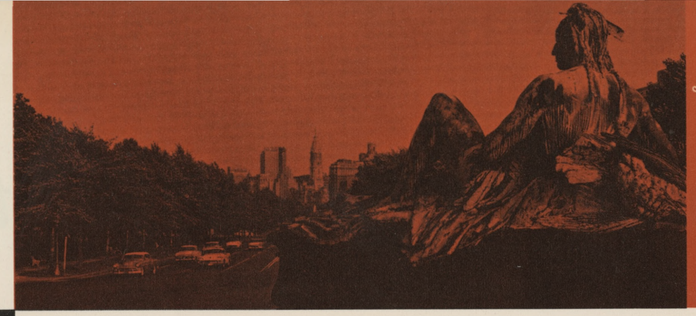
city of philadelphia
water department

PURE WATER . . . constantly tested

annual report 1963

Water for all: Water continued to be big business in Philadelphia in 1963 as 326 million gallons were consumed daily. To assure a plentiful future supply, one of the biggest pipe crosses (above) in the Eastern United States was laid near the Torresdale Water Treatment Plant. The piping will supply new storage basins.



JAMES H. J. TATE
Mayor

FRED T. CORLETO
Managing Director

SAMUEL S. BAXTER
Commissioner & Chief Engineer

city of philadelphia

water department annual report

1963

AMONG OTHER THINGS IT DISCUSSES

water department

SAMUEL S. BAXTER
Commissioner and Chief Engineer

***GERALD E. ARNOLD**
Deputy Commissioner, Water Operations

B. BARNEY PALMER
Administrative Services Director

****EDWARD D. BASTIAN**
Deputy Commissioner, Sewerage Operations

WATER OPERATIONS

CHARLES E. VICKERMAN
Chief, Water Operations

Division Chiefs

†ELWOOD L. BEAN
Water Treatment

ELMER GOEBEL
Distribution

VICTOR A. PAGNOTTO
Load Control Center

††EDWARD J. SWEENEY
Pumping, Schuylkill

HENRY F. KALINOSKI
Pumping, Delaware

ROBERT F. WALKER
Customer Service

W. FRANK SCOTT
Water Main Records

WILLIAM SNYDER
Automotive Maintenance

ADMINISTRATIVE SERVICES

THOMAS B. MULLINEAUX
Chief, Fiscal Division

FLOYD PLATTON
Acting Personnel Officer

LEIGH B. HEBB
Fiscal Officer

JACOB BALK
Meter Shop

ENGINEERING

JOHN BRIGGS
Assistant Chief Engineer

Division Chiefs

ABRAHAM FINKELSTEIN
Design

SAMUEL K. WILSON
Construction

JAMES A. BRADY, JR.
Projects Control

WILLIAM R. CROOKS
Testing Laboratory

SEWERAGE OPERATIONS

***CARMEN GUARINO
Chief, Sewerage Operations

Division Chiefs

RALPH A. HOOT
Sewage Treatment

ABRAHAM L. BARMISH
Sewer Maintenance

JACOB S. REICH
Industrial Wastes

EUGENE V. BONNER
Sewer Records and Information

COMMISSIONER'S STAFF

SAMUEL J. SCHWARTZ
Assistant

RAYMOND J. HARRIS
Administrative Assistant

ERVIN L. DAVIS
Executive Assistant

* Retired February 7, 1964. Replaced by Charles E. Vickerman April 27, 1964.

** Resigned June 28, 1963.

*** Appointed December 9, 1963. Acting chief from July 1, 1963.

† Sub Chiefs: John Dillener, Delaware Filters; Robert J. Waters, Schuylkill Filters; Walter C. Ringer (deceased August 3, 1963), Quality Control.

†† Deceased April 27, 1964.

