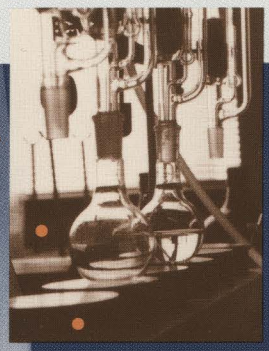
recycling

1992

Philadelphia Water Department
Executive Summary

water treatment



water

distribution

neighborhoods

daily operations

dedicated employees

24 hours a d

quality service

d a i l y

a y

around the clock

Tick, tick, tick . . .The day to day operation of the Philadelphia Water Department reflects nature's water cycle, incorporating the principles that nature designed — using and replenishing the earth's water. Fitting the Water Department's daily operations into nature's framework demands that it be multi-faceted, operating and providing service 24 hours a day, continuously. With little interruption, it pumps the waters of the Delaware and Schuylkill rivers into the water treatment plants, cleans and processes the water for delivery to homes, collects the water flushed and drained through sewers, cleans the waste-water at the wastewater treatment facilities, and returns the processed water back to the Delaware River. These basic operational components create complementary operations and services, large and small, including: collection and composting of sewage sludges, maintenance and rehabilitation of a vast water and sewer pipe infrastructure, laboratory quality testing of water, wastewater and sludge, environmental protection of the region's waterways, and the pursuit of the best treatment techniques to ensure the highest quality drinking water for the City's 1.6 million people.

p u b l i c h e a l t h

lead public education

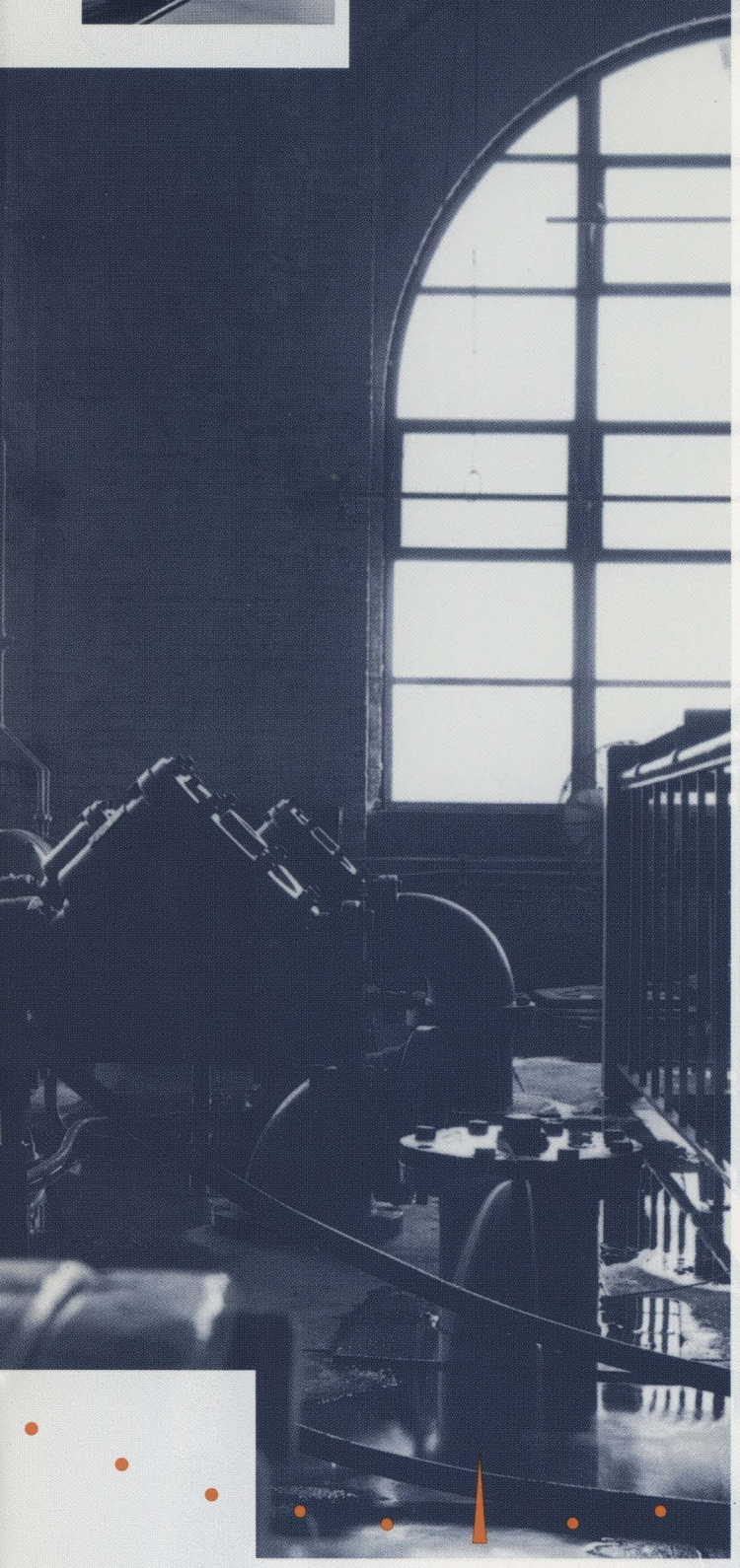
The Water Department has successfully completed a full year of water quality sampling for lead at customers' taps in compliance with the 1991 Lead Rule. Federal guidelines dictate that if more than 10 percent of sample homes most at risk for lead contamination exceed lead levels of 15 parts per billion (ppb), a public education program should be initiated, and a corrosion control program put into place.

