WATER DEPARTMENT
CITY OF PHILADELPHIA

SEWER REGULATION NO. 6*

SEWER CHARGES - REGULAR AND SURCHARGE

Pursuant to section 5-801 of the Home Rule Charter and in order to continue the Sewer Fund on a self-sustaining basis, charges for sewer service supplied by the City of Philadelphia shall be established and revised as of July 1, 1970, as follows:

A - SEWER CHARGES - In General

All customers discharging wastewater into the City's wastewater system shall pay a charge for normal wastewater and shall pay additionally a surcharge for wastewater whose pollutant content is by definition in excess of the pollutant content of normal wastewater.

Normal wastewater subject to the regular charge is that wastewater which contains less than 350 milligrams per liter of biochemical oxygen demand and less than 400 milligrams per liter of suspended solids. Wastewater subject to the surcharge is that wastewater which contains either more than 350 milligrams per liter of biochemical oxygen demand or more than 400 milligrams per liter of suspended solids or both.

B - SEWER CHARGES - Regular

Regular sewer charges shall be determined and billed as follows:

(1) Regular sewer charges imposed shall be based upon water consumption of properties served, as measured by the charges for water supplied under the terms of Water Regulation No. 34.

(2) These sewer charges shall be the following percentages of the water charges for the various sizes of meters:

Size of Water Meter	Percentage	Size of Water Meter	Percentage
5/8 Inch	115%	3 Inch	80%
3/4 Inch	109%	4 Inch	73%
1 Inch	103%	6 Inch	67%
1 1/4 Inch	98%	8 Inch	60%
1 1/2 Inch	92%	10 Inch	60%
2 Inch	86%	12 Inch	60%

* Sewer charges are fixed as a percentage of water charges.

(3) Bills for these sewer charges shall be rendered at the same time and for the same billing cycles covered by water bills. Provisions for payment of these sewer bills, for penalties, and for the transitional first billing, shall be as prescribed in the Water Regulations and the Philadelphia Code.

:- SEWER CHARGES - Surcharge

(1) The surcharge for wastewater by definition in excess of normal wastewater shall be fixed at one and one-half cents ($.015) a pound of pollutants received into the wastewater system in excess of 350 milligrams per liter of biochemical oxygen demand or in excess of 400 milligrams per liter of suspended solids or both.

(2) The strength of wastes shall be determined from samples taken on the customer's property at any period or time and of such duration and in such manner as the Department may prescribe or at any place mutually agreed upon between the customer and the Department. The results of routine sampling and analyses by the customer may also be used in determining the amount of the surcharge after approval of the Department.

(3) Customers discharging sewage subject to the surcharge shall, as prescribed by the Water Department

(a) install and maintain such facilities for sampling and measuring the sewage discharged from their properties; and

(b) install and maintain such records and information deemed necessary for the calculation of the surcharge.

(4) Customers, as required from time to time, shall file with the Water Department a questionnaire establishing or revising pertinent information of the quantity of flow and the quality of wastewater and other data deemed necessary for the calculation of the surcharge.

(5) Measurements, tests and analyses of the characteristics of wastewater subject to surcharge shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater."

(6) The surcharge shall be applied to the total wastewater discharged less any portion excepted by the Department. The surcharge shall apply to wastewater discharged into the system on and after July 1, 1970.

(7) Provisions for payment of sewer surcharge for penalties and for the transitional first billing shall be as prescribed in the Water Regulations and the Philadelphia Code.

D - EFFECT OF THIS REGULATION

This regulation applies to the billing of sewer charges accruing on and after July 1, 1970. It does not repeal or supersede any regulation or ordinance in effect governing the billing of sewer charges accrued to January 1, 1967 and does not change the running of penalties and interest against such charges under existing regulations or ordinances.

E - EFFECTIVE DATE

This regulation is effective July 1, 1970.

SAMUEL S. BAXTER (sgd)

SAMUEL S. BAXTER
Water Commissioner

Approved as to Form and Validity

KARL I. SCHOFIELD (sgd)

KARL I. SCHOFIELD
Deputy City Solicitor

shall discharge into a lavatory, water closet, urinal, bathtub, shower, drinking fountain, or other similar fixture in use for its customary purpose.

(a) A drain for receiving condensate from air conditioning systems may discharge to a laundry tray fixture or service sink fixture in accordance with §8-1202.

