for application of the stormwater charge based on their actual impervious area, such as golf clubhouses, park mansions, stables, tennis courts, and other recreational facilities.

* **Policy Statement 9:
Stormwater Charge Credits**

It is recommended that credits against stormwater user charges be provided for in the rate methodology to account for situations where on-site stormwater control facilities and activities performed by property owners and managers result in mitigation of peak flow, total volume, and pollutant loadings. Two specific types of credits are recommended when changes are instituted in the stormwater charge methodology: 1) a credit for properties subject to and in compliance with National Pollutant Discharge Elimination System (NPDES) permits; and 2) credits for non-residential on-site detention facilities that reduce peak runoff rates.

A maximum credit of seven (7) percent is recommended for properties obtaining and remaining in compliance with an NPDES permit covering stormwater discharges.

A maximum credit of fifty (50) percent is recommended for on-site non-residential detention systems which meet the PWD's design standards and are maintained in proper operating condition.

These percentages represent the approximate mid-point of the range of potential program cost reductions achievable by the activities for which the individual properties would obtain credit.

The concept of a locational credit for properties situated along the riverfronts was discussed and rejected by the CAC because it would be inconsistent with the previously adopted Policy # 5 (Distribution of Costs through User Charges). That policy recommends that no distinction should be drawn between the combined sewer area and the separate sewer area, which was basically a decision not to favor ratepayers based on their location in the city. *The CAC recommends that a policy of "no credit, no surcharge" associated with geographical location should be adopted.*

**Policy Statement 10:
Appeals and Adjustment Processes**

It is recommended that a formal process be provided for PWD stormwater charge appeals and adjustments. *The current PWD policy for appeals and adjustments meets the fundamental standards* of providing a clear, hierarchical process for elevating appeals and provides standards for evaluating and determining appropriate adjustments in response to customer appeals of water and wastewater charges, including the current stormwater component. It is recommended that the existing appeal and adjustment process be amended as necessary and applied to stormwater charges under the recommended stormwater charge methodology based on impervious area and gross area.

Appendices

1. Stormwater Charge Allocation Project Description
2. Stormwater Charge Allocation Community Advisory Committee: Mission and Purpose
3. Stormwater Charge Allocation Community Advisory Committee: Meeting Groundrules
4. Stormwater Charge Allocation Community Advisory Committee: Protocols and Procedures
5. The Levels of Consensus
6. Policy Papers 1- 10
7. Glossary of Terms

APPENDIX 1

STORMWATER CHARGE ALLOCATION PROJECT DESCRIPTION

STORMWATER CHARGE ALLOCATION PROJECT

The Mayor's campaign position paper on the utilities called for reforming the manner in which the Water Department charges for stormwater collection, conveyance and treatment. This call was reflected in the Commissioner's decision in the rate case, which specifically directs the Department to evaluate the reallocation of stormwater costs.

In some jurisdictions, stormwater costs are recouped from the general tax base. Recently, however, some areas have created stormwater utility districts, either within or separate from municipal wastewater utilities. In Philadelphia, the responsibility for stormwater was transferred from the Streets Department to the Water Department in 1968, and since that time stormwater costs have been recouped from water/sewer bills. Stormwater collection is expensive because it requires enormous temporary capacity to absorb periodic storm flows (some combined and sanitary storm sewers are 22 feet wide). In addition, the federal government is in the midst of a dramatic increase in regulation of stormwater which may impose additional stormwater conveyance and treatment costs on Philadelphians in the future.

Currently, stormwater costs in Philadelphia are allocated using the "equivalent meters" method. This approach uses the customer's meter size as a proxy for the stormwater burden the customer puts on the system. The equivalent meters method is approved by the American Water Works Association and is widely accepted by utility experts. However, the approach has been criticized by some who argue that there is little similarity in the stormwater burden by a rowhouse and a home with half acre of land, both of which are likely to have the City's standard 5/8" meter.

To further complicate the situation, parking lots and vacant lots with potentially significant runoff have no water service, and thus are charged nothing for stormwater service. Other contributors like the state (highways) are only partially charged. Finally, a few years ago the Law Department settled a case brought by the small group of City residents who have on-lot septage and receive only water service from the City, which exempts them from stormwater and sewage charges. The exemption of the parking lots has particularly raised the ire of some critics. Consumer advocates have also repeatedly suggested that the tens of millions of dollars in stormwater costs be borne by the General Fund.

For some time, the Water Department has explored other potential allocation methods most of which involve site-specific information and data-base capabilities that the City has historically lacked. Most of these approaches attempt to establish charges based on lot size and permeability. In the past, the Water Department database has been found to be significantly incompatible with City records on lot size. Calculating permeability might require expensive infrared aerial surveys.

In addition, some believe that reallocating the stormwater charge won't change much. For example, the property on a half-acre of land is physically larger, but the unpaved portions absorb much stormwater runoff. Moreover, many such properties are served by separate stormwater systems, which relatively inexpensively transport the runoff to local creeks or

rivers. The rowhouse, in contrast, may be 100 percent paved, and the stormwater discharge in that part of the City is routed to a combined sewer system, which means that at least part of it receives expensive treatment at the City's wastewater treatment plants.

To address this situation, the Water Department plans an assisted negotiation with all affected parties. This approach, which employs the assistance of a trained professional mediator, has worked well in other environmental and utility rate-related matters nationally. Stormwater cost allocation is an appropriate area to experiment with this methodology to test its possible application in a variety of other areas, where the requirements of utility operation have been at odds with priorities of some stakeholders.

The Water Department proposes to retain an experienced environmental mediation firm (PennAccord, a project of the Pennsylvania Environmental Council) to identify potential participants, convene the group, facilitate the meetings and mediate differences. The Water Department cannot perform these functions because some interested parties may not view the Department as neutral in this matter. However, the Department would provide technical support internally and through new or existing contracts. PennAccord would recruit a representative group (consumer advocates, large site industrial users, parking lot owner, environmentalists, etc.). The two basic groundrules for participating groups and individuals would be:

- 1) stormwater costs will continue to be billed and collected in the water/sewer ratebase
- 2) The group will focus solely on the sufficiently complex issue of allocation of stormwater costs, and leave the appropriate level of costs for the next rate proceeding

The group would be charged with coming up with a fair allocation system that would be supported by the constituencies represented by the parties at the table. For its part, the Water Department would agree to accept the group's final recommendation (within the constraints of law), and to work with City Council for any changes that might be necessary to implement it. The costs of administering a new stormwater allocation would not be capped at the outset since the group will have reason to limit implementation costs, and any reasonable cost which has the support of affected parties should be acceptable to the Water Department.

APPENDIX 2

**STORMWATER CHARGE ALLOCATION
COMMUNITY ADVISORY COMMITTEE**

Mission and Purpose

STORMWATER CHARGE ALLOCATION COMMUNITY ADVISORY COMMITTEE

Mission and Purpose

You have been chosen as a member of the Stormwater Charge Allocation Community Advisory Committee (CAC), which has been asked to determine if there is a fairer way for the Philadelphia Water Department to charge its customers for the removal, treatment and disposal of stormwater.

The CAC was formed earlier this year in response to the Water Commissioners' Rate Determination of 1993, stating that the Water Department should "evaluate whether a future reallocation of stormwater costs is appropriate..." Since a reallocation would affect everyone in Philadelphia, the Department believed that a committee should be formed, representing all interested parties in the city, to evaluate how to equitably recover the significant costs of removing stormwater from properties.

As a member of the CAC, your first role is to review how and why the Department charges its customers for stormwater costs today. Then, with the help of an expert, you will review information on other ways to distribute costs and charges for this same service. The CAC will consider questions such as:

- Should stormwater costs be based on the size of the property?
- Should charges be based on both size and property characteristics (paved area vs. grass area)?
- How should the cost for public land (e.g., parks, streets) be allocated?
- Should owners pay for stormwater if they have no water service?

The final step will hopefully be reaching a consensus on a stormwater cost allocation system that is equitable and implementable. We expect this to take many months.

It is important that the CAC focus on the reallocation of stormwater costs if it is to complete its job in a timely manner. For this reason, questions that do not deal with the reallocation of costs cannot be addressed by this committee. For example, the CAC will *not* be looking at questions that deal with maintenance of the stormwater collection system (e.g., drain cleaning), service issues (e.g., frequency of meter readings), current bills and charges (e.g., why all senior citizens don't get the discount), etc.

These kinds of questions are important ones, and while the CAC cannot deal with them, the Water Department can. If you find you have some of these questions, please contact the Department before or after the regular CAC meetings and Department personnel will answer them for you.

**STORMWATER CHARGE ALLOCATION
COMMUNITY ADVISORY COMMITTEE
FINAL MEMBERSHIP LIST - JULY 26, 1995**

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senior centers/organ
community groups

ESTELLE TURNER, Alternate
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technical resource

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City of Philadelphia

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large lot industrial

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water resources protect.

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neighborhood group

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small business

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RITA LEDERER
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427-3463

neighborhood group

WAYNE LEE
Vice President, Jackson Cross
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Philadelphia, PA 19103-2217
568-4353, Fax 568-6936

building owners/managers

DANIEL LINKER
711 Georges Road
Philadelphia, PA 19119
247-6365

on-site septic/water only

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City Council Technical Staff
Room 564, City Hall
Philadelphia, PA 19107
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City of Philadelphia

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SEPTA - Chief Engineer
200 West Wyoming Street
Philadelphia, PA 19140
580-4200

transportation sector

JOSEPH VAN SCIVER
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Philadelphia, PA 19118
248-1138

large property residential
on-site septic

LOU VISCO
Director of Maintenance and Utilities
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large non-profit
institution

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ROSS WILSON, V.P. Real Estate
Parkway Corporation
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parking garages/lots

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POLICY PAPER 1

STORMWATER MANAGEMENT PROGRAM MISSION

Issue Description

The most fundamental consideration of any public or private enterprise is its mission, or simply why it exists. A concise stormwater management program mission policy clearly describes its purpose. The mission guides elected and appointed officials and staff in determining, directing, and managing the program's evolution. In concert with other policies, the program mission influences the level of funding that is required and how costs should be allocated through one or more methods of funding.

Background Information and Analysis

The Philadelphia Water Department's stormwater management program addresses both the quantity and quality of stormwater runoff and its effects. It encompasses both separate urban storm drainage systems and the City's combined sanitary/storm sewerage facilities. Also, the mission of the stormwater program is associated with flood protection along major water courses and receiving waters.

In approximately 40 percent of Philadelphia, stormwater flows into, through, and is discharged from separate storm sewers to receiving waters. In the remaining 60 percent of the City, combined sewers carry both sanitary wastewater and, during and following storm events, stormwater runoff. Stormwater entering the combined sewer systems impacts both the conveyance and treatment plant components. A majority of the flow capacity provided in the combined sewers and the operating practices of treatment facilities are predicated on the demands of stormwater entering the systems.

The mission statement should reflect the breadth of the existing program and likely future changes in its role. In particular, the program will be influenced by the stormwater quality management plan agreed to through the draft National Pollutant Discharge Elimination System (NPDES) permit recently issued to the City of Philadelphia through the Water Department.

Recommendations

It is recommended that the City of Philadelphia adopt the following stormwater management program mission statement as policy:

The mission of the City of Philadelphia's stormwater management program administered by the Philadelphia Water Department (PWD), is to safeguard public

health and safety, prevent damage to public and private property and protect the City's water resources from environmental degradation in the most cost-effective manner.

- To further this mission, the PWD will plan, develop, implement, and adequately and equitably fund a comprehensive stormwater program that addresses the effects of both stormwater quantity and stormwater quality.
- The program will include the construction, acquisition, replacement, regulation, operation, repair, and maintenance of stormwater drainage systems that:
 - 1) safely and efficiently control runoff
 - 2) protect lives and property
 - 3) function effectively in concert with the City's sanitary sewage conveyance system and treatment facilities
 - 4) complement and support other Water Department and City programs and priorities and those of other governments and agencies, individuals and businesses
 - 5) facilitate mobility throughout the City and ensure citizens', employees', and visitors' safety and convenient access to homes, businesses, and other venues
 - 6) eliminate or remove to the maximum extent practicable the discharge of pollutants to receiving waters
 - 7) enhance the City's natural resources

POLICY PAPER 2

PROGRAM STRATEGY AND PRIORITIES

Issue Description

This policy paper addresses the relationship between service charge rates (and the resulting cost allocation that occurs) and the City's stormwater management strategy and priorities. The charge given to the Advisory Committee is limited to examining stormwater cost allocation opportunities. The PWD's stormwater management strategy and priorities are among the "givens" in their deliberations. Detailed information about the program has previously been presented by the PWD staff and the Department's consultants, Black & Veatch.

This policy issue paper provides brief background information and concisely states the PWD's overall stormwater management strategy and priorities that should guide the Advisory Committee's cost allocation discussions. It provides: 1) a reference point for the Advisory Committee; and 2) documentation of the linkage between the City's program strategy, priorities, costs, and their allocation through service charge rates and (possibly) other funding mechanisms.

Background Information and Analysis

The PWD has been the lead agency for the City's stormwater management efforts for more than twenty five years. Since 1970, PWD water/sewer service charges have funded most stormwater related activities and improvements. However, the service charge rate methodology has been oriented largely to the water supply and wastewater management programs, with the stormwater program strategy, priorities, and costs being secondary considerations.

The PWD's stormwater program strategy and priorities have not been key independent factors in designing service charge rates and making other stormwater funding decisions. A rate methodology based primarily on water meter size has been applied to stormwater management costs as well as water supply and sanitary sewer service. This reflects the nature of the physical sewerage and drainage systems in Philadelphia and the City's management approach.

As alternative cost allocation opportunities are being investigated, it is appropriate that the stormwater management strategy and priorities be considered. The Advisory Committee needs to understand the Department's strategy and priorities if it is to thoughtfully advise the City on cost allocations and rates.

Philadelphia's stormwater management program is part of a larger program that addresses a diverse mix of systems and service needs. Most of the city is served by "combined sewers" which collect and transport both sanitary sewage and stormwater runoff to the Department's three wastewater treatment plants. Street drainage and that from roofs, parking lots, yards, and most everywhere else is routed to the combined sewer systems in those areas of the city and then to the treatment plants along with the sanitary sewage from homes and businesses.

In dry weather and periods of light rainfall, both the sanitary sewerage and the stormwater entering the system are treated at the plants and discharged. During severe events, heavy stormwater inflow into the combined sewer system overtaxes the systems' capacity and results in overflows to receiving waters upstream of the treatment plants. These are termed "combined sewer overflows", or CSOs. During extreme storms, surcharged sewers can also cause backflows into homes and businesses connected to the combined sewer systems. The combined sewer conveyance and treatment facilities are sized to meet severe storms. However, sizing the system to prevent flooding under extreme peak flow demands from storms which occur very rarely would be excessively costly. Engineering judgement has been applied in determining proper design parameters for the systems, which are reexamined periodically.

Combined sewage overflows pose a water quality dilemma that implicitly bridges sanitary sewage pollution and stormwater runoff pollution. The traditional strategy in controlling sanitary sewage pollution has involved collection and treatment of wastewater in large, complex facilities. However, since large amounts of stormwater enter combined sewers, vastly greater transport and treatment capacity is needed than would be required solely for the sanitary sewage flow in the system.

A variety of strategies have been used and billions of dollars have been spent in the United States to reduce combined sewer overflows, ranging from separating the stormwater from the sanitary sewage to constructing massive storage capacity that captures and temporarily holds peak flows to increasing treatment capacity at the plants through operational optimization. To date, Philadelphia's strategy has primarily been to use the latter method and avoid building excess storage capacity.

Clearly, stormwater runoff in combined sewer areas causes significantly greater capital investment and operational expense in one manner or another than would be necessary to deal only with the sanitary sewerage that is generated by homes and businesses. Appropriate allocation of this component of the total sewer system expense is a pivotal consideration in properly structuring stormwater service charges in Philadelphia.