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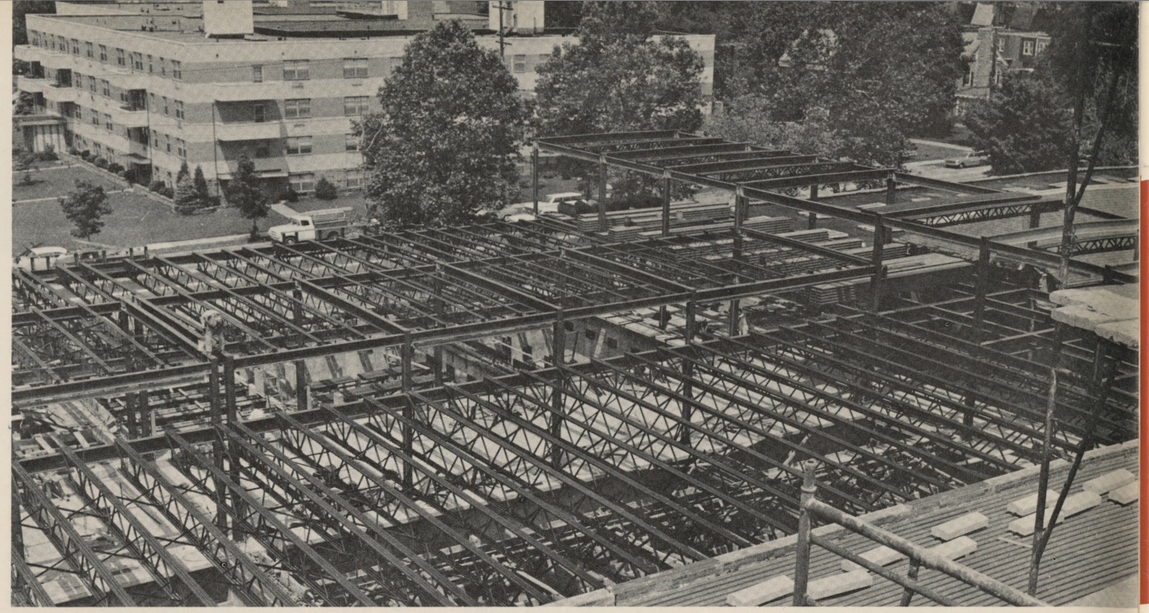
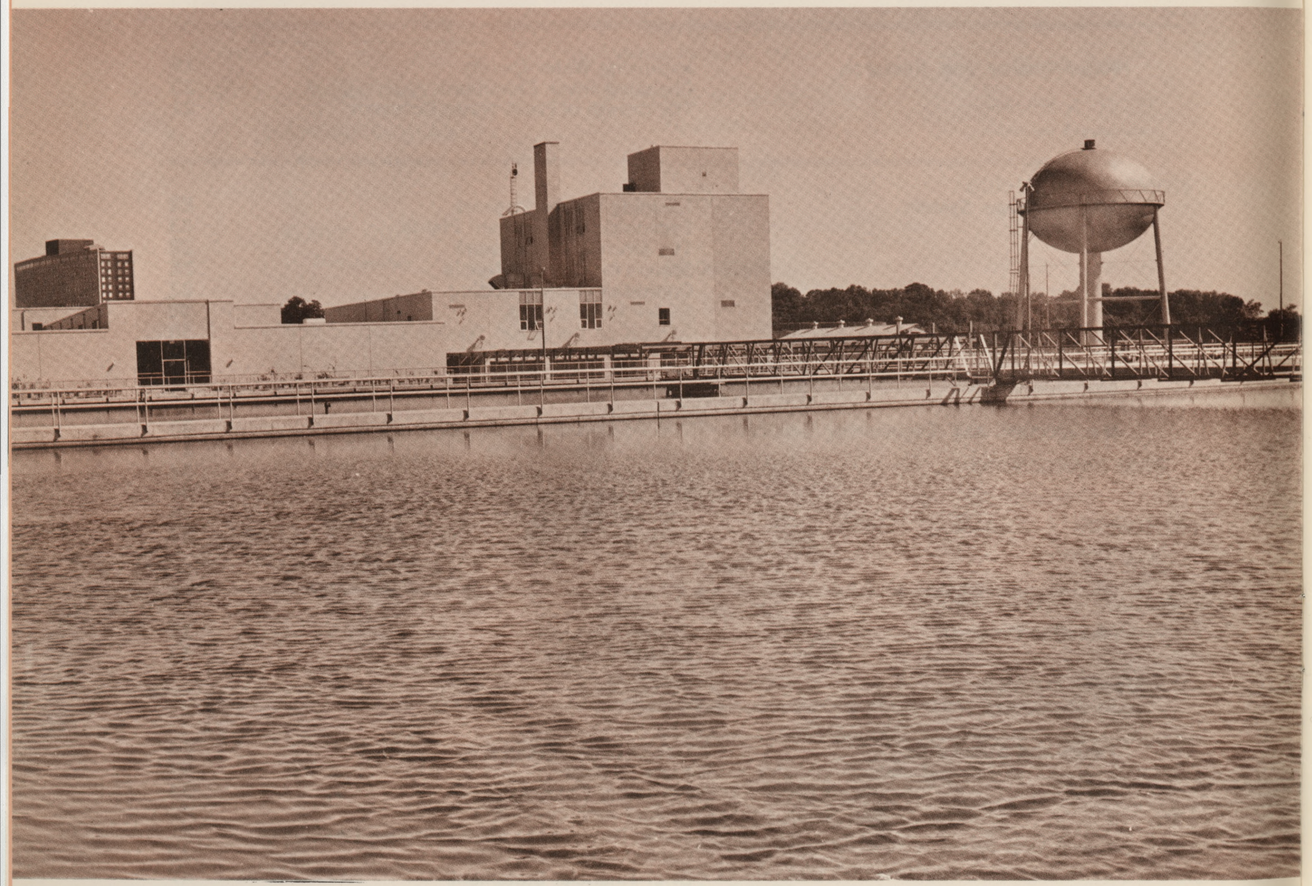