§8-1203. Sewage and Industrial Waste

(1) Materials. Pipes, stacks, vents and connecting joints conducting or otherwise in contact with corrosive waste shall be constructed of materials approved by the Department as capable of resisting the destructive action of such wastes.

(2) Treatment.

(a) Corrosive, toxic, or injurious wastes shall not be discharged into a street sewer unless first treated, diluted, or neutralized in accordance with the regulations of the Water Department to prevent injury to the public sewer system and treatment works.

(b) No waste containing radioactive substances shall be discharged into any portion of a plumbing system unless so treated, diluted or handled as the Department of Public Health may prescribe by regulation to prevent public health hazard.

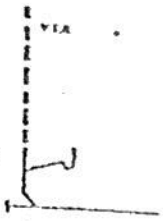
(c) Corrosive, toxic, or injurious wastes or sanitary sewage not discharged into the public sewer system or as prescribed in Chapter 8-1400 shall be conveyed in a manner approved by the Department and treated, diluted, neutralized, and disposed of in accordance with the regulations of the Department of Health of the Commonwealth and the Department of Public Health to ensure efficient and sanitary disposal and to prevent stream pollution, discharge to the ground surface of contaminating substances, creation of offensive odors, contamination of water supplies, and the creation of health hazards and nuisances.

§8-1204. Length of Indirect Wastes

No indirect waste pipe shall exceed 100 feet in length without venting.

§8-1205. Venting Indirect Wastes

Indirect waste stacks receiving the discharge from fixtures on more than one floor, indirect wastes exceeding 100 feet in length, and indirect wastes draining more than one trapped fixture shall be vented by being extended to the outer air above the roof as required by Chapter 8-1100.



§8-1206. Size

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(d) Clean-outs on 4 inch or larger pipes shall be so installed that there is a clearance of not less than 18 inches for rodding.

(e) Clean-outs smaller than 4 inches shall have not less than 6 inch clearance.

§8-508. Interceptors and Separators

(1) Whenever the waste discharged into a drainage system contains or is likely to contain substances which hinder sewage disposal, such as non-soluble, flammable, or hazardous substances, an approved interceptor shall be installed which effectively prevents such substances from entering the public sewer. When required by the industrial Wastes Division of the Water Department.

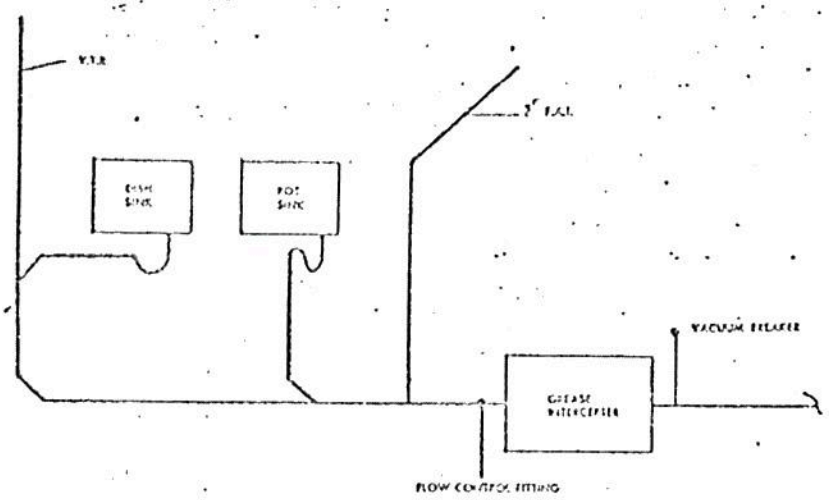
(2) Interceptors shall not be required for fixtures installed in dwelling houses or dwelling units.

(3) All interceptors shall be so designed that they will not become air-bound or permit siphonage. They shall be located so as to be readily accessible for cleaning and inspection.

(4) The flow rate through an interceptor shall not exceed its rated capacity, and the interceptor shall operate at a minimum overall efficiency of 90% while draining the fixture in 2 minutes.

(5) Grease interceptors shall have a flow control fitting with external cleaning device.

(6) No interceptor shall be considered a trap unless the outlet is at least 1½ inches above the inlet.



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(7) All fixture outlets shall be individually trapped, all traps shall be properly vented, and a fresh air inlet or vent shall be installed on the house side of the interceptor.