The expense of stormwater management in areas having separate sanitary and stormwater systems also needs to be carefully considered. Much of northeast and northwest Philadelphia is served by separate sanitary and storm sewers, reducing the capacity required in the sanitary system but dictating that stormwater systems in those areas convey and discharge runoff to open ditches, creeks, and ultimately to the Schuylkill and Delaware Rivers. The major consideration in the past has been adequate conveyance capacity to prevent flooding during

the following storms. Water quality impacts resulting from pollutants transported in stormwater have become an additional concern in recent years.

The conventional strategy (to date) for dealing with stormwater pollution in separate stormwater drainage systems has been to eliminate or at least reduce the introduction of pollutants at their origin or source rather than attempting to remove pollution from stormwater runoff using conventional mechanical and chemical treatment. This approach is reflected in the draft National Pollutant Discharge Elimination System (NPDES) permit recently received by the PWD requiring a variety of program activities to reduce pollutant loadings in stormwater runoff.

The mix of combined and separate sewer systems to control stormwater runoff dictates that the PWD provide a variety of operations, regulatory activities, and capital improvements. They could be funded wholly or partially from different sources; some of which are well-suited to nearly all types of expense while others are applicable only to operational or regulatory activities or to capital improvements. Service charge rates (and/or secondary funding sources) might arguably differ in the combined and separated sewer service areas to reflect differences in the costs of the services and facilities or other criteria. Once the program strategy and priorities are clearly understood; it is easier to select and implement the desired rate and funding methods in a manner and timeframe consistent with the program.

The Department's current stormwater management strategy is to:

- 1) maintain the existing combined and separate systems and related program activities.
- 2) construct improvements and improve operations to solve the most pressing stormwater flooding and combined sewer overflow problems as quickly as practical; and
- 3) incorporate the operation, monitoring, and regulatory activities and improvements mandated by the NPDES permit into the program.

Black & Veatch has calculated that the total cost of service allocable to this stormwater management strategy is \$75 million. Approximately two-thirds of the total annual stormwater management expense is for stormwater conveyance capital facilities, either through debt service of bonds or cash expenditures for betterments. About twenty-five percent of total expense is for operation of the collection and treatment systems and maintenance of stormwater inlets. About seven percent is allocable to the stormwater portion of the capital expense of treatment plants.

Program priorities identified by PWD staff in interviews and in the materials previously presented to the Advisory Committee include the following:

System Capitalization. Continued reinvestment in the combined and separate stormwater systems is a high priority. System capitalization will be funded at a level

that adequately services bonded debt and also allows cash expenditures each year to construct smaller improvements. Typical capital projects include reconstruction of existing combined and separate storm sewers, enhancement of combined sewer conveyance and storage capacity, improvements to reduce infiltration and inflow, correction of combined sewer overflows and backups, conveyance system and plant modifications, upgrade of treatment levels, construction of flood relief facilities, replacement of deteriorated and damaged inlets, and improvements at discharges.

System Operation. Operation of the combined sewers includes routine cleaning and remedial repairs to the conveyance systems, maintenance and operation of the treatment plants, and inlet cleaning. Inflow and infiltration of stormwater into the combined sewers is a major factor in the operational demands of the conveyance systems treatment plants. The separate stormwater systems require routine and remedial maintenance, plus water quality management as specified in the NPDES permit for the stormwater systems. Supportive operations include engineering and technical guidance and assistance, contract administration, management and data systems support, and other functions that are monitored and upgraded as the stormwater program evolves.

Stormwater Quality Management Program. Pursuant to the Federal Clean Water Act (as amended), the City is required to apply for, obtain, and comply with a permit for stormwater discharges to waters of the Commonwealth. The PWD has received a draft NPDES permit for stormwater discharges from its municipal separate storm sewer system from the Pennsylvania Department of Environmental Protection. The permit conditions essentially mirror the proposed program submitted by the PWD in its NPDES application, and address legal authority, pollutant source identification, discharge characterization, management program requirements, assessment of controls, fiscal resources, and reporting requirements. The management program priorities includes maintenance of structural controls, development plan review and inspection, conduct of various "best management practices" (BMP) such as road salt storage and street cleaning, investigation and abatement of illicit connections to the stormwater systems, continued assessment of the conditions in the systems, spill prevention and response, installation of controls to prevent infiltration of sanitary sewage into the separate stormwater systems, and monitoring and control of pollutants emanating from industrial and commercial properties and construction activities. Public education and information efforts are also a major component of the PWD's efforts to improve stormwater quality and operations. These may ultimately become a major cost of the program as well.

Funding. Transition to a new method of cost allocation is a priority for the PWD stormwater program. The Black & Veatch rate analysis and Advisory Committee deliberations are the key activities to accomplish this objective. Timely agreement needs to be reached and recommendations presented to the City to support the program.

Technological Innovation. The PWD is identifying opportunities to use new technologies in support of the operational, regulatory, and capital investment elements of the stormwater management program. For example, possible use of a geographical information system (GIS) to support various PWD activities and projects is being evaluated. Such a system would have numerous applications for other City departments as well. In the case of stormwater management, a GIS could support maintenance and capital improvement programs, regulatory functions including NPDES monitoring and investigative activities, and even service charge rate analysis, billing, and collection. A maintenance management system might be linked to the GIS, providing improved customer service response. Current priorities for technological enhancement of the stormwater program include flow monitoring and computer monitoring projects for capital and operating optimization.

Organizational Adjustment. Stormwater management responsibilities are generally focused in the PWD but other city departments are peripherally involved in several aspects. The PWD seeks to optimize the efficiency and effectiveness of its program by minimizing overlaps and clearly delineating authority and responsibilities. The NPDES stormwater discharge permit and technological innovations such as a GIS system could dictate that organizational adjustments be made, although no clear direction or priority is evident at this time.

Recommendations

The scope of the program strategy and priorities described above clearly illustrates why it is so important that the Advisory Committee grasp what the PWD stormwater program is intended to accomplish in the foreseeable future. Since the program strategy and priorities are givens which guide the Advisory Committee's consideration of funding and cost allocation opportunities, no recommendations need to be made in the form of a policy statement on this issue. This policy paper is for reference and documentation of the process only. A summary of the strategy and priorities may be incorporated in a report transmitting Advisory Committee recommendations for the purposes of background and documentation.

POLICY PAPER 3

FINANCIAL REQUIREMENTS

Issue Description

The Philadelphia Water Department (PWD) manages stormwater as one element of its total wastewater (sewerage) program. The majority of the City is served by "combined sewerage systems" which carry both sanitary wastewater and stormwater. Separate systems for sanitary wastewater and stormwater are installed primarily in the northeast and northwest areas of Philadelphia. Sewerage systems in areas outside Philadelphia which are tributary to the City's treatment plants are predominately separate sanitary wastewater systems, not combined sewers.

The financial requirements of both the combined and separate sanitary and stormwater sewerage systems include annual capital-related costs and operation and maintenance expense. Analyses have been performed by the PWD and Black & Veatch to allocate capital and operating costs between the sanitary wastewater and stormwater components of the total sewerage program. The proportion of the financial requirements presently allocated to the stormwater management component of the sewerage program totals \$75 million, which is the revenue requirement that the stormwater portion of the PWD service charge must recover. The allocation is based on a combination of the historic and projected capital investment in the system and budgeted operation and maintenance expenses. The \$75 million allocation is consider a "given" in the Community Advisory Committee's deliberations. This policy paper documents three aspects of the stormwater financial requirement: legal authority; accounting basis; and cost of service.

Background Information and Analysis

Legal Authority

Under the City Charter, the PWD is given the responsibility to operate, maintain, repair, and improve the City's stormwater system. The service area for which the Water Department's stormwater system is designed includes the total area within the City's boundaries. Wholesale wastewater service is provided on a contractual basis to ten jurisdictions outside the City boundaries, the majority of which have separate sanitary sewer systems which are tributary to the City's wastewater collection and treatment system. To the extent there are some combined sewers in these wholesale service areas, any stormwater included in the wastewater delivered to the City is metered at the entry point to the City's wastewater system and is included in the overall wastewater charge to the wholesale customer in accordance with the wholesale service contract agreement. The City is not responsible for the operation and maintenance of any stormwater system outside of the City boundary.

Accounting Basis

The basis of accounting utilized by the PWD is established, in part, by the bond covenants for the outstanding water and wastewater revenue bonds. The accounting method is alternatively referred to as the "legally enacted basis" or the modified accrual basis of accounting. Under this basis of accounting, revenues are based upon actual cash collections or receipts. Expenditures are generally separated into two categories. Debt service, or principal and interest on outstanding bonds, are recorded as an expense when paid. Operation and maintenance expenses, which include both direct Water Department salaries and fringe benefits, purchase of services, materials and supplies, and equipment, as well as allocated operation and maintenance expenses of other City departments that provide services to the Water Department, are recorded on an encumbrance basis. An encumbrance is basically a formal authorization to incur costs based upon previously approved, budgeted expenditure levels.

Cost of Service

As has been presented to the Stormwater Charge Allocation Community Advisory Committee in previous meetings, the annual cost of stormwater service identified through Black & Veatch rate studies for the PWD amounts to \$75 million. The elements that comprise this total cost include: (1) annual capital costs associated with the stormwater collection system; (2) annual capital costs associated with treating stormwater at the three wastewater treatment plants; (3) annual maintenance expense for the collection system; (4) annual operation and maintenance expense at the wastewater treatment plants for the treatment of stormwater; and (5) annual maintenance of the stormwater inlets in the City streets and the disposal of debris removed from the inlets.

The \$75 million annual cost of stormwater service reflects existing levels of service provided by the PWD. The responsibility of the Water Department for stormwater service begins with the stormwater inlets and the collection system mains in the street. It is the customer's responsibility to maintain the sewer lateral, which typically conveys both sanitary wastewater and stormwater runoff, from the customer's property to the City's collection main in the street. The existing level of service includes a scheduled cleaning of each stormwater inlet in the street at least once a year. Other existing levels of service include scheduled repairs and replacements of stormwater and/or combined collection system mains based upon historical levels. Treatment of stormwater will also continue at historical levels, with no increased volume assumed to be treated through reduction in combined sewer overflow (CSO) events. It is expected that current levels of stormwater costs will remain fairly constant over at least the next five years.

Capital Costs: Stormwater Collection System

The largest single component of the annual cost of service for stormwater in Philadelphia is the annual capital costs associated with the stormwater collection system. The overall wastewater collection system in the City is largely a combined system, which means that the sewer pipes are designed and sized to carry both stormwater runoff and sanitary wastewater.

Some of the newer areas of the City, in the northeastern and northwestern sections, have separate sewer systems, where storm flows and sanitary wastewater flows are carried in separate sewer pipes.

Black & Veatch has made an analysis of a sample of the separate sewered areas of the City and has determined that in these areas, approximately 70 percent of the "inch-feet" of sewers is storm sewer related and 30 percent is sanitary related. The total inch-feet, which is a product of the diameter of the sewer (in inches) times the length of sewer (in feet) is a representative measure of the relative investment in storm vs. sanitary sewers in these separately sewered areas. Extrapolating the 70-30 relationship to the entire wastewater collection system, including the predominance of the system which, again, is a combined system, provides a measure of the overall collection system investment separated between the stormwater collection function and the sanitary collection function.

The total investment in the City's collection system amounts to \$696.345 million, of which \$8.208 million is allocable to the suburban wholesale customers based upon the terms of the contracts with those customers. The remaining investment of \$588.137 million is allocable to the inside City retail customers of the Water Department. The stormwater allocated share of this investment, using the 70-30 relationship discussed above, amounts to \$481.696 million. This allocated share of investment in the City's stormwater collection system is used in apportioning or distributing the total annual revenue requirement for capital costs for the overall wastewater utility to the stormwater function. The investment in other wastewater facilities, including the sanitary wastewater collection system, the three wastewater treatment plants, and the wastewater pumping facilities, is used to apportion the balance of the annual capital costs to these functions.

The total investment in the City's wastewater system allocable to the provision of service to retail customers amounts to \$974.626 million. This amount includes the collector sewer systems, the treatment works, and the pump stations. Thus, the stormwater collection function is allocated 49.42 percent (\$481.696 million/\$974.626 million), or nearly one-half, of the annual wastewater system capital costs for retail customers. When applied to the total annual capital cost of approximately \$98 million, the portion allocable to stormwater collection amounts to \$48.400 million. This cost is comprised of the capital costs of debt service (principal and interest payments) on both revenue and general obligation bonds which have been issued by the City on behalf of the Water Department for financing capital improvements to the wastewater utility and capital improvements financed from annual revenues (cash financed improvements as compared to debt financed improvements).

Capital Costs: Stormwater Treatment

Another element of the total annual stormwater cost of \$75 million is the allocated capital costs associated with the treatment of the stormwater which is collected and delivered to the three wastewater treatment plants of the City. The total investment in the three treatment plants allocable to the provision of service to retail customers amounts to \$271.493 million. The capital investment in treatment facilities is allocated differently than the capital investment in the collector systems.

The capital investment in treatment facilities must first be allocated among the functional cost components for which various elements of the treatment plants are designed, including annual average volume, peak rates of flow, total suspended solids (TSS), and biological oxygen demand (BOD). Total annual treatment plant units of service applicable to the entire retail service area are then established for the above four functional areas, including the estimated annual stormwater contribution to these units of service.

The relationship of the stormwater units compared to the total units of service for each of the functional cost components establishes the allocated percentage share of each component to the stormwater treatment function. The total share of treatment plant investment allocable to stormwater is then used to identify the annual capital cost allocable to the treatment of stormwater.

The annual volume units allocable to the treatment of stormwater are based upon analyses undertaken by Water Department staff, and are based upon the average amount of annual rainfall in the City adjusted to recognize an overall impervious factor for the area in the City. The strength of the stormwater reflects the largely combined wastewater system, which includes a fairly high TSS strength of 100 milligrams per liter (mg/l) in recognition of the "first flush" phenomenon following a rainfall event and a relatively low BOD of 25 mg/l. A peaking factor of 2.5: 1 is assumed for the stormwater flow reaching the treatment plants and is applied to the annual average day storm flow.

The total annual capital costs allocable to the treatment of stormwater, recognizing the above methodology amounts to \$5.0 million or approximately 18% of the total annual capital costs associated with treatment facilities.

Operation and Maintenance Expenses

The balance of the annual stormwater revenue requirement of \$75 million is related to operation and maintenance expenses for: (a) the collection and conveyance of stormwater to the treatment plants; (b) the treatment of the stormwater; and (c) the maintenance of the stormwater inlets and the removal of debris from the inlets.

Operation and maintenance expenses allocable to the stormwater function include both direct expenses and allocable indirect or overhead expenses. The direct expenses include costs such as personal services expenses (salaries and wages) plus salary related fringe benefits such as pensions and health insurance, purchase of services (electricity, contract services, etc.), materials and supplies, and equipment directly assignable and identifiable with the above three functional areas. The indirect expenses which are also included in the total costs of providing stormwater service include such costs as an allocated share of the administration, finance, human resources, public affairs, and planning and engineering divisions within the Water Department which provide a support function to all of the operating units, as well as an allocated share of the costs of other City departments and functions, such as personnel, finance, legal, purchasing, streets, public properties, and other groups, which also provide support services to the Water Department.

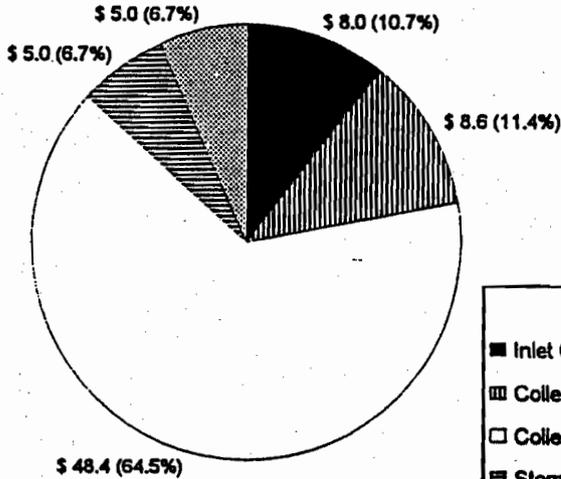
The total annual operation and maintenance expense for the three elements of operation and maintenance, including both direct and indirect expenses, are as follows: stormwater collection system maintenance (\$8.6 million); stormwater treatment (\$5.0 million); and inlet cleaning (\$8.0 million).