Water Abundance: Rapidly rising in West Philadelphia in 1963 was the new Belmont Water Treatment Plant—another step in Philadelphia's program to provide plenty of good water for its citizens. Steel skeletons in June (top photo) had taken on skin of bricks, aluminum and glass (bottom photo) by end of year. Two basins and wash water tank were also ready.

highlights of 1963

There was water scarcity in some parts of the country in 1963, but not in Philadelphia.

The city's oldest business venture—the supply of good water through a public system—completed its 163rd year, with increasing abundance at its command. From that January day in 1801 when the first water was lifted from the Schuylkill River by one of America's first steam pumping stations, Philadelphia's public system has supplied more than nine trillion gallons of water to the city's residents. This is enough water to flood all of Pennsylvania to a depth of one foot.

Water abounded in Philadelphia in 1963 despite a persistent drought that lowered the Delaware and Schuylkill Rivers.

The reasons for the city's good fortune were happily evident. Cleaner streams, together with many modern water and sewerage facilities, provided purer, more palatable, and more usable water, in dependable supply and at adequate pressures. The dangerous pollution of streams and paralyzing shortage of facilities which plagued some parts of the country had been largely overcome in Philadelphia.

Within 12 short years, most of the important elements in the city's water system had been completely modernized. New "push-button" water plants had nearly replaced turn-of-the-century water works; a dozen modern pumping stations were in operation; a revolutionary microwave network guarded water distribution; hundreds of miles of new water mains were in service; water storage was being increased.

Along with this rejuvenation of the city's water system, there was increasing protection for the Delaware and Schuylkill Rivers, as Philadelphia pushed toward completion a big program for interception and treatment of domestic and industrial wastes. A network of modern sewage treatment plants, pumping stations, and large interceptor sewers, was capturing 99% of all the city's raw sewage, diverting it from the rivers into which it once poured. Hundreds of miles of sanitary and storm sewers had been built.

Philadelphia was not alone in its clean-up effort. Its drive for cleaner streams was strengthened by the waste treatment programs of many other communities in the Delaware River Basin, and by the growing cooperation of federal, state, and local public agencies in studying river pollution.

In river studies, Philadelphia was leading the way. Its continuing stream studies (in cooperation with the U. S. Geological Survey) were the oldest in the region, and were supported by an increasing array of sophisticated, electronic equipment for monitoring the Delaware and Schuylkill.

In water treatment and distribution too, the city was pioneering new methods: It had adopted new "push-button" controls on a scale equalled by hardly any other American metropolis.