(8) The outlet of the interceptor shall have a vacuum breaker or vent.

§8-509. Oil Interceptors

(1) An approved oil interceptor shall be installed in the drainage systems of the buildings or other structures and parts of buildings or other structures and premises of the following uses or occupancies. When required by the Industrial Waste Division of the Water Department.

(a) Commercial garages, repair shops, service stations, trucking docks, and any other place where gasoline or other flammable liquid with flash-point less than 90° is dispensed, or regularly used in connection with the work performed or processes employed;

(b) Dry cleaners or dyers using solvents;

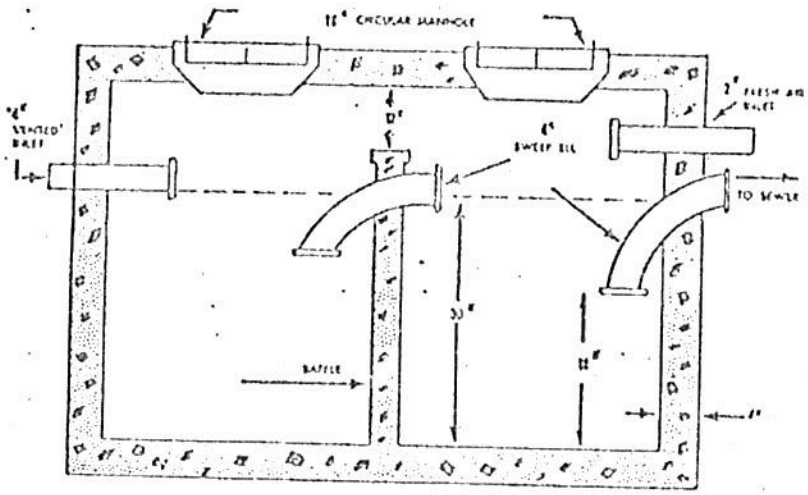
(c) Paint, lacquer, or varnish factories;

(d) Printing ink manufacturing plants.

(2) Oil interceptors shall be constructed so as to be oil-tight and shall have easily removable water and gas-tight covers.

(3) Every oil interceptor shall have a separate vent on the terminal end of the inlet piping and a fresh air inlet on the sewer side of the interceptor tank to relieve vapor. The size of the fresh air inlet shall be not less than 2 inches in size, connected to the interceptor tank, extended to the outer air in accordance with §8-503 or to any location approved by the Department.

(4) Construction. If construction is of masonry type it shall be of reinforced concrete and the base, baffle wall and exterior walls shall be not less than six inches thick. Or: Construction may be of eight inch sewer brick parged to a smooth finish on the interior walls. Or: Construction may be of eight inch 75% solid concrete block parged to a smooth finish on the interior walls. Other materials may be used when approved by the Department. Adequate access to each compartment of the intercepting tank shall be provided by an 18 inch manhole and removable cover. Manhole covers shall be cast iron or pre-cast reinforced concrete set into a retaining ring and each cover shall weigh not less than 63 pounds. Manholes shall be brought up to grade and be water-tight, and gas-tight.



§8-510. Grease Interceptors

(1) An approved grease interceptor shall be installed wherever grease as a product or by-product may be introduced into a drainage system in sufficient quantity to cause line stoppage or hinder sewage disposal, and shall be installed in connection with the following uses or occupancies when required by the Industrial Waste Division of the Water Department:

(a) All wastes in meat preparation areas, pot sinks, dish washing machines and can washers for public eating places, institutions, and schools;

(b) Slaughter houses and meat packing or processing plants;

(c) Rendering plants;

(d) Soap factories.

(2) When a grease interceptor is installed, it shall be located as near as possible to the fixture or fixtures served and shall be readily accessible for cleaning.

(3) Grease interceptors shall be constructed of impervious materials capable of withstanding shock from hot and cold water, shall be water-tight, and shall be equipped with easily removable, water-tight and gas-tight covers.

(4) The trap seal on grease interceptors shall be not less than 4 inches and shall conform to §8-501 (2).

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§8-511. Hair and Lint Interceptors

An approved hair or lint interceptor shall be installed wherever hair or lint in sufficient quantity to cause line stoppage may be introduced into the drainage system, and shall be installed in connection with the following uses or occupancies when required by the Industrial Waste Division of the Water Department.