Recommendations

The cost of stormwater management services and facilities is not a policy issue before the Community Advisory Committee, but rather is a "given" to which the charge allocation discussions apply. The make up of the costs may, however, be a consideration in the Community Advisory Committee's development of a recommended charge allocation method.

The City of Philadelphia has a largely combined wastewater collection system, with approximately 70 percent of the system being allocable to the collection and conveyance of stormwater runoff to one of the City's three wastewater plants for treatment. The annual capital costs of conveying and treating stormwater and the associated annual operation and maintenance expenses presently amount to \$75 million. It is anticipated that this level of annual expenditure will remain fairly stable over the next five years. The Community Advisory Committee recommends that the Water Department continue seeking cost-effective measures in the operation, maintenance, and replacement of its stormwater system and in complying with both current and future regulatory requirements related to its stormwater system and CSO program.

**Philadelphia, Pa.
Test Year 1994 Storm Water Costs**



- Inlet Cleaning
- ▨ Collection System Operation & Maintenance
- Collection System Capital Costs
- ▤ Storm Water Treatment Operation & Maintenance
- ▧ Storm Water Treatment Capital Costs

NOTE: All dollar values in millions.

Storm Water Cost Summary

Capital Costs	
Collection System	\$ 48.4
Treatment	5.0
Total Capital Costs	<u>\$ 53.4</u>
Operation & Maintenance Expense	
Collection System	\$ 8.6
Treatment	5.0
Inlet Cleaning	8.0
Total Operation & Maintenance Expense	<u>\$ 21.6</u>
Total Costs	<u>\$ 75.0</u>

BLACK & VEATCH

POLICY PAPER 4
STORMWATER FUNDING PHILOSOPHY
BASIS FOR UTILITY APPROACH
SERVICE, BENEFIT, AND/OR DEMAND ON THE SYSTEM

Issue Description

This policy paper addresses the overall philosophy of funding stormwater management, and specifically (1) the basis for using a "utility" approach to funding stormwater services and facilities and (2) how service, benefit, and/or demand on the system are incorporated into user charge rate design.

Background Information and Analysis

Stormwater Funding Philosophy

The rationale for managing and funding stormwater management as a utility rather than as a general function of municipal government should be formally adopted as a City policy. In the City of Philadelphia the historical precedent is well-established by the fact that stormwater management has been a key part of the City's wastewater utility program since 1969 and has been funded through the wastewater portion of the PWD service charge for approximately twenty-five years.

One of the givens in the Community Advisory Committee's deliberations is that stormwater funding will continue to be charged and collected through the water/sewer bill. The CAC work scope is focused on the stormwater charge allocation methodology that results from the rate structure. The underlying funding philosophy characteristic of a user charge system recognizes how service, benefit, and/or demand on the systems might be accounted for in the stormwater allocation methodology and the resulting stormwater rate structure.

Basis for Utility Approach

Three reasons are commonly cited by municipal governments to justify managing and funding stormwater management as a utility:

1. When compared to other municipal functions, stormwater management services compare most closely to water supply and wastewater treatment services. These latter two services are commonly managed and funded as enterprise fund (separate) municipal utilities or are provided by private utilities. Stormwater management

involves the construction, operation, and regulation of an extensive infrastructure system. In communities which have combined sewer systems, like Philadelphia, the stormwater component is combined with the sanitary sewer component and should therefore be managed and funded in a similar manner, by the same type of charge.

2. The funding demands of a stormwater program are also similar to water supply and sanitary sewer systems. A large initial capital investment is needed for all three of these systems. The systems deteriorate over time and need periodic replacement. The level of capital expenditure for these replacements often exceeds the revenue available in any given year and may best be met through long-term financing, typically by issuing bonds. A utility can issue revenue bonds which do not reduce the general obligation bonding capacity of a municipality. To ensure that the systems function, they must be cleaned and otherwise routinely repaired and maintained. This results in on-going operating expenses that require the adequate and stable funding that a utility typically offers.
3. The cost of providing stormwater services and associated facilities is related to the use of and activities on individual parcels of property rather than the economic value of the property. The forms of funding available to utilities, most notably user charges, allow greater flexibility in structuring funding to recognize a desired distribution of costs (user charges are sometimes also called service charges. In Philadelphia, the term "service charge" also refers to a specific part of the water/sewer bill). Most other local government functions are funded by various taxes that have little relationship to the basis for or level of stormwater management costs. This linkage between the costs and the distribution of responsibility for costs is the key issue being addressed by the Stormwater Charge Allocation Community Advisory Committee (CAC).

Service

The four primary stormwater management funding mechanisms used by local governments in the United States are taxes, ad valorem and non-ad valorem special assessments, exactions, and user charges. Courts have defined and characterized these funding mechanisms in order to distinguish among them. Although most citizens consider any government revenue source to be a tax, in fact the distinctions between the various funding methods are extremely important. Taxes, special assessments, exactions, and user charges are all different. In determining whether a funding mechanism is properly structured and applied within the constraints and/or authority that pertain in a given situation, the courts are normally very careful to consider the nature of the funding mechanism at issue.

Underlying each funding mechanism is a basic philosophy which is reflected in legislation and in the body of judicial decisions, definitions, and tests that are applied. The philosophy dictates to a degree the form and manner of application to which each type of funding method must adhere. Thus, taxes, special assessments, exactions, and user charges must satisfy what the courts have said are their philosophical foundations as well as more specific

standards and tests. The courts have not been uniform or consistent, however, in the degree of compliance they demand with the philosophical foundation for each funding mechanism.

Regarding "user charges" for various municipal purposes, the philosophy that guides rate design is fairly well refined, but the courts have allowed municipalities a high degree of flexibility. In fact, one of the characteristics that sets user charges apart from taxes, exactions, and special assessments is the latitude the courts have extended to local bodies (city councils, commissions, etc.) to determine how rates should be structured to achieve overall community objectives in providing water, sewer, stormwater, solid waste, electrical, gas, and other such services and facilities.

The courts presume that a user charge rate structure adopted by local officials is appropriate in their community unless a plaintiff can conclusively demonstrate that the officials acted in an arbitrary and capricious manner in adopting the rates, or the results are illegally discriminatory. As a result, a plaintiff challenging a user charge rate structure bears a very large burden of proof. This has allowed a broader philosophy for user charges than for most other municipal funding methods, and has yielded a variety of rate structures that are generally consistent but rarely identical.

The fundamental test applied by the courts to user charges is that they be equitably apportioned and that the resulting charges bear a substantial relationship to the cost of providing services and facilities. By "equitably apportioned," the courts have deemed that user charges to similarly situated properties or customers should be similar, and that charges to dissimilar properties or customers should be relative to the differences. A rate structure should be proportional to the service provided. The substantial relationship between user charge and the cost of services and facilities requires that a logical linkage (or "rational nexus") be apparent. Mathematical precision is not required to satisfy any of these standards.

The philosophy evident in stormwater user charge rate structures elsewhere reflects the fundamental tests that the courts have commonly applied to other types of municipal utility user charges. "Stormwater service" is broadly interpreted, and most municipalities strive to reflect the cost of stormwater services and facilities in their rates. Stormwater user charges are usually based on the factors that influence the peak rate of runoff from properties, the total volume discharged, and (in some cases) the pollutant loadings carried in the stormwater.

Benefit

Specific and measured benefit is not generally a characteristic of user charges. While a user charge may provide some benefit to the customer, it is not usually quantified in the calculation of stormwater user charges. "Benefit" has a very specific legal definition in terms of municipal funding, especially as it applies to non-ad valorem special assessments which must reflect the direct and special benefit peculiar to each individual property. "Benefit" in this instance is in the form of increased utilization of the property assessed, not simply an increase in the economic value of the land. Some assessment concepts do, however, dictate that an assessment not exceed the value of a property after the beneficial improvement is realized.

It is possible to consider some of the "benefits" of stormwater management in the design of a user charge rate structure. This does not require that "benefit" be specifically quantified in the user charge calculations for individual properties in the same manner that it would be for non-ad valorem special assessments. For example, while stormwater quality management may provide a general benefit to the entire community, a special benefit to individual properties is extremely difficult to quantify. However, the "benefits" to the community in general resulting from a stormwater quality management program can justify recovering the cost through a broadly-distributed user charge even though specific services are not performed for individual properties.

Demand on the System

"Demand on the system" is considered in most utility rates, especially when variations in demand may have meaningful impacts on the cost of services and facilities. For example, electric utilities often structure rates so peak hour demand costs more than off-peak demand. Stormwater rate structures based on impervious area might also be interpreted to be highly reflective of demand, since impervious coverages greatly increase peak rates of runoff and require large capacity increases in stormwater systems if flooding is to be avoided.

Recommendations

Basis for Utility Approach

It is recommended that the City continue to manage and fund stormwater management as a utility function under the Water Department.

Service Benefit and/or Demand on the System

The long-term cost of stormwater services and facilities in Philadelphia is primarily a function of peak demand (system capacity), and stormwater quality control. In light of the courts' broad perspective of the philosophy supporting municipal user charges in general and the latitude allowed to local elected officials, it is recommended that the CAC adopt a funding philosophy which supports a rate methodology that reflects the cost of service associated with capacity demands and treatment of stormwater to meet water quality objectives.

TAX TERMS GLOSSARY

Ad Valorem	A tax assessed according to an object's value. The prototype is property taxes.
Non-Ad Valorem Special Assessments	An assessment in the nature of a tax levied upon property according to benefits conferred; is selectively imposed upon the beneficiaries. Levied for a specific purpose and in an amount proportionate to the direct benefit of the property assessed.
Exactions	A tax or a fee, depending on its purpose. An exaction constitutes a tax when levied for general governmental revenue-raising purposes. An exaction is a fee where it is enacted principally as an integral part of the regulation of an activity, to cover the cost of regulation.
User Charges	Fees imposed on persons or properties for the use of a particular facility; usually a reasonable fee designed to defray the costs of construction and maintenance. The prototype is highway tolls.

POLICY PAPER 5

DISTRIBUTION OF COSTS THROUGH USER CHARGES

Distinguishing Between Separate and Combined Sewer Areas

Issue Description

This policy paper and subsequent papers address the focal issue of the CAC's deliberations, how the cost of stormwater management should be "distributed" across the community through the Philadelphia Water Department sewer use charge. Who should pay, and for what?

This is a complex topic which has been broken down into several policy papers in an effort to simplify the CAC's consideration and resolution of the issue. The decisions the CAC makes will define a path that will ultimately result in a logical and cohesive rate/funding recommendation. These CAC decisions will build the internal structure of specific policies on the foundational philosophy and within the supportive limits of the committee's criteria and the givens that have been identified (refer to the graphic presented to the CAC by the consultants at the outset of the policy issue process).

The first issue in distributing costs among categories of ratepayers is whether some distinction should be drawn between the area of the city that is served by combined sanitary wastewater and stormwater systems and the area served by separate sanitary and stormwater systems. If the conclusion is "yes" and a distinction should be made on this basis, it suggests one set of questions to be resolved. If it is "no", then a slightly different set of questions must be addressed. First, however, a glossary of terms is introduced in this paper so that the CAC members, staff, and consultants will use the terminology consistently.

Glossary

Allocation of Costs

Costs are "allocated" to categories in a cost of service analysis and then "distributed" to classes of customers. Black & Veatch has presented a report to the CAC which summarizes how it has allocated the Philadelphia Water Department's stormwater management costs of service to five categories. The categories are termed Collection System Capital, Collection System Operations, Treatment Capital, Treatment Operations, and Inlet Cleaning.

Distribution and Recovery of Costs

Regardless of whether one is dealing with water, sewer, or stormwater, costs are "distributed" to classes of customers. In Philadelphia, stormwater costs are currently distributed to wastewater customers based on the size of each customer's water meter. Costs are then "recovered" from various classes and categories of stormwater ratepayers by user

charges of various types. A "rate structure" is designed to recover the costs which have previously been distributed among the ratepayers. For example, the cost of building the stormwater collection systems is recovered from ratepayers by the user charge rate structure, with individual charges being calculated using a formula which quantifies certain parameters related to the distribution of capital costs. The same is true for operation and maintenance expense. The rate structure should recognize, to the extent practicable, the cost responsibilities associated with providing service to the customers of the stormwater system. The principal parameter presently used in Philadelphia to calculate stormwater charges is the water meter size at the service location.

Combined Sewer Area

In much of Philadelphia, a single sewer system has been built which collects, conveys, and treats both sanitary sewage and stormwater runoff. This is a combined sewer system.

Separate Sewer Area

In the northeast and northwest areas of Philadelphia, stormwater is not routed to the same sewer system as sanitary sewage from homes and businesses. Separate systems handle sanitary sewage and stormwater runoff, with only the sanitary sewage being routed to a treatment plant. Most stormwater sewers discharge into local streams, ditches, or rivers.

NPDES (National Pollutant Discharge Elimination System)

The National Pollutant Discharge Elimination System is a program administered by the United States Environmental Protection Agency pursuant to the 1972 Clean Water Act and subsequent amendments. In designated states, the direct responsibility for the program is "delegated" to state environmental agencies rather than being operated directly by the federal government. NPDES permits are issued which regulate various discharges into "waters of the state" or "waters of the United States", including but not limited to discharges from sewage treatment plants, industries, and municipal stormwater discharges. The Philadelphia Water Department operates under NPDES discharge permits governing its sewage treatment plant discharges and has recently received a draft permit for stormwater discharges in the separate sewer areas of the city.

Ratepayers

Ratepayers are those parties, individual and corporate, who pay for services such as water supply, sewage treatment, stormwater management, solid waste, electricity, and gas through user charges (as contrasted with property or other taxes). Many parties are both ratepayers and taxpayers, but not all. For example, churches are usually ratepayers subject to user charges, but are exempted from certain taxes.

Recommended Policy Position

The consultant's recommendation is to pursue or follow an approach which does not distribute costs on the basis of property location in a combined or separate sewer area. The following are cited as primary reasons for this recommended policy.

- Water quality in receiving waters is enhanced by treatment of stormwater in the combined sewer system. In a broad sense, that is a general service to the entire community, not just to the properties in the combined sewer service area.
- The City has historically employed uniform charges regardless of property location. Properties farther from the water supply and wastewater treatment plants do not pay more for water and sewage treatment than those located closer, regardless of the fact that more infrastructure is required to serve them. This means that people don't have to make location decisions based on utility costs.
- Some capital costs and operating expense differ between the two areas, but a meaningful portion of those costs may be related to the street systems which provide mobility for the entire community without distinction of where individual persons and businesses happen to own properties.

Background Information and Analysis

Whether to distinguish between the combined sewer area and the separate sewer area in the distribution of stormwater costs among ratepayers is not a simple issue, but resolving it is a critical step toward sorting out the stormwater rate/funding options and arriving at a recommended stormwater charge methodology. Once the CAC has come to a decision on the basic question of cost distribution between the combined and separate sewer areas, the details of rates and related funding will be easier to resolve.

There are differences in the capital costs and operating expenses of collecting and treating stormwater and cleaning inlets in the combined and separate sewer areas. However, all costs are presently distributed among users on a uniform or common basis. It has not historically been the PWD's practice to distinguish between the combined and separate sewer areas in its rate structure. To do so now would constitute a major change in policy for the City after many years of distributing costs among ratepayers uniformly regardless of which type of system serves specific users. It would also mark a departure from the rate practices applied to water supply and wastewater collection and treatment. Adopting different charges for the combined and separate sewers areas now could penalize some people who made location decisions in the past based on a rate concept which did not distinguish between them.

The consultants and staff examined the arguments for and against retaining the current practice of not distinguishing between the combined and separate sewer areas in the structuring of stormwater user charge and/or applying other funding methods. The following summarize our conclusions. Can the CAC identify additional considerations and/or conclusions?