Philadelphia's growing abundance of good water, therefore, was an abundance of **availability**—an availability stemming from cleaner, better protected streams and more efficient, larger-capacity facilities for water purification and distribution.

Managing this sizable program—$482 million of initial investments from 1946 to 1969—is the Philadelphia Water Department, a self-supporting public utility. In 1963 the department took new steps to complete this program. During the year—

1. The city's third semi-automatic water treatment plant, which will replace the old Belmont water works, moved two-thirds of the way toward completion. Offering better water to West Philadelphians, about one half of the $10.4 million plant will go into operation by the spring of 1964, and the rest in 1965.

2. Extensive pumping and related improvements were begun in three water pumping stations; similar improvements were finished in a fourth station and nearly completed in a fifth. This work represented the final stage in the modernization of 15 stations.

3. Microwave controls were installed in two more water pumping stations, with these stations scheduled to become automatic and remotely controlled early in 1964. This will bring to nine the number of stations so operated.

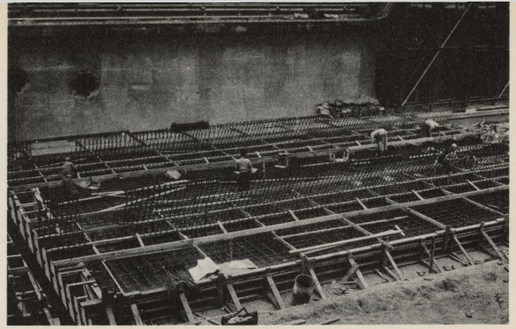
4. An increase in water storage was in sight as a 45-million gallon basin was formed from 21 abandoned filter beds at Torresdale, and conversion of 44 similar beds started.

5. A $5.3 million expansion of the Northeast Sewage Treatment Works was more than half finished. By late 1964 the larger capacity plant will be able to meet more easily the increasing needs of northern and northeastern neighborhoods.

6. The last steps in the city's stream clean-up program were being taken as a new three-mile intercepting sewer went into service along the lower Schuylkill River and other interceptor extensions or replacements were begun. These extensions will soon divert the remaining 1% of the city's untreated sewage to treatment plants.

7. Storm flood control was tightened as a huge relief sewer went into service in the Northeast and a $1 million storm water pumping station neared completion in Eastwick. Other big storm control sewers were started in West and South Philadelphia.

8. Nearly 39 miles of new water mains were built to improve the flexibility and adequacy of water supply. A little more than 13 miles of old mains were taken out of service permanently, while another 13 miles of old mains were cleaned and cement-lined.



For Cleaner Rivers: In full progress was the $5.3 million expansion of the Northeast Sewage Treatment Works. The aeration tank (above) was one of five new tanks, designed to raise the capacity of the Northeast Works from 125 million gallons daily to 175 M.G.D.

9. The sewer system branched out to meet new needs as 27 miles of sanitary and small storm sewers were built.

10. Research got increasing emphasis. The Water Department practically completed a new Materials Testing Laboratory, opened new offices and laboratories for its Water Quality Control and Research Section, and fitted out a new cabin cruiser to extend its studies of the Delaware River.

The swiftly moving construction at the Belmont Water Plant and the Northeast Sewage Works kept field work at a record level for the second successive year. Despite a strike by operating engineers (employed by contractors) in the early summer, the value of work done on all projects was more than $23.2 million, compared with $25 million the year before and $16 million in 1961.

The Water Department actually paid out $24.6 million for capital projects, while total "net capital activity" for the year—the book value of projects started, under way, or completed—amounted to $57.2 million. On December 31, 1963, the department had $32.6 million of encumbrances on its books. Nearly $28.2 million of contracts were let during the year.

While building new facilities to assure water abundance, the department continued its efforts to supply this water at reasonable cost. Thus it continued to automate its facilities and to tighten its management practices.

1. As new automatic and semi-automatic controls have been extended to water treatment plants and pumping stations, some labor and related costs have dropped. This trend was still in full swing in 1963, helping to moderate the upward rise of operating costs.

2. During the year, the department made extensive organizational studies, introduced new accounting procedures, accumulated data for more efficient rate making, adopted new techniques for engineer recruitment, and refined the training of new employees.