(1) Commercial, institutional, hotels, club, or other laundries equipped with commercial type laundry equipment;

(2) Beauty parlors and training schools for operators having six or more lavatories draining to a common house drain;

(3) Dry cleaning establishments;

(4) Hide or fur processing plants;

(5) Establishments having laundry equipment on the premises for public hire.

§8-512. Sand Interceptors

Sand and similar interceptors shall be designed and located so as to be readily accessible for cleaning and shall have a trap seal of not less than 6 inches.

(1) The wastes from stables, barns, stable yards, barn yards, manure pits and subsurface drainage pipes shall pass through an intercepting catch basin before entering the house drain, lateral, or public sewer.

(2) Floor drains shall be equipped with removable basket strainers wherever necessary to prevent solids which might cause line stoppage from entering the drainage lines.

§8-513. Garbage Grinders

(1) Garbage Grinders. The efflux from a domestic grinder when in operation shall be carried off by and through a trap and waste pipe of at least 1½ inches inside diameter. The efflux from a commercial grinder when in operation shall be carried off by and through a trap and waste pipe of at least two inches inside diameter. The waste pipe from a domestic garbage grinder and the waste pipe from a commercial garbage grinder shall not extend in length more than 12 feet from a vented soil or waste connection. Garbage grinders shall not be installed on a waste where an interceptor is required under §8-510 (1).

(2) Domestic garbage grinders may be installed when the drainage system is connected to a City sewer or sewers which are in turn so arranged as to discharge this sewage into a sewage treat

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ment plant. Commercial garbage grinders shall be connected to a separate system sanitary sewer leading to a sewage treatment plant. Whenever such public sewers are unavailable domestic garbage grinder drainage and commercial garbage grinder drainage shall be in accordance with Chapter 8-1400.

(a) Identification. When applying for a permit to install a domestic garbage grinder or a commercial garbage grinder the model number and manufacturer's name shall be permanently identified by a plate or by indented marking on each grinder installed.

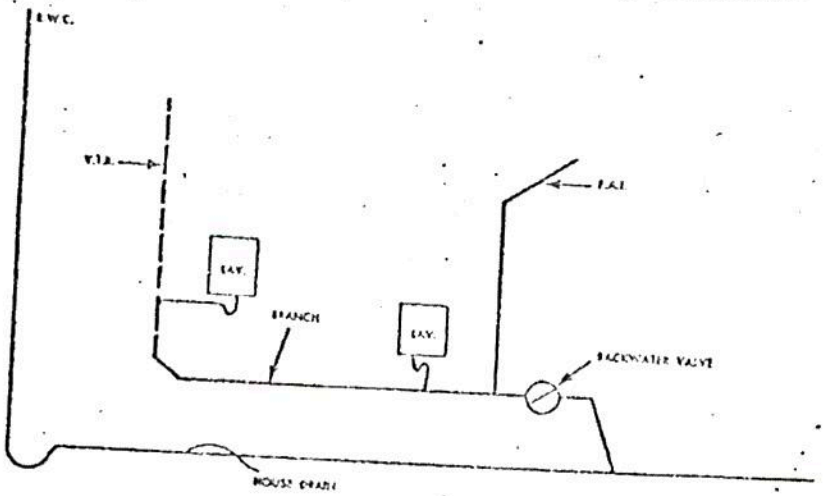
(b) Testing and Approval. The testing and approval of all garbage disposal units shall be authorized by and under the jurisdiction of the Water Department.

§8-514. Backwater Valves

(1) Sewer gate valves shall be of the manually-operated, non rising stem type. Or may be of the swinging disc back pressure type or any other type of back pressure valve approved by the Department.

(2) Sewer gate valves shall be constructed of corrosion-resistant material.

(3) Sewer gate valves when fully open shall have a free-opening cross section not less than the pipe in which they are installed.



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CITY OF PHILADELPHIA
WATER DEPARTMENT

CONSULTATION ON RATE STUDIES

Memorandum No. 1

Operation and Maintenance Costs for the Water Pollution Control Plants

Greeley and Hansen, Engineers

March 21, 1973

1. Introduction

Reports on design studies have been prepared for each of the City's three Water Pollution Control Plants. These reports propose bases of design and preliminary layouts for the modifications necessary to provide upgraded wastewater treatment for a design year of 1990.