PRO

No location advantage is created for investment, so stormwater charges do not steer investment to the combined or separate sewer area. People who purchased property in a combined sewer area (where costs are higher) under a rate policy that did not distinguish by location would not be penalized in the future.

Less data is required for rate calculations, and implementation and upkeep costs are therefore also less.

Most low-income areas are served by combined sewer systems which have a higher average cost of service.

Consistent stormwater charges regardless of location fit with current PWD rate practices for water supply and sanitary sewage treatment.

Consistent with the PWD's past history of distribution of stormwater costs.

Consistent charges regardless of location are simple and easy to explain to the public.

To facilitate the CAC discussion of this issue, we ask that each member write out a brief answer for each of the following questions in the space provided and bring these ideas to the September 6, 1995, meeting, where they will be discussed.

1. There are two distinct methods of stormwater collection in Philadelphia, the combined and separate sewer systems, with different and unequal costs. Should owners of properties pay the amount related to the stormwater system in their area, or should the total cost of both systems continue to be shared as they are now?

CON

Less reflective of cost of service principles. The current practice results in higher user charges in separate sewer areas than would a rate structure that distinguishes between the combined and separate sewer areas.

Presently, there is no treatment of stormwater required in the separate sewer systems for water quality purposes, yet ratepayers in separate sewer areas help pay for treatment of stormwater in the combined sewer area under the current rate methodology.

The age and condition of systems in the combined and separate sewer areas differ significantly, but rates don't reflect the cost of necessary reinvestment in the combined sewer systems.

2. After years of not distinguishing between areas served by these two different types of stormwater systems, is it "fair" (refer to CAC established criteria) to now distribute costs of service based on the type of system? Why?

3. Do other considerations override some or all differences in costs of service (for example, is the improved water quality resulting from routing stormwater from the combined sewer area through the wastewater treatment plants a reason to distribute the conveyance and treatment costs in that area city-wide? Can the same be said for the cost of dealing with combined sewer overflows (CSO) in the combined sewer area, or for future stormwater quality management costs associated with the NPDES discharge permits that applies to the separate sewer area?)?

POLICY PAPER 6

USER CHARGE RATE METHODOLOGY

Issue Description

This policy paper describes the basic stormwater rate structure alternatives that could be used by the Philadelphia Water Department (PWD) to distribute the cost of stormwater management among its ratepayers. Additional refinements described as "modifying factors" and "secondary funding methods" that could be employed to alter or augment the basic stormwater rate methodology are examined in subsequent policy papers.

Recommendation

It is recommended that the PWD shift to a stormwater rate methodology that better reflects the cost of providing the stormwater component of its service and facilities. To control implementation expense, the new approach should initially be based on a single primary parameter, either impervious area or gross area. Both result in equity and fairness and have been sustained in court. The CAC's selection of a primary parameter may depend on whether it desires to include or exclude undeveloped lands from participation in stormwater funding. If it is deemed desirable to include undeveloped lands, a rate methodology based on gross area would be best. If not, a methodology based on impervious area would be appropriate. If a gross area methodology is used, consideration must be given to including one or more factors to reflect the impact that intensity of development has on peak flow, total volume, and pollutant loadings of stormwater runoff. The costs of implementing an impervious area methodology versus a gross area/intensity of development approach are relatively comparable since new data must be generated for both options. Costs for a given methodology might be less if data can be derived from existing files or through a cooperative effort with other departments.

Background Information and Analysis

Rate Design

The design of a basic rate structure is the most important factor influencing the distribution of costs among various types and classes of ratepayers. The City has substantial latitude in rate design decisions. The basic legal standard it must meet is that a rate structure must be fair and reasonable and the resultant user charges must bear a substantial relationship to the cost of services and facilities. To meet this standard, the City must act with information and knowledge to ensure that its decisions are not arbitrary and capricious and the charges are not illegally discriminatory.

The PWD's utility bill currently has two line item charges, a service charge and a usage charge. PWD's service charge is based on water meter size. It is presently used in part to

fund stormwater management (the PWD usage charge is based on water consumption and does not figure into stormwater management rates and charges). The operating expenses and capital costs allocated to the stormwater management portion of the PWD service charge are determined through a cost of service analysis. They are categorized under five headings: Collection System Capital; Collection System Operating; Treatment Capital; Treatment Operating; and Inlet Cleaning.

Six rate methodologies are examined in this paper. The first is the current approach whereby the stormwater component of the PWD service charge is calculated on the basis of water meter size. The other five stormwater user charge rate methodologies more directly reflect the impact that property conditions have on the peak rate, total volume, and pollutant loadings of stormwater runoff, and include the following:

- impervious area
- gross area and impervious area
- impervious area and impervious percentage
- gross area and the intensity of development
- gross area, with several modifying factors

These rate methodologies have different characteristics and would require different calculations to determine the service charge applicable to individual properties and/or classes of properties. They also pose differing requirements in terms of the data that is needed to calculate user charges and the cost of implementation and upkeep of a master account file and the billing system. Some rate methodologies could broaden the funding base by allowing user charges on properties not currently charged. For example, a rate methodology based in some manner on gross property area would allow (but not necessarily require) user charges to undeveloped as well as developed lands.

Evaluation Criteria

The CAC has defined "objective criteria" to apply in its deliberations. They are:

- promote stormwater revenue stability
- reflect what has been learned from other places
- promote good stormwater management behavior
- not harm the City (residents and businesses)
- be efficient
- be cost-effective
- be revenue neutral
- be equitable and fair
- promote good stewardship of both financial and environmental resources

The CAC criteria touch many but not all of the considerations that the City must account for in its evaluation of the rate options to meet due diligence responsibilities. To aid the CAC in comparing of the rate methodologies identified in this paper, the following nine topics have

have been identified which span the CAC's objective criteria plus the considerations the City must apply in its decisions.

Equity

This topic addresses the CAC's expressed objective of attaining equity and fairness in the stormwater rate methodology and not harming residents or businesses. As explained in Policy Paper 4, general adherence with cost of service principles is recognized as a key factor in attaining equity. From the PWD's perspective, it is also a measure of compliance with general judicial standards that must be satisfied by the rate design.

Balance

It is desirable for a stormwater rate methodology to have the capability to balance rates and charges with the level of service provided, especially if vastly different levels of service are provided or are likely to be provided in the future. This is consistent with the CAC's equity objective and desire to promote "good stormwater behavior." In Policy Paper 5, the consultants have recommended that the PWD stormwater rate methodology balance rates and service generally but allocate costs across the city without distinction between the combined and separate sewer service areas. The CAC has indicated that it will take this approach.

Data Requirements

The data requirements associated with assembling a master account file and making the user charge calculation for each account influence efficiency, cost-effectiveness, and timing. Other cities have found that the key factors influencing the cost of developing, implementing, and managing user charges are: 1) the number of parameters for which data must be acquired or assembled; and, 2) the number of accounts. The number of accounts is relatively fixed, and could be altered only by applying the stormwater component of the PWD charge to those who currently are not billed (undeveloped properties, developed properties with no water service, and water only accounts). The number and type of parameters involved are a function of the rate structure and have greater potential for impacting costs and efficiency.

Cost

Cost-effectiveness is an identified concern of the CAC. The cost of implementation and upkeep of alternative rate methodologies is difficult to estimate precisely because the technologies available for determining impervious area and other conditions applicable to stormwater runoff user charges are changing rapidly. Two general rules apply, however. First, generating new data is usually more expensive than extracting and using existing data from other sources. The potential problem with existing data is that it may not be exactly what is desired or may not be sufficiently accurate or in the proper electronic format. Second, the cost of data goes up with the standard of precision demanded. At some point, the next increment of accuracy is not worth the additional expense.

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Compatibility

Compatibility of a rate methodology and the data that it employs with the data processing systems now available influences cost-effectiveness and efficiency. An approach that demands fewer changes in the existing data processing system used to bill, collect, and account for PWD's charges would reduce the time and expense of making a transition.

Consistency

The equity and fairness attributed to any new approach to stormwater funding by the general public will largely depend on whether it is understandable. Consistency with the City's and especially the PWD's other financing policies is important because it makes it easier for the general public to understand any new approach to funding stormwater management costs.

Financial Sufficiency

Consistent with the CAC criteria of remaining revenue neutral in any change in the rate methodology, the financial sufficiency of the alternatives is identified as a topic. Financial sufficiency goes beyond merely meeting the present financing needs, however. The preferred rate methodology should be capable of meeting future funding needs as well, to the extent possible.

Revenue Stability

Revenue stability is identified by the CAC in its objective criteria. A consistent revenue stream is needed to enable the PWD to meet its current costs and to plan several years ahead for both capital investment and changing operations.

Flexibility

The rate methodology needs to be structured in a way which enables it to support the full range of stormwater capital costs and operating expenses that the PWD will incur in the future. It should also allow the user charge to be integrated with other funding mechanisms in the future, some of which might be tied to the user charge and/or its underlying data.

Rate Methodology Options

Water-Meter Size (Existing Rate Methodology)

Table 1 summarizes the evaluation of the existing rate methodology which bases stormwater user charges on the same parameter as the other components of the service charge portion of PWD's rates, i.e. the water meter size. This rate methodology is not generally used for stormwater management because it does not have a direct relationship with the peak rate, total volume, or pollutant loadings of stormwater runoff which dictate demands on the system and program costs. The only other known example of a similar rate methodology being used for stormwater management is in Aurora, Colorado. Key points are.

- Because water meter size has only an indirect relationship with stormwater cost of service, equity is not as easily demonstrable as in other methods. Although water meter size data is readily available and accurate, the lack of a strong linkage or "nexus" between the parameter and the program costs makes this methodology less cost responsive than some other options. Under this approach, some properties that have a clear impact on stormwater runoff but lack a water meter connection (for example parking lots) do not participate in stormwater funding.
- The historical use of meter size as a basis for stormwater cost distribution and recovery of costs recognizes that stormwater cost responsibility is a function of both the number of customers (properties) and the size of property (of which meter size serves as a surrogate measure). In the past this was the only readily available cost-effective parameter upon which to base stormwater charges. With the potential implementation of a City-wide geographic information system (GIS) and improved automation of property records, alternative parameters upon which to base stormwater charges should be available in the future.
- The greatest advantage of retaining the existing rate methodology is that none of the potential cost related to changes would be incurred. Unless the basic rate methodology was altered in some manner, there would be no impact on data processing and financing management. This may be the greatest factor explaining why the PWD has chosen not to change the stormwater rate methodology in the past. However, the recent dramatic reductions in the cost of changing to alternative methodologies now makes them worthy of consideration.
- A rate methodology based on water meter size is relatively static and not very flexible in terms of adjusting or fine-tuning rate structure in its application to differing situations. For example, a warehouse covering a large acreage and a multi-story office building may have comparable water meters. Other methodologies may also offer more flexibility to adjust to changes in the mix of stormwater capital costs and operating expenses in the future.

**TABLE 1
WATER METER SIZE**

Equity	Water meter size is an indirect indicator of the peak rate, total volume, and pollutant loadings of stormwater runoff. Within certain classes, such as residential, there may be little difference in stormwater contribution from one property to another, and meter size can be a close proxy. However, other classes may have significant differences, and some properties are currently not charged for stormwater management under this rate methodology.
Balance	This approach does not offer a means of incorporating the level of stormwater service into the rate methodology unless significant modifications or additions are made to the basic rate methodology. Note: the level of service is assumed to be consistent across the City. In the future, that may not be the case.
Data Requirements	This approach requires a single, readily available data parameter. However, some properties that generate significant stormwater runoff do not have water service and therefore meter size data is missing.
Cost	There is no implementation or maintenance cost related to transition because this is the existing rate methodology.
Compatibility	Existing data systems are set up to use this parameter to calculate the wastewater/stormwater user charge.
Consistency	Charging on this basis has only an indirect lineage with stormwater management costs related to each property. Although the methodology is used for the recovery of customer-related costs for the water and wastewater components of the PWD's service charge, stormwater management charges based on water meter size are less consistent with the rationale and cost of service principles underlying the recovery of stormwater related costs than other options.
Financial Sufficiency	The present rate methodology has been capable of meeting the specified revenue requirement of \$75 million.
Revenue Stability	A stable revenue stream presently exists. Stormwater revenues are only moderately sensitive to economic conditions.
Flexibility	This approach is not very flexible because it is based on a single billing parameter that is indirectly related to stormwater costs and which can be accurately determined. The only means of introducing flexibility into this methodology is by applying additional modifying factors to the rate calculation and/or adding other funding methods.

Impervious Area

Table 2 summarizes the evaluation of an impervious area rate methodology. Because it bases charges on impervious area, undeveloped properties (by definition) do not participate financially. Key points are:

- This approach is widely used by stormwater utilities elsewhere, including Louisville, KY, Miami, FL, Charlotte, NC, and more than one hundred other cities and counties.
- This approach employs a single data parameter that can be measured or estimated in several ways, some of which are very accurate (but also costly). In most applications an average impervious area is determined for detached single-family residential properties. That value is used as an "equivalent unit" from which the user charge to non-residential properties is calculated. The purpose of the equivalent unit is to maintain a proper relationship between the user charges to residential and non-residential properties.
- The equity of the impervious area approach is generally accepted by ratepayers and the courts. Impervious coverage is a key factor in the changes in peak runoff, total volume, and pollutant loadings contained in stormwater. Case law supporting this methodology includes Supreme Court and Court of Appeals decisions in several states.
- Shifting to this methodology involves a substantial cost to assemble or generate impervious area data and alter the existing PWD billing account file and software. Uncertainties preclude making a precise cost estimate at this time, but the experiences of other cities and counties suggest that an impervious area methodology coupled with a simplified charge for residential properties would cost between \$800,000 and \$1,200,000 to develop and implement in Philadelphia. A portion of this expense might be shared with other City departments because a geographical information system (GIS) base map is needed for other applications.

**TABLE 2
IMPERVIOUS AREA**

Equity	Equity of this approach is relatively good. People understand that impervious areas increase the peak rate, total volume, and pollutant loadings of stormwater runoff. However, only developed properties are charged because only they have impervious area. This methodology has been accepted by the courts in several states.
Balance	Balance is equal to but not necessarily better than that attainable through other rate methodologies based on property characteristics. Level of service is assumed to be consistent across the City, but this assumption may not hold in the future.
Data Requirements	Requires only a single billing parameter. It is necessary to measure the impervious area of <u>each</u> property, either by estimation or possibly using aerial photographs. Using a simplified charge for residential properties reduces the data needs.
Cost	Implementation cost is likely to range between \$800,000 and \$1,200,000.00. It is a function of the number of properties to be measured and the measurement technique employed, and is usually between \$0.50 and \$2.00 per account. Maintenance cost is minimized if reliable impervious data can be gained from building permits or other sources. Use of a flat-rate residential charge would reduce costs.
Compatibility	Existing data systems are likely to be capable of using this parameter in a stormwater rate calculation, but have not been examined in detail. Extensive data manipulation may be necessary to do this.
Consistency	Charging on this basis approximates the cost of service related to each property. Impervious area directly influences the peak rate, total volume, and pollutant loadings of stormwater and thus the cost of service. Generally consistent with the City's policies for water and wastewater rates.
Financial Sufficiency	Capable of meeting the specified revenue requirement of \$75 million.
Revenue Stability	A stable revenue stream is created under an impervious area methodology. Revenues are not sensitive to economic conditions.
Flexibility	This rate methodology is not very flexible because it is based on a single parameter that can be accurately measured. The only means of introducing flexibility into this methodology is through modifying factors and other funding methods. This type of rate structure can accommodate other funding methods based on impervious area.