Round one of the department's lead sampling program was conducted from January to June 1992. During this period, the department tested 162 homes which were at risk due to lead plumbing systems or components of their plumbing systems containing lead-based solders. Twenty-five of these homes, or approximately 15 percent, exceeded the 15 ppb "action level." The department immediately launched a six month public education campaign which included: brochures on lead in drinking water in customers' bills; health brochures to hospitals, non-profit agencies, schools; ads in newspapers; and public service announcements for radio and TV. Philadelphia was the first city in the country to begin a lead public education program of such magnitude.

Round two culminated with the Water Department receiving a passing grade after testing for lead at customers' taps from July to December 1992. The second round of testing included 143 homes. Only 14 of the samples, or 9.79 percent, exceeded the federal action level. Despite the positive results, the department will continue its public education efforts to keep its customers informed of the possibilities of lead leaching from home plumbing systems.

The Water Department is now concentrating its efforts to implement and fine tune a unified corrosion control program, using zinc orthophosphate as the "inhibitor of choice" at its three water treatment plants to minimize lead leaching. Lead sampling will resume in January 1997 to gauge the effectiveness of the department's adopted corrosion control strategy.

water quality



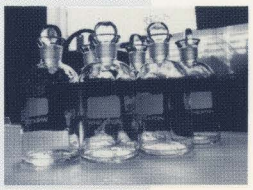
Water quality is the buzz word of the '90s. With the implementation of the 1986 amendments to the Safe Drinking Water Act, no less than 83 substances found in our nation's water supplies have come under the microscope. Water utilities are required to monitor these substances to ensure their presence remains under barely measurable levels of parts per million. These water quality parameters deal as well with the treatment techniques employed by water utilities at their treatment facilities, with how they distribute and test the drinking water supply and with how the water supply is stored and protected.

Total Coliform

Implementation of the revised Total Coliform Rule in 1991 electrified water utilities across the country due to the prominence placed on a single indicator of total coliform from a lab sample.

The Water Department successfully completed its first year of testing for total coliform, a bacteria indicator, under the revised Safe Drinking Water Act without a hitch.

The Water Department samples the water quality of the treated water distributed from its three water treatment plants, in addition to 71 locations throughout the 3,000 mile distribution system. Under the new ruling, which became effective in July 1992, the department was required to recruit four alternative sampling points, two above and two below each of the department's standard sampling locations. This requires the department to take samples every three months from the homes of customers who volunteered to take part in the program. Water samples are taken from the tap that is closest to the water meter in order to obtain a water sample most like the water in the main in the street. Water samples are tested for pH, turbidity, chlorine, alkalinity and coliforms.