Based on these reports, and in particular the layouts and capital cost estimates included in them, we have prepared estimates of the operation and maintenance cost for each plant, for the first 12 months of operation. These estimates were prepared to assist in rate studies currently being made by others for the City.

According to the DRBC proceedings of July, 1972, the Northeast and Southwest Plants must commence operations on December 31, 1975, and the Southeast Plant must be operational on October 1, 1976. The estimated average wastewater flows for the first year following the

beginning of operation are 194 mgd at Northeast, 167 mgd at Southwest and 130 mgd at the Southeast Plant. This compares with 1990 design flows of 250 mgd, 210 mgd and 140 mgd, respectively.

In the following sections, the cost estimates are compiled on the basis of six divisions: labor, maintenance and repair, electric power, chlorine, barging and ash disposal, and fuel oil. The summarized operation and maintenance costs for each plant are appended hereto as Table 11.

2. Labor

Assignment of personnel, and their salaries, reflects present practices but anticipates that the proposed plants will be highly automated. Operator positions have been held relatively constant while the number of maintenance, laboratory and general labor personnel has been increased. Table 1 gives the present staffing of the Wastewater Treatment Section and shows the salary range as of July, 1973. Tables 2 through 5 show staff requirements estimated for each plant, and for the general services division which supplies special services to all three plants. The salaries shown on these tables are July, 1973 rates. To simplify the

labor projections, the titles in Tables 2 through 5 are broad categories and do not correspond directly to existing titles.

The information on these tables has been adjusted for indirect labor costs and escalated by 5 percent per year to the middle of the first year of operation for the modified plants. The results are summarized as follows:

	WPC Plants		
	NE	SW	SE
Annual cost of plant labor force, July 1973 dollars	$ 947M	$ 656M	$ 646M
Allocated annual labor cost of General Services Division, July 1973	204M	204M	204M
Total direct labor cost	$1151M	$ 860M	$ 850M
Fringe benefits and indirect costs at 25 percent of direct costs	288M	215M	213M
Total cost of labor, July 1973 dollars	$1439M	$1075M	$1063M
First year of operation	1976	1976	1977
Total cost of labor in the first year of operation with an escalation of 5 percent per year	$1650M	$1235M	$1280M

3. Maintenance and Repair

Average annual maintenance and repair costs for new facilities at the three plants were estimated as a

percentage of the estimated construction cost thereof. For structures, not including pile foundations or earthwork, a 0.5 percent figure was applied, and for piping and equipment a 1.5 percent figure was used.

The average annual costs of maintenance and repair for existing facilities was estimated from past City budgets giving consideration to the fact that some existing facilities will be abandoned or replaced.

Table 6 shows the calculations for maintenance and repair costs, which are summarized as follows:

	WPC Plants		
	NE	SW	SE
Maintenance and repair of new construction			
a. Structures	$ 143M	$148M	$104M
b. Equipment	402M	444M	441M
Maintenance and repair of existing structures	600M	300M	300M
Total maintenance and repair	$1145M	$892M	$845M

4. Electric Power

Electric power usage for the three treatment plants was obtained by applying a diversity factor of 75 percent to the installed horsepower minus the major standby units. The power use was also considered to be proportional to wastewater flow, and the estimated use for the first year of operation was reduced to reflect this proportion.

Power charges were computed on the basis of Philadelphia Electric Company's Rate PD. The energy charges and demand charges were calculated and reduced to a simple rate of $0.013 per kw-hr. This rate was applied to the average usage rate without escalation. Power computations are tabulated in Table 7 and the annual costs are summarized as follows:

Northeast WPCP	$1,055,000
Southwest WPCP	$ 625,000
Southeast WPCP	$ 740,000

5. Chemical Costs-Chlorine

The chlorine supply costs for the three treatment plants are based on dosage rates determined by pilot work done at the three plants. Disinfection studies indicated that the DRBC standards for disinfection can be met by chlorine dosages of 4.1 mg/1 at NE, 1.7 mg/1 at SW and 1.6 mg/1 at SE. For the purposes of this study dosages of 6.0 mg/1, 4.0 mg/1 and 4.0 mg/1, respectively were assumed.

The cost of chlorine was assumed to be $0.04 per pound as delivered to the sites in tank car lots. This unit price was not escalated.

$246.60 / ton - ton container

14 7.3¢/lb. = 146.60/ton tank car