Gross Area and Impervious Area

Table 3 summarizes the analysis of a rate methodology which considers the two primary factors influencing the quantity and quality of stormwater runoff, impervious coverage and gross property area. This approach is not used elsewhere, but some cities and counties base stormwater charges on gross area and "intensity of development," which is a similar option (described below in Option 5). Key points are:

- Basing the charge on gross area in some manner offers an opportunity to bill undeveloped as well as developed properties, possibly enhancing, equity and fairness.
- This approach is more flexible than other options because it allows weighting factors to be assigned to the two parameters. The two parameters would have to be quantified in the rate calculation process to reflect their relative importance. Accurate relative weightings are not technically attainable, which would introduce an element of subjectivity into the rate design (which is not necessarily bad or good).
- Because this option would require assembling or generating data for two parameters, the cost of developing, implementing, and maintaining a master account file and billing system would be greater than options based on a single parameter, most likely in the range of \$1,000,000 to \$1,750,000.

**TABLE 3
GROSS AREA AND IMPERVIOUS AREA**

Equity	This approach is relatively simple and easy to explain, and consistent with the public's understanding of impacts that both impervious coverage and gross area have on stormwater runoff. Charges for each square foot of gross and impervious area can be adjusted to attain greater equity. In much of Philadelphia virtually all gross area is also impervious, so this rate methodology might be redundant.
Balance	Very good once the costs of service are defined accurately enough to be reflected in weighting factors for the two parameters.
Data Requirements	This approach is likely within the City's capacity to manage, but would require data on both the impervious coverage and gross area of properties, which would increase implementation and upkeep costs.
Cost	Implementation costs would be more expensive because two parameters are involved, and likely range between \$1,000,000 and \$1,750,000. Costs per account would be between \$2 and \$6 per account, but could be reduced by using a flat-rate or other simplified charge for residences. Maintenance of the database could be simplified by requiring data from developer's engineers and/or architects when plans are submitted, but reliability of such information might be questionable.
Compatibility	The City's data processing systems should be capable of combining these two parameters in a rate calculation. Both rate parameters are specific and measurable. Data storage requirements would be increased over other options.
Consistency	Consistency with the City's existing general financing, water, and wastewater rate policies would be good.
Financial Sufficiency	Potential revenue capacity of this type of rate structure meets the current objective of \$75 million and might result in lower charges for some users if the stormwater charge is applied to both undeveloped and developed areas.
Revenue Stability	Excellent revenue stability. Gross area does not change and alterations to reduce impervious coverage would not be economic in most cases.
Flexibility	This approach is very flexible because a range of weighting factors could be applied to gross area and impervious area. Other funding methods based on impervious area and gross area could be used in concert with this approach.

Impervious Area and Impervious Percentage

Table 4 summarizes the analysis of a rate methodology which considers both the amount of impervious coverage and intensity of development (represented by the impervious area percentage of a gross property area). This approach differs from the gross area/impervious area and the gross area/intensity of development options because it implies that only developed properties which have impervious area would be charged. Typically, properties would be divided into groups by percentage imperviousness (e.g., 1 to 10 % impervious coverage, 11 to 20 %, and so on) and a factor would be included in the rate calculation representing the relative significance that each impervious percentage group has to the cost of service and facilities. Key points are:

- This approach is used in Denver, CO, but was questioned by the Colorado Supreme Court, which directed the City to assemble more accurate data and make changes in its rate structure in response to a suit by several ratepayers. Those changes were made.
- This approach requires that data be assembled or generated on two parameters, impervious area and gross area. (The impervious percentage would be calculated using the two data parameters.) Thus, the implementation and upkeep costs of this rate methodology would be greater than approaches that require measured data on a single rate parameter and/or use one or more subjective measures such as intensity of development. The likely range of implementation costs is \$1,000,000 to \$1,750,000.
- This approach is more flexible than those which calculate charges directly from one or more accurately measurable parameters. Different factors would be assigned to each grouping of impervious percentages, and the structure of those factors would be somewhat subjective and thus flexible.

TABLE 4
IMPERVIOUS AREA/IMPERVIOUS PERCENTAGE

Equity	This approach is relatively simple and easy to explain. It is consistent with the public's understanding of the impact that both impervious area and percentage of impervious coverage have on stormwater runoff.
Balance	This type of rate offers opportunities to balance charges with differing levels of service once the cost of service is defined accurately enough to be reflected in a calculation formula that incorporates both parameters. The level of service is currently assumed to be consistent throughout the City.
Data Requirements	Both impervious area and gross area data would be needed to calculate the percentage of impervious cover, increasing costs of implementation and upkeep.
Cost	Implementation costs are likely to be \$1,000,000 to \$1,750,000 because two data parameters are involved. The cost per account for implementing this type of rate methodology typically ranges between \$2 and \$6, but could be reduced by using a flat-rate or other simplified charge for residences. Developers' engineers and/or architects could be required to submit impervious and gross area data when plans are submitted, but reliability of the information might be questionable.
Compatibility	The City's data processing systems are most likely capable of combining both parameters in a rate calculation. Data storage needs would be increased over a single parameter rate structure.
Consistency	Consistency with the City's existing general financing, water, and wastewater rate policies and cost of service principles would be good.
Financial Sufficiency	This approach is capable of meeting the \$75 million revenue objective. Potential revenue capacity of this type of rate structure is essentially equal to other methodologies based on impervious area, though it could result in a different distribution depending on the way impervious area and impervious percentages are treated in the user charge calculation.
Revenue Stability	This approach offers excellent revenue stability. Reducing either a property's impervious area or its percentage of impervious coverage would not be economic in most cases.
Flexibility	This rate methodology would be somewhat more flexible than others based on impervious area because a range of formulae could be applied to impervious area and impervious percentage to calculate user charges. Other funding methods using these parameters could be incorporated.

Gross Area and Intensity of Development

Table 5 - summarizes the evaluation of a rate structure based on gross area and intensity of development. In most cases the intensity of development is subjectively interpreted based on accepted engineering standards. This approach offers the flexibility of structuring rates to include undeveloped as well as developed properties. Key points are:

- This type of rate methodology is used in Cincinnati, OH, Bellevue, WA and elsewhere. It has been subjected to judicial review and sustained.
- Reasonably accurate and reliable gross area information may be available from existing data sources. However, this information is not currently in a format that is compatible with the PWD's billing system.
- The cost of implementing a master account file and changes to the billing system would likely range between \$500,000 and \$1,000,000 if suitable gross area information were available from existing data sources. However, it is likely that the PWD would bear costs for obtaining and restructuring this information.
- Under this approach the CAC would have to make a judgement as to the relative runoff likely from different levels of development.

**TABLE 5
GROSS AREA/INTENSITY OF DEVELOPMENT**

Equity	Equity is equal to that of other methodologies if sufficiently detailed assignments of intensity of development can be made. This methodology allows service charges to undeveloped as well as developed properties.
Balance	This type of rate would generate a distribution of costs relative to the level of service that is roughly comparable to other rate methodologies if commonly accepted values for intensity of development are used. The level of service is currently assumed to be the same city-wide.
Data Requirements	Data requirements for this approach are probably less than for other options. Gross area information may be available from existing data sources, but not in a compatible format. Intensity of development factors might be derived from property tax records or other data, or could be assigned to each parcel based on engineering judgment.
Cost	The cost of implementing this approach (\$500,000 to \$1,000,000) would probably be slightly less than impervious area methodologies if adequate data is available from existing records; \$1.00 and \$2.00 per account is typical to determine the gross area figure and \$.10 to \$.25 per account to assign an intensity of development factor. Cost could be reduced by use of a flat-rate or other simplified charge for residential accounts. This lower cost may be offset by the need for PWD to process the data to make it compatible with the billing system.
Compatibility	Existing data systems are likely to be capable of handling this approach if the data can be provided in the proper format. Using two parameters would increase storage requirements.
Consistency	This approach is generally consistent with water and wastewater rate methodologies and is based on cost of service principles, but is somewhat more subjective than rate methodologies based on measurable parameters.
Financial Sufficiency	This methodology is capable of meeting the specified revenue requirement. Increased revenue capacity would result if undeveloped properties as well as developed parcels were charged.
Revenue Stability	A stable revenue stream would exist under this methodology. Gross area is impossible to eliminate, and the intensity of development of individual properties cannot be economically reduced and is unlikely to change. Revenues would not be sensitive to an economic downturn.
Flexibility	This approach is more flexible than most methods because the intensity of development is assigned using subjective engineering judgment instead of being a measured parameter.

Gross Area and Modifying Factors

Table 6 summarizes the analysis of a rate methodology based on a single parameter (gross area), but employing two or more modifying factors in a more complicated rate calculation formula to reflect a variety of conditions which influence stormwater runoff quantity and quality. A similar rate methodology could be developed using impervious area instead of gross area. Key points are:

- Although extensive use of modifying factors offers excellent flexibility and an opportunity to enhance equity and fairness, this type of methodology has not been used elsewhere. The most common rate methodologies use only one parameter, impervious area.
- This approach would likely be much more expensive to implement than other options because more data parameters would be involved and more adjustments would be required in the billing system if the number of accounts increased or complex calculations were needed. It could easily cost \$2,000,000 or more to implement this type of rate methodology.

TABLE 6
GROSS AREA/MODIFYING FACTORS

Equity	This approach potentially offers a very high degree of equity, but it relies heavily on multiple data parameters, relatively precise measures, and fine-tuning of the rate algorithm.
Balance	The balance of rates with the level of service provided to individual properties could be improved by using this type of methodology, but calibration might be difficult and costly. The level of service is assumed to be uniform city-wide at the present time.
Data Requirements	The data requirements of this type of rate structure pose a major obstacle. First, the factors to be used in a rate algorithm would have to be determined. The City would then face the onerous task of assembling a data base on such diverse topics as soil conditions, the average water quality impacts and/or pollutant loadings of various land uses, and the mitigative influence of water quality management practices such as onsite detention, grass swales, or porous pavement.
Cost	This rate concept could potentially create much higher implementation and upkeep costs, and are likely to exceed \$2,000,000. The number of modifying factors used in the rate algorithm, data accuracy requirements, and whether a residential flat-rate or other simplified charge is used would all influence costs. Initial data gathering costs could exceed \$20 per account for those accounts that require data.
Compatibility	This approach poses far greater data processing demands and thus impacts data systems more than other options. Depending on the number of parameters used, the nature of the data, and the design of the rate algorithm, this type of rate structure might demand two to three times as much file storage space and more complicated programming.
Consistency	This type of rate structure has relatively low consistency with the City's existing wastewater rates and general financing philosophy. No other aspect of PWD user charge financing attempts to generate a comparably precise relationship between cost of service and charges to individual properties.
Financial Sufficiency	This approach is capable of fully satisfying the revenue requirement. Financial sufficiency would probably be equal to the other options.
Revenue Stability	The stability of revenue generated through this approach would be comparable to that of other options.
Flexibility	This approach offers greater flexibility in the design of the rate algorithm and its application to individual properties or classes of customers, but at a much higher cost.

POLICY PAPER 7

USER CHARGE RATE MODIFYING FACTORS AND SECONDARY FINDING METHODS

Issue Description

This policy paper describes the modifying factors and secondary funding methods that might be used to augment and supplement a basic stormwater user charge rate methodology. The basic standard for distribution of the cost of stormwater management among the Philadelphia Water Department's ratepayers could be altered by the use of one or more of these mechanisms.

Policy Paper 6 presents five basic rate methodologies that might be used instead of the PWD's current approach based on water meter size. This policy paper presents mechanisms to fine-tune the basic rate concepts to enhance equity, broaden financial participation, increase and/or stabilize the revenue stream, and complement the user charge with other funding methods better suited to specific purposes.

It is proposed that the CAC evaluate the modifying factors and secondary funding methods along with the user charge rate concepts to ensure consistency between Policy Papers 6 and 7. The consistency between any new stormwater rate methodology and other elements of the Philadelphia Water Department's wastewater rate structure and water supply rate structure should also be considered.

Recommendations

Assuming that a change in the PWD's stormwater service charge rate methodology is desired, it is recommended that:

- 1) a simplified residential charge be employed
- 2) fixed costs per account be identified and charged to each account as part of the current "service" charge (with other variable stormwater charges billed as a separate line on the bill)
- 3) credits be provided for on-site stormwater detention

The other modifying factors which were considered are not deemed to be appropriate in Philadelphia. Likewise, the secondary funding methods identified in the analysis are better suited to communities undergoing rapid development, and are not recommended for use in Philadelphia.

First, for the simplified stormwater charge for residential accounts, it is proposed that three separate flat-rate charges be employed which reflect the relative average stormwater costs of service associated with the three distinctive types of residential properties in Philadelphia.

The three groups of residential customers would be: (1) row houses; (2) semi-detached homes; and (3) detached homes. The average (median) property characteristics for each of these groups would be used to set the user charge, consistent with whatever parameter is to be applied to nonresidential properties.

Second, a fixed charge per account would be equitable for a portion of the stormwater management cost of service. The PWD's "service" charge could be adjusted to recover those stormwater costs of service which do not vary significantly from one account to another. This might include billing costs, certain overhead costs, office rental, public educational costs related to stormwater, and other similar expenditures. Inlet cleaning costs might also be allocated to the fixed charge per account because virtually all inlets are in street areas and ensure safe transportation mobility to everyone in the City equally.

The third potential modifying factor that could be included in the stormwater rate structure is the establishment of credits for on-site stormwater detention basins and similar structures. Courts in several states have identified credits as a key characteristic of stormwater user charges which sets them apart from tax concepts.

Background Information and Analysis

Evaluation Criteria

The CAC has defined "objective criteria" to apply in its deliberations. They are:

- promote stormwater revenue stability
- reflect what has been learned from other places
- promote good stormwater management behavior
- not harm the City (residents and businesses)
- be efficient
- be cost-effective
- be revenue neutral
- be equitable and fair
- promote good stewardship of both financial and environmental resources

The CAC criteria touch many but not all of the considerations that the City must account for in its evaluation of the rate options to meet due diligence responsibilities. To aid the CAC in comparing the rate methodologies identified in this report, the following nine "topics" have been identified which span the CAC's objective criteria plus the considerations the City must apply in its decisions. They are defined in Policy Paper 6 and used in the tables in that policy paper as well as this one.

- Equity
- Balance
- Data Requirements
- Cost
- Compatibility

- Consistency
- Financial Sufficiency
- Revenue Stability
- Flexibility

Rate Methodologies

Six rate methodologies are examined in Policy Paper 6. The first is the current approach whereby the stormwater component of the wastewater charge is calculated on the basis of water meter size. The other five are designed to more directly reflect the impact that property conditions have on the peak rate, total volume, and pollutant loadings of stormwater runoff. They are typical of stormwater user charge rate methodologies in common use elsewhere. The alternative rate methodologies would require varying sets of data to make calculations to determine the stormwater charge applicable to individual properties and/or classes of properties, and thus imply differing costs for implementing and maintaining a master account file and slightly differing distributions of the cost of service.

Modifying Factors

One method of refining a stormwater user charge rate methodology is to introduce modifying factors into the calculation formula. Modifying factors are normally used to: 1) enhance user charge equity by more accurately reflecting the cost of service and facilities; 2) reduce the expense of implementing and maintaining a master account file; and/or 3) broaden participation in stormwater funding. The modifying factors examined in this policy paper include:

- simplified, flat-rate charges for single-family residential properties
- a fixed "service" charge for costs that are similar for all accounts
- service area surcharges
- credits for private on-site detention and other systems
- a level of service factor

Four of these modifying factors are presently used by one or more other cities and/or counties. The remaining one, a level of service factor, is not yet used elsewhere to our knowledge. The advantages gained by using modifying factors or secondary funding methods must be weighed against the disadvantages they entail, especially added cost of implementation and upkeep of the data to support them.

The purpose of most modifying factors is to enhance equity rather than simply generate revenue. For example, a credit for on-site detention or other on-site control systems or activities would actually cause a redistribution of costs by reducing the user charge to properties which have such systems. Credits offer incentives to property owners to reduce their impacts on the public stormwater systems and program, which is consistent with the CAC's criteria of encouraging "good stormwater management" by property owners.