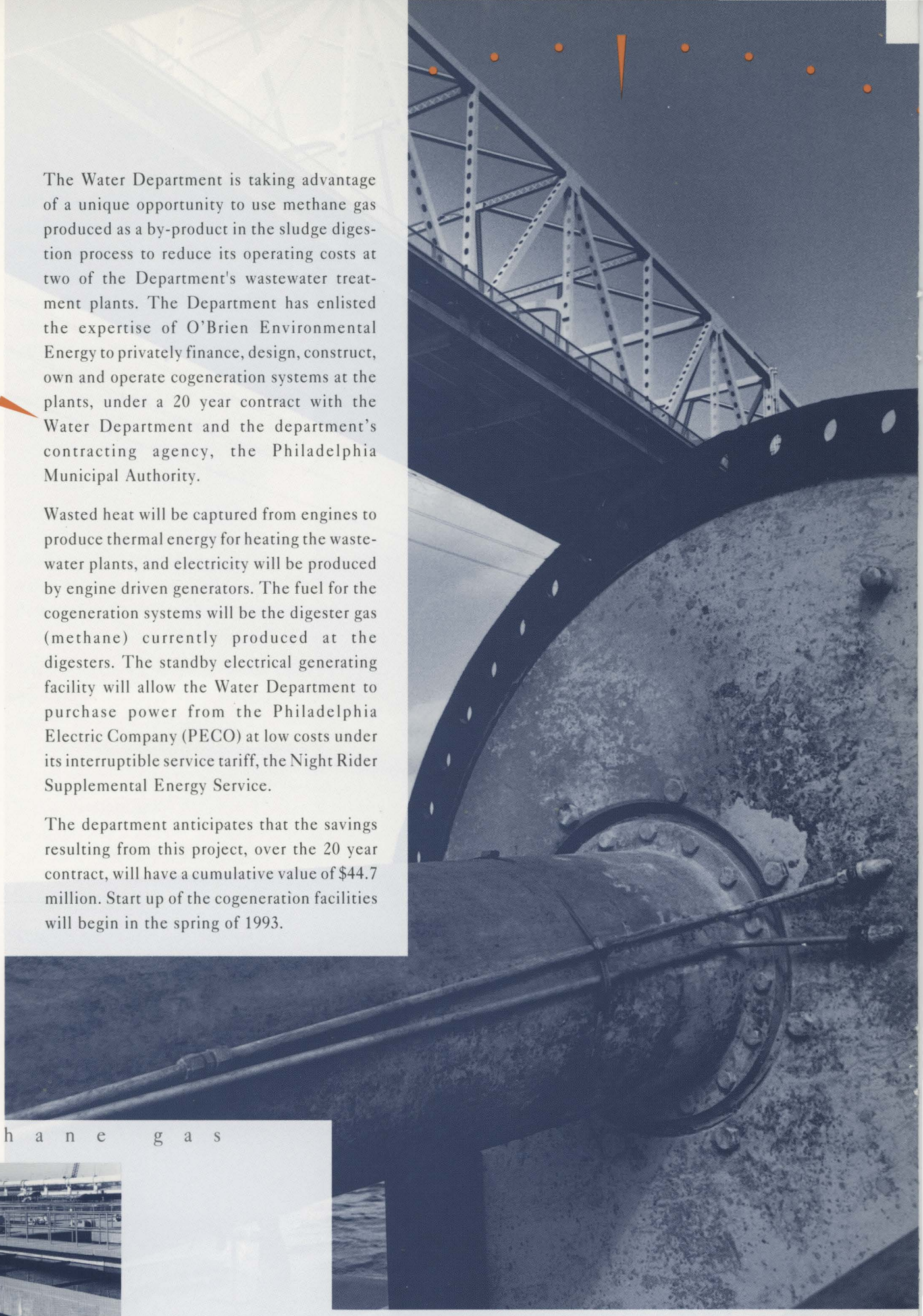


cogeneration

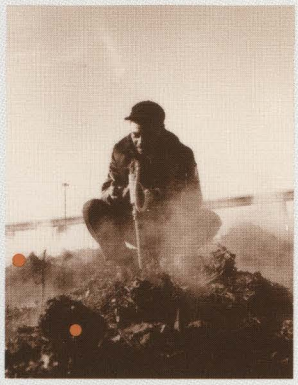
The Water Department is taking advantage of a unique opportunity to use methane gas produced as a by-product in the sludge digestion process to reduce its operating costs at two of the Department's wastewater treatment plants. The Department has enlisted the expertise of O'Brien Environmental Energy to privately finance, design, construct, own and operate cogeneration systems at the plants, under a 20 year contract with the Water Department and the department's contracting agency, the Philadelphia Municipal Authority.

Wasted heat will be captured from engines to produce thermal energy for heating the wastewater plants, and electricity will be produced by engine driven generators. The fuel for the cogeneration systems will be the digester gas (methane) currently produced at the digesters. The standby electrical generating facility will allow the Water Department to purchase power from the Philadelphia Electric Company (PECO) at low costs under its interruptible service tariff, the Night Rider Supplemental Energy Service.