Along with cost reduction, increasing attention was paid to the many special needs of the public. With 135,000 telephone calls pouring into the Customer Service unit alone, the department supplied more information and made more emergency visits than ever before.

Thanks to these many improvements, Philadelphia was moving to a commanding position in the water works and waste control fields. Much remained, however, to be done.

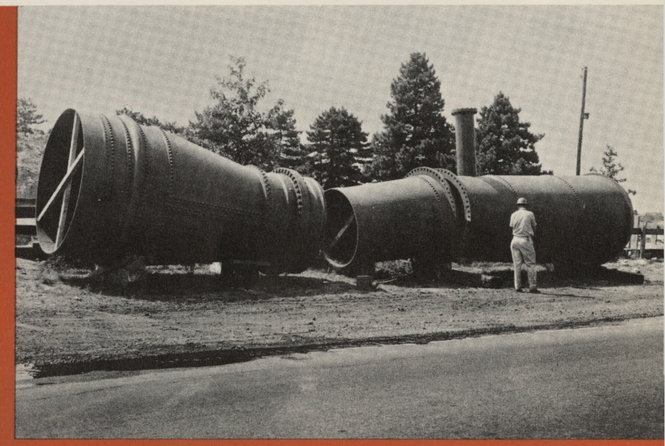
Despite the progress to date, the Water Department was already looking toward a more distant future. More study would be needed of the Delaware River Basin's streams, and the city would have to replace hundreds of miles of additional old water mains and sewers.

That these needs will be met seems highly probable, for Philadelphians have generously supported the city's water improvement program. Water abundance, reasonable rates, and sound service will continue to be the natural benefits of this farsighted support.

For 5,000 Philadelphia industries and 40,000 businesses, these benefits will also be of growing value. Plenty of high quality, moderately priced water is a basic ingredient of a thriving local economy.

more jobs through accelerated public works

The economic well-being of Philadelphia got an added boost in 1963, as the Water Department accelerated a number of vital water and sewerage projects. This speed-up was made possible by $7 million in Federal Government grants, which met half the cost. One result: More Jobs for Philadelphians.

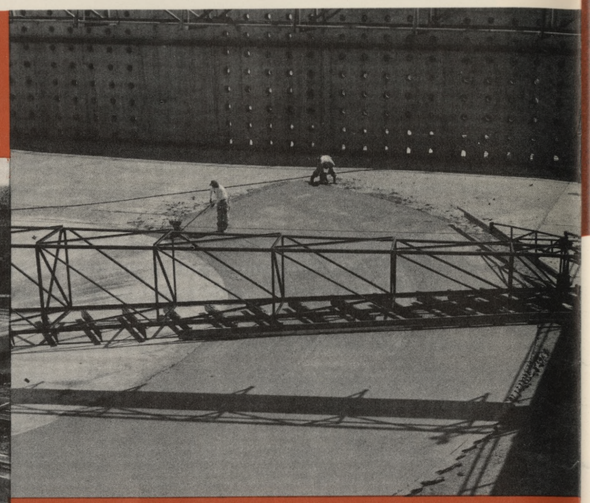


For Water Storage: Big Venturi tubing will measure water flow from new underground storage basins. The latter were being formed in 1963 from 65 old filter beds near the Torresdale Water Treatment Plant.

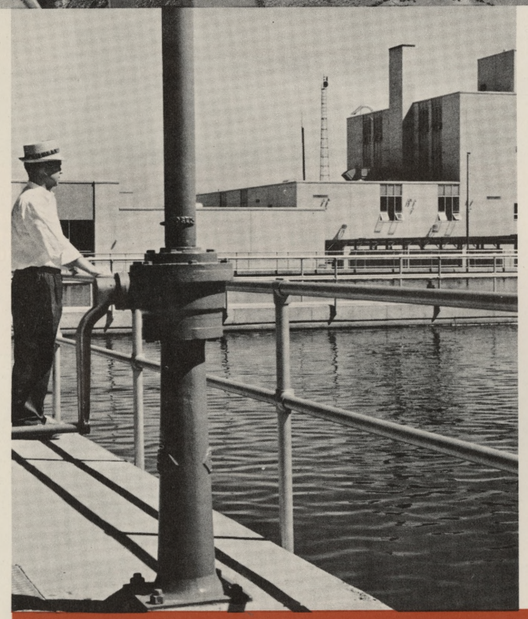
For Flood Control: Two sewers to control storm flooding were among Accelerated Public Works Projects. The old Mill Creek Sewer in West Philadelphia (above) was being replaced, while a new sewer was being built in Passyunk Avenue in South Philadelphia (right).