Simplified Single-family Residential User Charge

Table 1 summarizes the assessment of a simplified single-family residential user charge. One uniform flat-rate charge could be applied to all single-family residential properties, or two or more classes of single-family residential properties might be defined which would each have flat-rate charges. The make-up of the residential housing stock in Philadelphia must be considered in determining the appropriate number and definition of classes of residential customers. Philadelphia differs from most other cities which have adopted stormwater user charges, primarily in terms of the extensive areas of rowhouses and other common-wall residential developments where the intensity of development is more similar to apartments than it is to single-family detached residences on suburban lots.

Key points to consider in assessing a simplified residential charge are:

- A simplified residential rate structure which groups like properties into classes instead of requiring assembly of data for each individual property is the best opportunity to reduce the cost of implementation and maintenance of a master account file.
- Because the intensity of single-family residential development varies widely across Philadelphia, any simplification of the rate methodology by assigning residences to groups or classes should recognize and reflect the differences in terms of demands placed on the stormwater systems by each class of customer and the cost of providing services and facilities.

According to Black & Veatch's survey of stormwater programs, the vast majority (88 percent) of all cities and counties which have stormwater user charges employ a simplified charge of some type for single-family residences, including Louisville, KY, Charlotte, NC, and Cincinnati, OH. Some use a single flat-rate charge while others have two or more flat-rate categories for residential properties of different sizes. The approaches used elsewhere are not necessarily suitable in Philadelphia, however, because of differences in the mix of single-family residential housing stock.

**TABLE 1
SIMPLIFIED RESIDENTIAL CHARGE**

Equity	Would diminish equity slightly, but is consistent with the level of refinement that most stormwater rate methodologies offer for residential accounts. Actual dollar impact of a simplified residential charge on most ratepayers would not be great.
Balance with Level of Service	Would be compatible with the assumption of a relatively consistent level of service provided generally to residential areas throughout Philadelphia if proper classification by housing type is established.
Data Requirements	Significantly reduces requirements for a master account file if rates are based on impervious area or gross area by eliminating data gathering for up to 70% of all accounts.
Cost	Could reduce initial implementation costs by as much as 50% and diminish file maintenance expense, assuming that data gathering costs are relatively similar for each account regardless of whether a property is residential or non-residential.
Compatibility with Data Processing	Offers a simple classification option for designating single-family residential properties that is compatible with data processing systems, although the existing data base may have to be checked to ensure that residential customers are properly categorized.
Consistency with Financing Policies	Generally consistent with the City's policies which, for example, have been to have a minimum charge per account for utility services.
Financial Sufficiency	Does not threaten overall revenue sufficiency.
Revenue Stability and Sensitivity	Would not detract from revenue stability and/or increase sensitivity to economic factors.
Flexibility	Reduces flexibility somewhat by eliminating the availability of rate parameter data for single-family residential properties.

Fixed Charge for Certain Costs

Table 2 describes a fixed service charge which would distribute some costs equally among all stormwater accounts. The PWD's stormwater management program incurs some costs that are not related to the amount of runoff generated by individual properties or the level of service that is provided. Expenses such as stormwater user charge billing and collection, administration, general overhead, space rental, risk management (insurance), public education programs, program planning and development, maintaining system inventory and complaint response systems, and weather monitoring are either the same for each account or very difficult to allocate specifically to individual properties or classes of properties. The simplest example is that it costs the same to mail a bill to a residence as to a shopping center.

Key points to consider in evaluating a fixed "service" charge to recover certain costs that are similar for each account include:

- The PWD presently uses two elements in its water, wastewater, and stormwater charges, a service charge covering fixed costs and usage charge. Assigning certain stormwater costs which are similar for each account to a "service" component would maintain consistency with this existing practice.
- A service charge enhances equity and fairness in terms of the demands placed on the systems by the stormwater runoff from various properties.
- This modifying factor improves flexibility in the rate design because costs can be assigned to either the portion of the charge based on the rate parameter reflective of runoff impacts or the portion to which the fixed charge applies.
- There is little if any additional cost associated with this modifying factor because it has to do with the types of costs being supported rather than data parameters that would be used to calculate the charge.
- Relatively few stormwater utilities have a fixed service charge to cover those costs which are similar for all accounts. Notable examples which do have fixed charges per account are Charlotte, NC and Tulsa, OK.

**TABLE 2
FIXED SERVICE CHARGE FOR SOME COSTS**

Equity	Improves equity by isolating fixed costs per account and applying them equally to each account.
Balance with Level of Service	Improves the overall balance of rates with the level of service because, by definition, each account would receive the same level of service for those activities supported by a fixed charge.
Data Requirements	Data requirements are limited to cost of service information. Would not require the assembly or storage of additional data parameters for individual accounts, but cost information on fixed costs is not easily available at this time.
Cost	Relatively easy and inexpensive to implement. This option does not impact the cost of providing services and facilities.
Compatibility with Data Processing	Highly compatible with data processing systems. A fixed amount simply has to be entered for the "service" component of each account.
Consistency with Financing Policies	Very consistent with the local financing policies, including the City's existing water and wastewater rates which have a "service" charge component.
Financial Sufficiency	Might create a very minor adjustment in revenue that could be offset by a minor rate adjustment to all ratepayers for those costs which are not fixed per account. This is considered a "wash".
Revenue Stability and Sensitivity	Because the charge is by account, there is excellent revenue stability.
Flexibility	Offers flexibility in terms of which costs are assigned to the fixed charge.

Service Area Surcharges

Table 3 summarizes the evaluation of a surcharge based on service area. In Philadelphia the most obvious application of this modifying factor would be to use it to distinguish the combined sewer area from the separate sewer area. However, Policy Paper 5 addressed that issue and the CAC has recommended against using a surcharge in that manner. Other applications are also possible. Philadelphia is a community of many relatively small watersheds. A surcharge might be used to isolate some service costs to specific watersheds or communities as individual service areas where something non-standard is being done. For example, if the PWD defined as a standard practice that it would maintain open drainage channels only in road rights-of-way, but a given area of the City desired to have a stream channel maintained more intensively for aesthetic reasons, a surcharge could be applied only to properties discharging to (or adjacent to) that channel.

The key points to consider in evaluating a service area surcharge are:

- Such a charge presumes that costs can be tracked with sufficient accuracy to determine that the cost of service is greater in a given service area as a result of differing types of service or unusual conditions that exist. That is not always easily or efficiently accomplished.
- Geographic surcharges tend to steer investment in capital betterments and operations to higher income areas capable of paying for higher levels of service, whereas the overall service level of the system needs to be consistent if it is to function properly.
- The historical PWD practice has been to provide comparable levels of service city-wide and apply comparable user charges city-wide regardless of some distinctions in the cost of providing services and facilities in given locations. This argues against using geographical surcharges of any type unless distinct and easily measurable differences exist in the level and cost of service.

This modifying factor is not commonly used, and at least one community using it (Ft. Collins, CO) has identified problems created by its practice of isolating capital costs by watershed.

**TABLE 3
SERVICE AREA SURCHARGE**

Equity	Service area surcharges would appear to improve the equity of funding for capital costs, but also could degrade equity if the community's cumulative prior investment in stormwater system (which has been spread city-wide) is considered.
Balance with Level of Service	Could offer a better balance of charges and the level of service being provided at any given time in a local area by localized service area costs.
Data Requirements	Substantial data might be needed to apply a service area surcharge on individual watersheds. Would require on-going analysis of costs by service area.
Cost	Would increase costs associated with the definition of service areas or watersheds or other service zones and tracking of costs so they could be allocated only to the properties in specific areas.
Compatibility with Data Processing	Poses substantial additional demands on data processing to maintain an on-going allocation of costs to various service areas or watersheds.
Consistency with Financing Policies	Not consistent with the City's practices regarding allocation of other costs, e.g., wastewater.
Financial Sufficiency	Could diminish the long-term viability of stormwater systems if lower income neighborhoods are unable to fund capital and/or operating needs.
Revenue Stability and Sensitivity	It is likely to reduce revenue stability slightly.
Flexibility	Increases flexibility in funding operations in service areas but could diminish ability to fund major projects of area-wide importance.

User Charge Credits for On-site Controls

On-site stormwater control through detention storage and other mitigative management practices (such as constructed wetlands, sand infiltration devices, retention ponds, etc.) can be effective in controlling both the quantity and quality of stormwater runoff. Many stormwater utilities provide user charge credits in recognition of the mitigative impact of on-site systems and activities. Various means are employed to apply credits to user charges. The specifics of a credit policy in Philadelphia will have to be addressed in a separate policy paper if the CAC decides to include this modifying factor in its recommended approach. Table 4 outlines the evaluation of applying credits to the PWD stormwater user charge. Key points are:

- The existence of a credit policy allowing for reduced user charges in cases where owners mitigate (reduce) their properties' potential impacts on the public stormwater systems and costs of service is one of the characteristics that the courts have looked for in determining if a stormwater charge is in fact a user charge associated with a specific proprietary function of government or is a tax in disguise.
- A credit mechanism for on-site stormwater control systems and/or management practices speaks to the CAC's concern that the stormwater charge be equitable and fair.
- Most other cities and counties that charge for stormwater management have provided for credits in cases when impact on the public systems is mitigated. Nearly all are conditional, requiring that property owners maintain on-site systems in proper operating condition. Failure to comply with maintenance standards usually results in a credit being rescinded.
- It is rarely cost effective for a property owner to retrofit an on-site stormwater system on a developed property to obtain a credit on a stormwater user charge. Thus, in Philadelphia it is unlikely that credits would have a significant impact on revenues.
- Many industrial properties are subject to National Pollutant Discharge Elimination System (NPDES) permits for their discharges to combined or separate sewers. Some cities, to encourage and reward full industrial compliance with water quality permitting requirements, have established a policy that a property automatically receives a credit against its stormwater user charge if a NPDES permit for stormwater runoff has been issued and the property is in compliance with its conditions. Charlotte, NC is one example of this practice.

**TABLE 4
USER CHARGE CREDITS**

Equity	Improves equity by providing economic recognition of mitigative systems and management practices.
Balance with Level of Service	Offers a better balance with the level of service being provided, especially if properties discharge less peak flow, volume, and/or pollutants to the public stormwater systems.
Data Requirements	Increases data requirements to develop and maintain records on management practices and on-site systems on individual properties and their condition.
Cost	Would result in an increase in costs to identify and evaluate management practices and on-site systems on individual properties and inspect them for continuing compliance with PWD standards.
Compatibility with Data Processing	Poses additional demands on data processing to maintain records on individual on-site systems.
Consistency with Financing Policies	Consistent with the City's practices regarding industrial pre-treatment of wastewater prior to discharge to the public sewerage system.
Financial Sufficiency	Results in a minimal reduction in long-term revenue, though this is made up across the rate base.
Revenue Stability and Sensitivity	Does not influence the stability or sensitivity of the revenue stream.
Flexibility	Offers flexibility in applying user charges and offsetting credits to individual properties as private development continues in the future.

Level-of-Service Factor

Table 5 examines the use of a modifying factor to reflect the level of service provided to individual properties. Undeniably, the level of stormwater service that is currently provided varies somewhat from area to area in Philadelphia and even from property to property in given neighborhoods or watersheds. This would suggest that level of service might be a suitable consideration for a modifying factor. However, there are several obstacles to implementing a level-of-service modifying factor in Philadelphia, the most important being data limitations. Key points to consider are:

- The City has not yet formally defined its service level objectives, and does not have the data necessary to determine if specific geographic areas or watersheds are deficient, meet service objectives, or exceed them.
- It would be difficult to assign an economic value to incremental shortfalls in service level that might be the basis for reduced service charges. For example, if a property is exposed to minor damage due to flooding during a two-year storm event when the service objective is a five-year event, how might that be reflected in a modification factor which reduces the service charge, and how much less should an area without service pay than one which has service which meets the City's objectives?
- Although not specifically oriented toward differing user charges based on geographical location, the most obvious application of a service level modifying factor is to define service levels by watershed or other geographical location factors. That does not seem to be consistent with the objectives of the CAC, given the criteria of not creating locational advantages or disadvantages across the city.
- If an area of the City is continually prone to flooding, the PWD would likely schedule capital improvements to alleviate the condition, thereby putting the area on an equal footing with all others.

Secondary Funding Methods

Secondary funding methods can also be used in conjunction with a stormwater user charge. Most such funding methods have limited revenue capacity and can only supplement a major source of money such as utility user charges. Three secondary funding methods are examined in this paper.

- plan review and inspection fees
- system development charges
- in-lieu-of construction fees

These funding methods would: 1) generate more revenue for special purposes, selectively applying fees and user charges to certain customers who receive special services; 2) apply special charges to equalize financial participation over time; and/or 3) allow developers to participate in the cost of regional facilities instead of building on-site control systems.

Several other secondary funding methods are not directly associated with a utility user charge and therefore are not examined in this paper. However, some might be useful additions to user charge funding if carefully planned and integrated with the user charge rate structures employed by the Philadelphia Water Department. For example, special assessments could be used to augment user charge revenues in situations when local improvements are needed to stormwater systems which are not part of the public drainage system and the financial participation of individual land owners has to be organized in some manner.

Secondary Funding Methods

Secondary funding methods can also be used in conjunction with a stormwater user charge. Most such funding methods have limited revenue capacity and can only supplement a major source of money such as utility user charges. Three secondary funding methods are examined in this paper.

- plan review and inspection fees;
- system development charges;
- in-lieu-of construction fees.

These funding methods would: 1) generate more revenue for special purposes, selectively applying fees and user charges to certain customers who receive special services; 2) apply special charges to equalize financial participation over time; and/or 3) allow developers to participate in the cost of regional facilities instead of building on-site control systems.

Several other secondary funding methods are not directly associated with a utility user charge and therefore are not examined in this paper. However, some might be useful additions to user charge funding if carefully planned and integrated with the user charge rate structures employed by the Philadelphia Water Department. For example, special assessments could be used to augment user charge revenues in situations when local improvements are needed to stormwater systems which are not part of the public drainage system and the financial participation of individual land owners has to be organized in some manner.

Plan Review and Inspection Fees

Table 6 summarizes the evaluation of plan review and inspection fees. New private development impacts the City's stormwater systems most in the separate sewer areas in the northwest and northeast sectors of Philadelphia. Most of the relatively few newer commercial developments and residential subdivisions being built have internal stormwater drainage systems. The City reviews plans and inspects several aspects of private developments before and while the projects are under construction to ensure compliance with its design standards. In the future increasing stormwater quality control can be expected in compliance with the City's NPDES permit, implying that more plan review and inspection will be needed. The key points to consider are:

- There is relatively little new development taking place in Philadelphia at the present time and the review process does not facilitate breaking out the stormwater review from other systems.
- Plan review and inspection fees could be incorporated into the stormwater utility rate structure rather than being separately adopted. That might help to ensure that the revenues are directed to the PWD's stormwater management program.
- Most other cities and counties, especially those undergoing rapid growth, have plan review and inspection fees but few have integrated such charges with their stormwater management rates. One known example of plan review and inspection fees having been adopted as a specific component of stormwater rates is in King County, WA.

**TABLE 6
PLAN REVIEW AND INSPECTION FEES**

Equity	Special fees improve equity by charging developers directly for the plan review and inspection services provided strictly to them.
Balance with Level of Service	The level of plan review and inspection fees would ostensibly be balanced by the level of plan review and inspection services.
Data Requirements	Poses data management impacts if the City chooses to charge differential fees depending on the demands of various projects.
Cost	Would result in an increase in costs to developers and minor reduction in the costs allocated to stormwater ratepayers.
Compatibility with Data Processing	Poses minor data processing demands to process plans and administer an inspection program.
Consistency with Financing Policies	Generally consistent with the City's present practices for funding special services.
Financial Sufficiency	Minimally increases long-term financial sufficiency assuming basic user charge rates are unaffected.
Revenue Stability and Sensitivity	Less stable than some other forms of funding because fees depend on the pace of development.
Flexibility	Offers flexibility in structuring user charges and fees.

System Development Charges

Table 7 summarizes the evaluation of system development charges that might be employed in conjunction with stormwater user charges to ensure that an equitable distribution of the cost of capital improvements is achieved. Such a charge would be especially useful if user charges were applied only to developed parcels as, for example, as is usually the case under an impervious area rate methodology.