The department anticipates that the savings resulting from this project, over the 20 year contract, will have a cumulative value of $44.7 million. Start up of the cogeneration facilities will begin in the spring of 1993.



sludge recycling



Nineteen ninety-two was a year characterized by change, during which the sludge unit regrouped, experimented and set out on new ventures. In Fiscal Year '92, approximately 286,610 tons of recycled sewage sludge products were distributed, 46 percent used to restore park land, grow flowers, recondition stripmines, produce feed stock and revitalize dying grass lands.

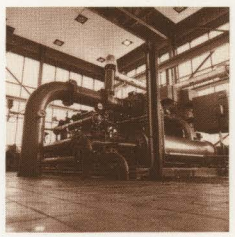
At the Sludge Recycling Center, the new Mixing Facility, which was destroyed in a fire in 1990, is scheduled to start up operation in the late spring, allowing plant operations to abandon the less flexible, interim mixing method. In addition, operational improvements including upgrading of the centrifuges, testing new polymer systems, installing more powerful motors on pug mills—will contribute to a more efficient sludge processing operation.

In its goal to truly recycle resources, the unit experimented with using recycled woodchips versus virgin woodchips for the composting process. However, after a period of dedicated testing of the recycled woodchips, the possibility of unacceptable levels of preservatives used in wood and lumber has caused the department to resume use of virgin woodchips again in their composting process. Philadelphia's compost products shine as compared to EPA's standards for metal concentrations in compost.

And, because the composted products are so popular with regular users, the Department is planning to develop community giveaway sites in various sections of the City this summer and next. Customers and neighbors will be welcomed to shovel and bag for themselves EarthLife, the Department's finest, screened compost, free of charge.

e a r t h l i f e

c o m p o s t



leak detection

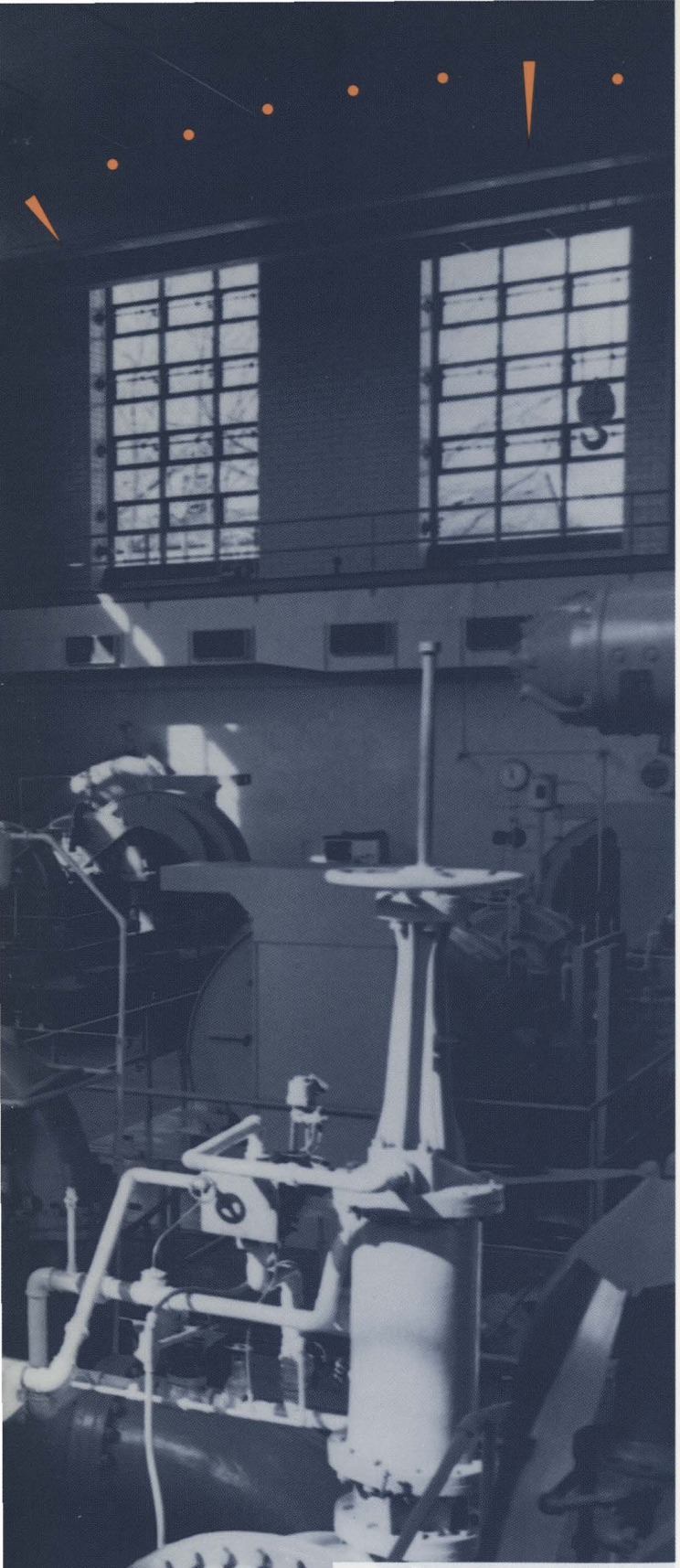
The Philadelphia Water Department's 3,000 mile water infrastructure is a vast underground network of pipes which delivers drinking water to customers' homes. This network encompasses pipes ranging from 3-inch diameter to 93-inch diameter, made from materials such as cast iron, ductile iron, steel and reinforced concrete. The average age of the department's water infrastructure is a respectable 75 years. It's an aging system that requires much monitoring and replacement.