The basic purpose of a system development charge is to balance the financial participation in capital investments among ratepayers served by systems at different points in time. Similar but more complex funding methods known as capital facility fees, plant investment fees, connection fees, and capital recovery fees are widely used for water and wastewater funding and by private utilities. The need for system development charges is dictated by the fact that the physical life of most stormwater improvements is substantially longer than the period during which they are funded. Typically, this type of charge is employed in areas of rapid growth to insulate the existing system users from the cost of providing capital facilities to serve the demands of new customers.

Key points to consider are:

- There is relatively little new development taking place in Philadelphia, so a system development charge would generate little additional revenue.
- Most of the city is served by combined sewers which were designed and installed many years ago. Most of the initial capitalization of the system has already occurred, and current capital costs are primarily a reinvestment in existing capacity rather than increases in capacity due to customer growth. The proportion of stormwater revenue used to fund capitalization is primarily for debt service on existing bond indebtedness.

A system development charge would be inconsistent with the City's historic approach to capitalizing the infrastructure of the water and sewer systems.

**TABLE 7
SYSTEM DEVELOPMENT CHARGES**

Equity	A system development charge would improve equity by allocating the cost of capital improvements over the life cycle of the systems and recapture financial participation of properties not developed when initial capitalization occurred.
Balance with Level of Service	Improves the relationship of charges to system capacity designed and installed in anticipation of growth.
Data Requirements	Poses some data management to track capital investment applicable to system development charges and maintain a schedule for such fees.
Cost	Results in increased one-time costs at the time of development and reduced costs to the general stormwater ratepayers.
Compatibility with Data Processing	Poses minor data processing demands to process the charge.
Consistency with Financing Policies	A system development charge would be a departure from the City's present approach to capital facilities funding.
Financial Sufficiency	Minimally increases long-term financial sufficiency assuming basic user charge rates are unaffected.
Revenue Stability and Sensitivity	Less stable than some other forms of funding because system development charges depend on the pace of development. In the meantime, other ratepayers must bear the cost of oversizing facilities for growth. This is not a major factor in Philadelphia, where most areas are nearly built out.
Flexibility	Offers flexibility in balancing charges and system development charges.

In-lieu-of Construction Fees

The flexibility available under a stormwater utility user charge would allow the City of Philadelphia to require that developers pay fees instead of building some types of on-site improvements. This may be especially applicable in the future if active treatment of stormwater in the separate sewer areas is required by the City's NPDES permit. At the present time, however, it appears that few regional facilities for stormwater quantity or quality control will be built to deal with the impact of new development, which is the normal alternative to on-site systems.

Table 8 summarizes the evaluation of in-lieu-of construction fees applied to stormwater management. Key points to consider are:

- There are relatively few areas in Philadelphia where on-site stormwater controls would be required on new developments.
- In-lieu of construction fees are most practical in cases where very deficient systems need to be upgraded and the option of on-site controls is widely practiced. Neither case pertains in Philadelphia at the present time.

**TABLE 8
IN-LIEU OF CONSTRUCTION FEES**

Equity	This type of fee improves equity by charging developers a fee commensurate with their avoided costs and other benefits derived from not building on-site stormwater control systems.
Balance with Level of Service	Not directly related to level of service, but does improve the relationship of overall financial participation with the provision of regional capacity to manage stormwater quantity and quality.
Data Requirements	Minimal data requirements determine what on-site controls might alternatively be required and the appropriate level of fee.
Cost	Results in increased one-time costs to developers at the time of development or redevelopment (offset by reduced on-site requirements) and reduced long-term costs to the general stormwater ratepayers because developers directly bear a share of regional facilities.
Compatibility with Data Processing	Poses minor data processing demands to process the fee.
Consistency with Financing Policies	Generally consistent with the City's present policies though no comparable fee exists for wastewater.
Financial Sufficiency	Minimally increases long-term financial sufficiency.
Revenue Stability and Sensitivity	Less stable than some other forms of funding because fees depend on the pace of development. In the meantime, the other ratepayers must bear the cost of regional facilities.
Flexibility	Offers flexibility in balancing user charges and in-lieu fees instead of simply requiring on-site systems for each development.

POLICY PAPER 8

RATE TREATMENT OF CITY STREETS AND PARKS

Issue Description

The CAC is considering alternatives to the current stormwater charge rate methodology based on water meter size. The options involve radical changes in the rate parameter used and the distribution of the cost of service that results. If a stormwater charge rate methodology based on impervious coverage and/or gross area is adopted, very large properties and especially those with a high percentage of impervious coverage will become the highest stormwater ratepayers. This could potentially include the City's street areas and parks. However, issues of equity and the impact of the revamped stormwater charge on the City's overall financial situation has to be considered.

The City presently pays a stormwater charge only for those properties which have water service and does not pay anything for street areas, which are estimated to comprise more than ten (10) percent of all impervious coverage in Philadelphia. Maintaining the status quo or relatively so in terms of financial impact on the City while also shifting to a new rate methodology almost certainly must include exempting the street areas from the stormwater charge.

The issues addressed in this policy paper are: 1) whether to exempt City streets and perhaps other City properties (e.g., major undeveloped parks) from the stormwater charge; 2) if they are exempted, how to distribute the revenue requirement among other ratepayers; and, 3) how to fairly treat private properties that are similarly situated to exempted public properties.

Recommendations

It is recommended that the City street system be exempted from the stormwater charge under whichever rate methodology is finally adopted.

There are several reasons for this recommendation. First, because the stormwater charge is a user fee, and not a tax, the owners of the one-third of the City's land area that is tax exempt must pay their fair, equitable share for stormwater collection, transportation and treatment. Moving the stormwater charge for streets to the City's General Fund tax base would have the effect of diluting the user fee nature of stormwater charges, and would also redistribute a significant amount of costs from tax-exempt to taxable property.

Next, the CAC was formed with the "given" that "stormwater costs will continue to be billed and collected in the water/sewer ratebase." This "given" recognized that the City's General Fund cannot support the shifting a major portion of the stormwater revenue burden onto the streets through a new rate methodology without having a negative impact on other City

services. It also accounted for the fact that the public taxpayers and water/sewer ratepayers are ultimately going to bear the financial burden of the City's participation in stormwater funding regardless of whether or not streets are charged. For this reason, almost all other cities which have confronted this question have chosen to redistribute the cost of stormwater from streets across the rest of the ratebase, rather than shift it to their General Fund.

Finally, the streets are seen by many as "an extension of the stormwater collection works improved, operated, and maintained by other public agencies in support of the PWD stormwater management program. In this sense, they should be exempt from the stormwater charge.

Therefore, since the street system exists to facilitate mobility throughout the community and that mobility is available in common to serve all properties, it is recommended that the portion of total revenue foregone as a result of the exemption of streets from the stormwater charge be redistributed among the remaining ratepayers (including the City itself) on the basis of gross area only.

It is recommended that fair treatment of private properties that are similarly situated to the City streets that would be exempted from the charge be accomplished by also exempting private streets which are: 1) freely available for use by the public in common; and, 2) improved, operated, and maintained by the owner in support of the PWD stormwater management program. If either of these criteria is not satisfied, a private roadway would not be similarly situated to the public street and should not be exempted from the stormwater charge.

Although other City properties like police precincts, fire stations, and parks also exist to serve the community, they are more similar to private commercial properties in terms of their relationship to the stormwater systems and cost of providing service and facilities. It is recommended that they be treated under the stormwater rate methodology in a manner similar to comparable private properties.

It is further recommended that there be a declining block rate for the gross area component of the charge, which would reduce the charges to City parks and other very large, essentially undeveloped properties. This is consistent with the CAC objective of encouraging good stormwater management through the rate structure.

If each square foot of gross area is charged the same amount, the very large green spaces in Philadelphia could be substantially burdened by the stormwater charge. As in the case of streets, this raises issues of equity, funding and practicability. Also, stormwater from large undeveloped properties tends to have a lesser impact on the system than that from similarly sized impervious properties. The revenue foregone would be made up by increasing the rate per square foot of impervious (and/or gross) area, thus slightly increasing the stormwater charge to other properties.

Background Information and Analysis

The Philadelphia Water Department's (PWD) stormwater rate policies will undergo a radical change if the policy preferences indicated thus far by the CAC are ultimately adopted by the City Council. Shifting from charges based on water meter size to a methodology based on property characteristics such as gross area and/or impervious area implies that the distribution of costs will be reallocated and the funding base will be broadened to include properties that do not have PWD water or wastewater service.

The change in the distribution of costs will be significant because the existing and proposed rate parameters (water meter size vs. impervious and/or gross area) are very different. Large properties without water service, such as parking lots and railroad switchyards, are notable potential additions under the new rate parameter. Other large properties with extensive gross and impervious areas and minimal water meter connections (e.g., warehouses) are likely to face much higher charges than under the current rate methodology. For all practical purposes they too are major additions to the funding base.

The largest single potential addition to the funding base would be the City's street areas. Public streets are a substantial percentage of the total area of Philadelphia and are covered primarily with impervious surface (paving). If the preferred rate methodology includes gross area in the charge calculation, large undeveloped and lightly developed properties (including the City's parks) could also face substantial bills regardless of the fact they have little impervious coverage. However, technical justifications exist for minimizing the stormwater gross area charge to very large properties through a declining block rate for gross area, described below.

The principal issue is whether streets and other large public properties and areas should be exempted from a stormwater charge, regardless of what the rate parameters are or how the charge calculation is structured. Several critical issues must be raised. First, since the stormwater charge is a user fee, shifting such a large amount of funding to the City will have the effect of relying on the general tax structure to raise a large amount of the stormwater charge. Most significant, it will have the effect of reducing payments for stormwater by tax exempt properties, which make up about one-third of the City's land area and one-quarter of all property tax receipts. The Administration expressed its opinion on this issue in setting up the CAC, structuring it with a "given" that "stormwater costs will continue to be billed and collected in the water/sewer ratebase."

Another practical consideration arises. A significant change in the PWD stormwater rate methodology which includes applying the charge to streets and/or parks could negatively impact the City's overall financial situation. If City streets and/or other public properties are subject to the stormwater charge, their maintenance and capital improvement might have to be reduced in order to pay the stormwater charge. Financial impacts could spread to other City priorities. Creating new problems under the banner of meeting stormwater needs could lead to opposition to the stormwater charge itself in the administration and/or City Council. That is not a solution to the stormwater funding dilemma.

The annual revenue requirement for stormwater management remains the same (\$75 million) regardless of whether the streets, parks, or other City properties are charged. If streets and/or other City, State, or Federal properties are exempted from the stormwater charge, the revenue requirement must be met from fewer billing units and each unit must therefore pay more. In practical terms, however, the vast majority of those paying more for each unit on their stormwater charge are also taxpayers. They would be paying higher taxes in some form if the City paid a stormwater charge for streets and/or other properties, so the cost will ultimately be distributed among the public regardless of whether the City streets and parks are charged for stormwater or not. Several members of the CAC have stated their view that it is just a matter of which of their pockets is the source of the funding for stormwater, the "stormwater charge pocket" or the "general tax pocket."

Although outright exemptions are generally avoided in the application of utility rates, a survey performed by Black & Veatch (previously presented to the CAC) indicates that a majority of cities and counties establishing stormwater utilities have exempted public street areas from their own charge. It is less common for parks, museums, fire stations, police precincts, and other government properties to be exempted from a stormwater charge. A variety of reasons have been advanced to justify exemptions. These cities have used a variety of ways to compensate for the lost revenue, most involving a reallocation among the remaining ratepayers of the revenue stream that would have been generated by a billing on the street system.

A second issue that would be spawned from a decision to exempt streets and/or other public properties has to do with thoughtfully managing the impact of removing a substantial portion of the potential funding base for the program. Since the revenue requirement does not go down, the remaining accounts must pay more to generate the needed \$75 million in revenue. If streets are exempted, which ratepayers (or other source of funding) should pick up the slack? In most cases where streets have been exempted, the stormwater charge to the remaining ratepayers was simply increased enough to recover the lost revenue with no change to the rate structure, reasoning that they would have paid for any charge to the City through higher taxes.

Most cities do not use a rate structure based on two parameters, e.g. impervious area and gross area. If such an approach is preferred in Philadelphia (as indicated by many members of the CAC at the December 6, 1995 meeting), and an exemption is determined to be reasonable and practical for City streets, it is appropriate to look at the function and purpose of the City's streets in deciding how to reallocate the stormwater revenue the City would have provided among the remaining ratepayers. Should that lost revenue be recovered by simply raising the rate for both impervious and gross area, or should it be concentrated on just one of the rate parameters?

The streets serve as a common facility that provides access to all properties. They are designed to collect and transport precipitation that falls on streets surfaces and stormwater from adjacent properties to the stormwater systems improved, operated, and maintained by the PWD. Because the streets serve all properties in common, it would make sense to reallocate the street portion of the stormwater revenue street to all other properties on a

consistent basis. A reasonable case can be made for using the gross area of properties as the basis for reallocating the revenue requirement. This is a reasonable and practical justification for weighting the gross area component of the stormwater rate at 10 percent or less in the rate calculation (See the DRAFT rate recommendation contained in Policy Statement # 6. If a declining block structure is used, the actual percentage attributed to gross area would be less as the size of the property increased). The ten percent or less of total revenue that would thus be assigned to gross area (compared to impervious area) is somewhat less than the proportion of total impervious area in the city that is within the street areas, but is generally consistent with the importance that street runoff plays in the total demands on the stormwater systems.

The CAC also needs to consider that exempting city streets may create some potential problems in addition to the higher charges that must be borne by the remaining ratepayers. Most important is the issue of fairly treating private properties that are similarly situated to the exempted public properties. At least one city (Titusville, FL) has exempted only those paved areas (streets) that are elements of the "public" transportation system available in common to all to use for movement about the community. This seems to be a reasonable criteria, since private streets that are not commonly available to all to use without restriction could be turned into parking areas or covered with buildings tomorrow.

A second reasonable consideration is that a street (public or private) may or may not function as an extension of the public stormwater system as a result of proper design to control stormwater on the street surface and from adjacent properties. The City's public streets nearly always do so. Some private "streets" and other areas on private property that might be construed to act as streets (e.g., drives and parking areas in shopping malls) often do not, thus necessitating some other provision for stormwater control which typically falls on PWD's public systems. Therefore, if a private street does not include adequate provision for control and conveyance of stormwater provided by and operated and maintained by the property owner (comparable to that provided by the City's streets), it does not duplicate the function of the City streets which act as an extension of the stormwater systems of the PWD and should not be exempted.

There is an additional practical concern in terms of charging City parks and other very large properties which have little impervious coverage. If each square foot of gross area is charged the same amount, the very large green spaces in Philadelphia could be substantially burdened by the stormwater charge. Fairmount Park is the largest municipally-owned and -operated landscaped park system in the nation. The generous amount of Philadelphia's land area dedicated to parks creates another potential problem for the Administration and City Council similar to that posed by a stormwater charge on streets, due to extremely large charges for Fairmount Park and other open spaces. As with streets, this shift to General Fund could result in reduced park services, and would tend to exclude tax-exempt properties from their fair share of user-fee financing. Moreover, as described below, there are technical reasons why stormwater runoff from park properties has a smaller impact than stormwater runoff from developed land.

As a result, it would be justifiable to have a declining block rate for the gross area component of the charge, which would reduce the charges to City parks and other very large, essentially undeveloped properties. This is consistent with the CAC objective of encouraging good stormwater management through the rate structure by providing an incentive for property owners to retain land in grassed, woodland or natural conditions unless there is a specific reason to make it an impervious surface.

The technical justification for a declining block rate for gross area is that the peak rate of stormwater runoff during and following storms is a function of the "travel time" of stormwater across a property. It takes longer for stormwater to travel across a grassed surface or a woodland than across pavement or roofs, lengthening the travel time. This is especially true in the case of very large properties such as undeveloped parks and exists to a degree even during saturated conditions because of the interference to flow that natural surfaces present.