Of course, monitoring a system which is underground and therefore invisible, is extremely difficult. The department often relies on its customers to call in a leak spotted on their street, or a drop in water pressure if the leaking or broken main is a large one.

However, a percentage of the Water Department's treated drinking water is lost every day through unseen, undetected, leaking water pipes. Therefore, as the Water Department focuses on the rehabilitation and replacement of its infrastructure, additional efforts will be concentrated on the investigation of leaking water mains which are difficult to locate.

The Water Department's goal for the next few years is the abatement of 10 million gallons of leaking drinking water a day, at a savings of $610,000 annually. The department plans to increase this amount as it gains expertise in the state-of-the-art technology of leak detection.

leak abatement



u n d e r g r o u n d

monthly billing

The Water Department and the Water Revenue Bureau, which acts as the billing and collection muscle of the Water Department, are working on a number of initiatives together to shore up the department's financial resources.

In January 1993, monthly billing began for Philadelphia's water and sewer customers. Monthly billing for a large utility such as the Water Department is preferred by both customers and administrators to the previous quarterly system. The benefits of monthly billing are: more manageable bills that can be budgeted with other household expenses; improved collection and enforcement; early identification of low-income customers in payment trouble; and more frequent meter readings. A typical monthly bill for a family of two will total somewhere in the area of $35 to $45. This is a smaller bite on the family budget than the previous quarterly charge.

An important step towards getting customers to pay their bills is to obtain an accurate or "true" reading of the customer's water meter, ideally on a twice a year basis at least.

To meet this goal, the Water Revenue Bureau launched a new meter reading schedule in April 1993 to meet the needs of the working family. Also, as in past years, a second shift was instituted to take advantage of daylight savings, allowing meter readers to visit customers' homes from noon until 8:00 PM. The Bureau is hoping to catch their working customers at home, to get a true reading that will provide an accurate bill.

Together, the Water Department and Water Revenue Bureau are implementing a variety of management initiatives to better serve their customers.

e n f o r c e m e n t

e r p r e s s u r e

m e t e r r e a d i n g

Supplemental Schedule of Rate Covenant Compliance for the Fiscal Year Ended June 30, 1992 (Legally Enacted Basis)

Pursuant to section 4.03(b) of the General Water and Sewer Revenue Bond Ordinance of 1974 (Bill No. 1263), the City is required to impose, charge and collect in each Fiscal Year rates and charges at least sufficient, together with that portion of the unencumbered amount of the operating fund balances available and reserved for appropriation for the payment of Operating Expenses at the commencement of such Fiscal Year, which together with all other project revenues to be received in such Fiscal Year, shall equal not less than the greater of:

A. The sum of:
(i) all Net Operating expenses payable during such Fiscal Year;
(ii) 150% of the amount required to pay the principal of and interest on all Bonds issued and outstanding hereunder which will become due and payable during such Fiscal Year; and
(iii) the amount, if any, required to be paid into the Sinking Fund Reserve during such Fiscal Year.

Coverage is computed as follows:

Coverage A	
Line 4	$159,479,273
+ Line 12	20,528,022
+ Line 18	(14,623,979)
	165,383,317
/ Line 5	(85,341,208)
= Coverage A	1.94

B. The sum of:
(i) all Operating Expenses payable during such Fiscal Year; and
(ii) all Sinking Fund deposits required during such Fiscal Year in respect of all outstanding Bonds and in respect of all outstanding General Obligation Bonds issued for improvements to the water or sewer systems and all amounts, if any, required during such Fiscal Year to be paid into the Sinking Fund Reserve.

Coverage is computed as follows:

Coverage B	
Line 4	$159,479,273
+ Line 12	20,528,022
- Line 13	(34,144,703)
+ Line 18	(14,623,979)
	131,238,614
/ Line 7	(94,587,346)
= Coverage B	1.39

c o n s e r v e w a t e r

s a m p l i n g p o i n t s

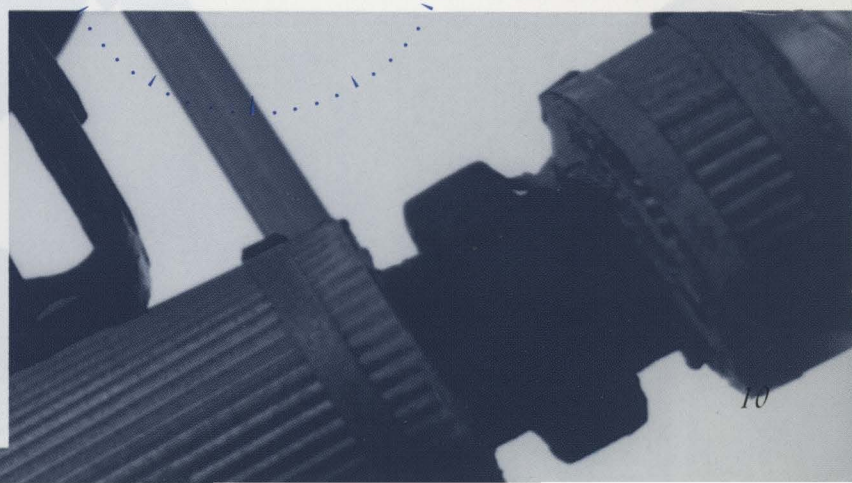
Supplemental Schedule of Rate Covenant Compliance for the Fiscal Year Ended June 30, 1992 (legally enacted basis)

Line no.		
1.	Total Operating Revenue	$323,547,920
2.	Net Operating Expense	(153,171,961)
3.	Bond Anticipation Notes	(10,896,685)
4.	Net Operating Revenue After Notes	159,479,273
	Debt Service	
5.	Revenue Bonds Outstanding	(85,341,208)
6.	General Obligation Bonds Outstanding	(9,246,137)
7.	Total Debt Service on Bonds	(94,587,346)
8.	Net Operating Revenue after Bonds	64,891,928
	Nonoperating Income;	
9.	Interest Income	15,865,948
10.	Grant Income	4,662,074
11.	Transfer in from Renewal and Replacement Fund	
12.	Total Nonoperating Income	20,528,022
	Other Obligations:	
13.	Direct Interdepartmental Charges	(34,144,703)
14.	Transfer of Interest Income to General Fund	
15.	Transfers to the Renewal and Replacement Fund	(21,980,721)
16.	Total Other Obligations	(56,125,424)
17.	Net Operating Balance for Current Year	29,294,526
18.	Net Balance at Beginning of Fiscal Year	(14,623,979)
19.	Net Balance at End of Fiscal Year	$14,670,547

c o l l e c t i o n

t u r b i d i t y

p o w e r e n e r g y h e a t



p u b l i c a f f a i r s

c e n t r a l l a b

s l u d g e

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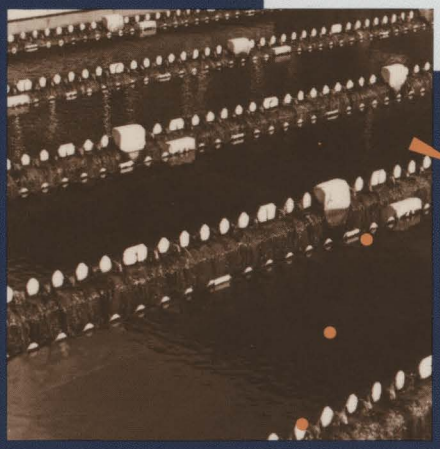

c o l l e c t o r s y s t e m

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w a t e r