Therefore, the City could opt to have a declining block rate under which the first unit (say one acre) of gross area is charged at one rate, the next four acres are charged a lesser rate, the next five acres even less, and all remaining gross area a very low rate. This approach could be structured in many different ways. It could significantly reduce the burden on large, undeveloped properties such as many of the City's parks. Of course, the revenue foregone would have to be made up by increasing the rate per square foot of impervious (and/or gross) area, thus slightly increasing the stormwater charge to other properties.

POLICY PAPER 9

STORMWATER CREDITS

Issue Description

A crediting mechanism to reduce the fee a property owner pays can be incorporated into the stormwater rate structure. Stormwater credits are granted to improve equity and to provide incentives to implement or carry out an overall community stormwater management plan or to advance some other social or environmental objective.

Credits typically do not significantly reduce total utility revenue (often less than 5 percent) and often provide a benefit to the utility by reducing the resistance to the stormwater charge from large fee payers or others who would qualify for a credit. Credits are one of only a few ways stormwater utilities have to encourage sound development using a "carrot" rather than a "stick". As such they may carry an importance far beyond their actual revenue significance.

There is a difference between a one-time credit (often termed an offset) and an ongoing credit. For the purposes of this policy paper, all types of exemptions and reductions are discussed under the general term "credit" although there is a difference in both legal standing and application.

The actual details of how a credit is devised and carried out can be tedious and technically complex. Some credit mechanisms require detailed legal and technical analysis, or the development of supporting policies and staff training prior to implementation. *Therefore, we recommend that the CAC limit the scope of its consideration to recommending basic types of credits to be given and a sense of how much of the user fee should be available for crediting.* The details of the credit mechanism will then be developed within guidelines set by the CAC along with the database and other utility rate study details.

It is important at the outset, as we consider the use of credits, to be reminded of several of the guiding criteria:

- reflect what has been learned from other places
- promote good stormwater management behavior
- not be unfair to any customer class
- be efficient
- be cost effective
- be equitable and fair

Background Information and Analysis

Basis for Stormwater Credits

Credits in use by stormwater utilities throughout the United States derive their primary basis in six different ways. Some credit mechanisms are complex, others are simple. Few cities offer credits in more than one or two of these categories. *Most cities have initially implemented a limited number of basic credits and have later expanded and refined as more experience is gained and other utility transition issues were settled.*

The six basic categories of, or reasons for, credits are:

- a class of ratepayers (such as elderly or disadvantaged)
- the class of property (such as tax exempt, agricultural, or publicly-owned property)
- location within the watershed or service area
- activities which improve the system beyond normal expectations
- on-going activities on the property which reduce impact
- on-going activities on the property which directly reduce the city's cost of service

The first two of these categories have been discussed by the CAC and resolved in previous policy papers, within the rate structure itself, or are current policies of PWD. By City Council ordinance and regulation the PWD currently offers a 25 percent reduction in water and wastewater utility fees to specific economically disadvantaged and certain tax exempt properties, namely senior citizens (who meet the income test), hospitals, schools, universities, churches, and other nonprofit charitable organizations. It is assumed that these same customers will also receive a 25 percent discount on the new stormwater charge. The CAC has decided to exempt public streets and certain other qualifying private streets and Fairmount Park from stormwater utility fees. The rate structure itself will offer reduced fees to larger properties who maintain open space. The last four categories will be discussed briefly with recommendations made.

Credits Based on Location of Property

It can be argued that properties located adjacent to major streams do not make use of the urban stormwater system in the same way properties do which are located elsewhere in the system. Some cities have granted some measure of credit for those properties which are located adjacent to and discharge directly into major streams or creeks (Portland, Oregon for example). However, such an argument taken to its logical conclusion can result in differing charges based on differing locations throughout the watershed. This is clearly an unworkable situation.

While properties adjacent to major streams and rivers do not make direct use of as much of the local urban stormwater system as properties located at the top of the watershed, there are also strong justifications for not granting them credits. Because of their riparian rights as owners of lands through which, or adjacent to which, streams flow these properties are the

primary, and often exclusive, beneficiaries of all systems and activities designed to reduce flooding, reduce flood insurance rates, regulate flood plains, stabilize rivers and streams, develop greenways and clean up surface water. In fact, in some cities (Boulder, Colorado for example), a surcharge is imposed on floodplain located properties to pay for the city's floodplain administration costs. *On balance, it might be stated that the farther from the watershed outfall the more use is made of the system while the closer to the watershed outfall the more benefit is enjoyed from proper working of the system.*

Also, all properties, regardless of location, benefit from installation of an adequate stormwater management system, and the proof of special benefit assigned to each property is not necessary. All property owners share in the general benefits of cleaner water, safe streets during storms and sounder development practices.

We therefore do not recommend developing a credit mechanism based on property location at this time.

Credit Based on Extraordinary Systems or Activities

This credit category allows flexibility to provide credits for a wide variety of activities which the City deems to benefit the public as a whole and which are obtained at the expense of a single, or class of, property owners. Types of credits under this category might include:

- Offering a one time or ongoing credit in exchange for building infrastructure which is larger or "better" than required;
- Offering credit for activities which reduce pollution or educate polluters. Some cities offer a credit to local schools if they provide education on surface water pollution and drainage, others give a credit (25% in the case of Charlotte, NC) to industries which must obtain and maintain an EPA permit for stormwater quality control, another is developing a credit mechanism for industries which carry out worker education and training in pollution reduction. Schools in Philadelphia currently receive a 25 percent discount.

Developing and maintaining such credits can be complex and requires the development of additional programs and staff policies and procedures. At present the city's stormwater quality program is in its infancy. Also, consideration of combined sewer overflows is undergoing current study. *It would seem premature to offer more complex credits in this area until such time as these other programs mature and take shape.*

Various industries within the city must maintain a current National Pollutant Discharge Elimination System (NPDES) permit to limit discharge of polluted stormwater. The requirements of such a permit vary, but all cost the industries something. The primary beneficiaries of these industrial activities are the downstream residents and the City population in general. Rewarding industries for carrying out such a stormwater program would seem to be both fair and reasonable. *We recommend that a simple blanket, lump sum credit be considered for industries which maintain and meet the conditions of a current*

stormwater quality permit. This credit may be in the form of a fixed dollar credit, or perhaps a percentage discount on the industry's stormwater bill.

Credit Based on Direct Reduction of Impact

The guiding principle in developing and granting stormwater credits based on impact and cost reduction (discussed in the next sub-section) can be stated as: "credit can be given for approved private investments or actions which reduce public cost, or which produce a stormwater related public good, which is ongoing". Under this guiding principle, there are a number of ways to look at how credits could theoretically be justified and applied.

The basis for the stormwater utility fee is twofold: the total cost of the stormwater program, and the impact of each property on the stormwater and stream systems. There are many stormwater related impacts of urban development including: higher peak flows which arrive faster than before development, higher velocities, more total flow volume, higher levels of pollution, more erosion and/or sediment, less long-term base flow, and higher temperatures. In Philadelphia, as in most cities, these impacts are approximated by measuring impervious and gross area. For credits, most cities consider only peak flow reduction, or a combination of peak flow and pollution reduction.

It must be realized at the outset that a credit is not a strict engineering calculation. It does not have to scientifically predict reductions in impact. Therefore, evidence of a significant hydrological response modification (e.g. reduction in contribution to the stormwater system), and not strict engineering analyses, is adequate for crediting mechanisms.

Often, for the sake of convenience and economy, individual residential properties are not afforded the credit opportunities of larger non-residential properties. Activities an individual homeowner could take to reduce storm water pollution are minor (though they can be major in aggregate) and impossible to monitor. To partially address this problem some cities allow homeowner associations to be treated like non-residential properties for certain types of credits, mostly regional detention structures.

Peak Flows. Most cities that have used an impact-based crediting mechanism have concentrated on providing credit for the reduction of peak flows. This credit is normally granted for the provision of detention or retention ponds. Many equations or rules have been employed using both fixed credit proportions or a sliding scale based on the amount of the peak flow reduction.

Columbus, Ohio, for example, uses a sliding scale which moves from a minimum of 20 percent credit for a basic detention pond and a simplified application procedure, to a maximum potential of an 80 percent credit for over-design to correct downstream problems. Several North Carolina cities use the concept of "effective impervious area." To the extent owners significantly modify their property to make it appear less impervious it is appropriate to allow a proportionate credit. For example, if a property owner makes the hydrologic response from four acres of impervious area act (in terms of peak runoff) like it is two acres

of impervious area, the owner might get a fifty percent reduction in that portion of the fee available for crediting

Philadelphia currently has about 190 detention ponds designed for peak flow reduction and primarily located in the separate sewer area.

Pollution. As a result of Federal (e.g. NPDES, Section 319, etc.) or state program requirements, some local governments are looking at ways to apply stormwater utility credits for activities for which anticipated pollution reduction can be calculated. The effective impervious area method has been applied in several instances. In others set amounts of credit are allowed for defined activities or construction of certain facilities.

Based on the above discussion, it seems appropriate to offer property owners who must build and maintain such peakflow reduction structures, when others do not have to build them, a credit in some way proportional to the reduction in impact these ponds accomplish. For reasons given in the previous sub-section, it seems premature to offer credits for pollution reduction structures until the water quality program is more defined and mature.

Credit Based on Directly Reduced Cost of Service

A cost reduction credit approach involves a recognition of the reduction of municipal responsibility by using private resources to accomplish public ends. For example, cities spend a certain number of dollars per acre on major and minor system maintenance. Larger properties that maintain their own systems or public systems to a certain acceptable standard reduce the city's cost by removing their large area from public responsibility. This can be recognized through a credit equal to the area they remove from the city's responsibility or the actual cost of service reduced. Durham, NC approached the credit problem using the area method. Columbus, OH used this basic method in a slightly different way by actually measuring the length of open channel maintained by private means and crediting an amount per linear foot annually.

To implement a mechanism like Durham's it is necessary to: (1) determine the city's projected cost per acre for the maintenance operations program; (2) determine a minimum area and type of area for which a property can apply for this credit based on the minimum size the city typically maintains; (3) determine acceptable maintenance standards; (4) determine a means of verifying that the property owner or manager has an internal grounds crew or a contract grounds crew and a specific maintenance plan that will result in a suitable service level; and (5) develop an inspection or other reporting method to ensure compliance.

Unlike many Western and Midwestern cities which have employed such a credit mechanism, most of Philadelphia's drainage system is contained in closed combined sewer systems. That portion of the stormwater system which is carried in open channels is minor, and is maintained on a complaint-driven basis. It is currently difficult to allocate costs for such maintenance. *Calculating a reasonable credit for such activities would be difficult, and the*

number of properties which would qualify for such a credit is likely very small. We recommend not considering such a credit mechanism at this time.

Summary of Recommendations

In summary:

- We recommend that a simple blanket, lump sum credit be considered for industries which maintain and meet the conditions of a current stormwater quality permit.
- We recommend that PWD offer property owners who must build and maintain peak flow reduction structures (such as detention ponds) a credit in some way proportional to the reduction in impact these ponds accomplish.
- We recommend that further consideration of credits for other pollution reducing activities be delayed until such time as the stormwater quality program has matured.
- We recommend that the details of the crediting mechanisms be worked out during the time period when the detailed rate structure is being developed.

POLICY PAPER 10

STORMWATER CHARGE APPEALS AND ADJUSTMENTS

Issue Description

Transition to a new rate methodology for the stormwater charge raises the issue of potential errors in the calculation of stormwater charges for individual properties and proper treatment of anomalous conditions that may not be fully accounted for in the impervious and gross area of individual properties. If a simplified residential rate is also used, the possibility exists that a residential property may not be properly assigned to the appropriate category. Furthermore, Policy Paper #9 (Stormwater Charge Credits) calls for recognition of conditions and activities which mitigate the usual impact of property conditions on the peak rate, total volume, and pollutant loadings of stormwater runoff.

Potential errors, anomalies, and credit provisions suggest the need for a formal process and mechanisms whereby property owners can appeal their charges and obtain corrections. The first issue to be decided is whether a stormwater charge appeals and adjustment process is needed. If appeals and adjustments are not a concern, no mechanism or process is needed. If appeals and adjustments need to be provided for, full consideration of this policy issue involves a decision tree.

The first question is whether an existing appeals and adjustment process is sufficient to ensure customers a practical and workable means of seeking relief from stormwater charges that may be in error or that may not fully recognize circumstances on their properties. If an existing process is sufficient, an appeals and adjustment policy for stormwater charges need only specify that the existing system is to be used to resolve problems with the stormwater charges. If the existing approach is not sufficient and one is needed, a policy should be defined which spells out how stormwater charge appeals and adjustments should be processed and addresses follow-on issues such as retroactivity of adjustments and rescinding of credits and adjustments.

Recommendations

It is recommended that a formal process be provided for PWD stormwater charge appeals and adjustments. The current PWD policy for appeals and adjustments meets the fundamental standards of providing a clear, hierarchical process for elevating appeals and a means of evaluating and determining appropriate adjustments in response to customer appeals of water and wastewater charges, including the stormwater component. It is recommended that the existing appeal and adjustment process be amended as necessary and applied to stormwater charges under the recommended stormwater charge rate methodology based on impervious area and gross area. PWD staff should review appeal applications and other paperwork that might be used to process customers' appeals.

Background Information and Analysis

An appeals and adjustment process offers several benefits to both PWD and its customers. First, and perhaps foremost, it legitimizes the stormwater charge as a user charge. Appeals and adjustment processes and mechanisms are a common element of stormwater utility user charge funding. Courts in several states have identified appeals and adjustment processes as indicative of a user charge as opposed to a tax. It is also consistent with current practices. PWD has had an appeals and adjustment process in place for many years to enable customers to seek relief from water and sewer charges, including the stormwater component of the sewer charge.

Assuming that an appeals and adjustment process is needed and appropriate, the second issue is whether the existing appeals and adjustment provisions are suitable for the problems likely to emerge in the application of a new stormwater charge rate methodology. An evaluation of the current appeals and adjustment policies and processes employed by PWD has been performed. The key finding of that evaluation is that the existing approach appears to be fully sufficient to process stormwater charge appeals under the recommended impervious area/gross area rate methodology.

Some fine-tuning of the appeals and adjustment process will be needed as the rate methodology is implemented. Often, the various sources used in developing impervious area and gross area data are found to be inaccurate or inconsistent. For example, an impervious area shown on a site plan may differ in size and/or shape from the apparent size and shape shown on an aerial photograph or digital planimetric map. The source of such discrepancies may be the result of construction which is not in compliance with the building permit. There may not be a building permit required for some impervious coverage. A structure for which there is a permit and site plan may not have been built at the time the aerial photography was acquired, or may not have been built at all. Although fewer problems typically occur with gross area measurements because they are not as dynamic of impervious area conditions, the potential for errors in the data exists. Finally, there is the potential for inconsistencies between the impervious area and gross area measures. Procedures should be established to resolve any discrepancies that might arise as the result of conflicting impervious area and gross area data sources.

In addition to impervious area and gross area discrepancies, there will be anomalous situations on individual properties which would not be treated properly by the usual stormwater charge calculation, or where the installation of best management practices reduces the apparent impact of a development on the stormwater systems and program. These properties may have certain conditions which result in lower than normal rates of peak runoff, total volume, or pollutant loading. In such cases, the PWD will need to have a means of responding to appeals and adjusting the stormwater charges to individual properties in order to maintain consistency with the rate philosophy proposed by the CAC and its objectives.

Finally, it appears that the existing appeals and adjustment process may have to be altered to better accommodate stormwater charge credits. The type of credits envisioned in Policy

Statement #9 would be conditional, i.e., they would be dependent on proper maintenance of the systems or continuance of the activities upon which the credits are based. Checks on the on-going satisfaction of the conditions underlying the credits need to be built into the process, including inspections and non-compliance notification mechanisms. The approach presently used for sewer charge adjustments for industrial pre-treatment offer a mechanism that is suitable for stormwater credits as well.