from concrete and bricks a push-button plant emerges

New Basins: Various components of the new Belmont Water Treatment Plant took form in 1963. Among these were new sedimentation and slow mixing basins. The two sedimentation basins (center of photograph) will hold a combined 11 million gallons of water.

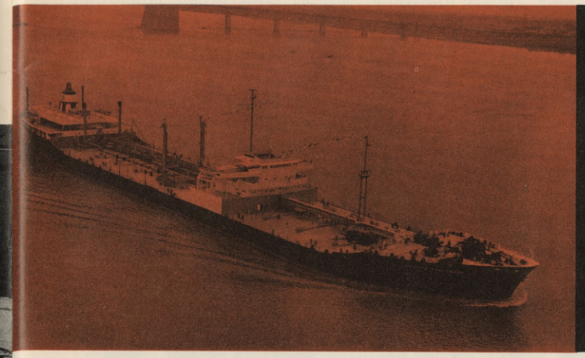


Finishing touches: Workmen complete the concreting of a sedimentation basin bottom. The giant steel clarifier arm will sweep sludge from the bottom when impurities settle out of water.



New Plant: By the beginning of 1964, the eye catching structures (left) represented the near completion of one half of the new Belmont Water Plant. Work on the second half was to start in mid-1964.

Pre-treatment Building: Almost ready for service was the new five-story pre-treatment building, where automatic equipment will apply chemicals to the incoming water of the new plant.



the water system

A DECADE OF REBIRTH

The city's abundant good water in 1963 was provided by a rejuvenated water system. The leading features of this system had been emerging for a decade.

1. By 1963 two modern water treatment plants were supplying all of the city east of the Schuylkill River. These plants, both semi-automatic and rapid sand, had replaced four outdated, slow sand plants of smaller capacity. A third rapid sand plant was rising west of the Schuylkill to replace the fifth and last slow sand water works.

By early 1965 the new plants will be able to treat 480 million gallons of water daily for normal needs, and at peak hours and on hot summer days they will be able to boost their production rate to 681 M.G.D. This capacity—well in excess of current consumption*—is designed to meet any conceivable emergency as well as a large future growth in water demand.

2. One by one the city's aged steam pumping stations had yielded place to modern electric stations, and in 1963 a few old electric stations were also being modernized. By 1965 total pumping capacity will reach 1,500 million gallons** daily—up 213 million gallons in little more than a decade.

3. Other changes were continuing in 1963. The new Load Control Center was monitoring and operating an increasing number of pumping stations. reservoirs, large valves, and other key components of the distribution network. Five new water storage tanks were in service, and new underground storage basins were beginning to take form. Within three years the storage capacity for filtered water is expected to climb to 1.1 billion gallons—an increase of 28% over 1961.

The many improvements noted were bringing greater flexibility and efficiency to the water system. New "push-button" controls were moving this system toward some measure of eventual automation; fewer plant personnel were processing and delivering better water in more reliable supply.

These improvements, together with the construction of 475 miles of water mains in 12 years, represented an investment of $120 million (1952-63). By the end of 1969, an additional $48 million will have been invested.

During 1963, nearly $6.3 million*** was invested in water plants and pumping stations, compared with $4.5 million the year before. The value of water main construction—more than $4 million***—was roughly at the same level as the year before, but mileage built was less.

New contracts awarded for water system improvements totaled $10.5 million****, or $1.3 million more than in 1962. At the same time 110 contracts, valued at $6.3 million, (many of them begun in previous years) were completed. The 74 outstanding contracts at the end of the year were valued at $21 million****. Work was still to start on 16 of these contracts, amounting to $1.8 million.

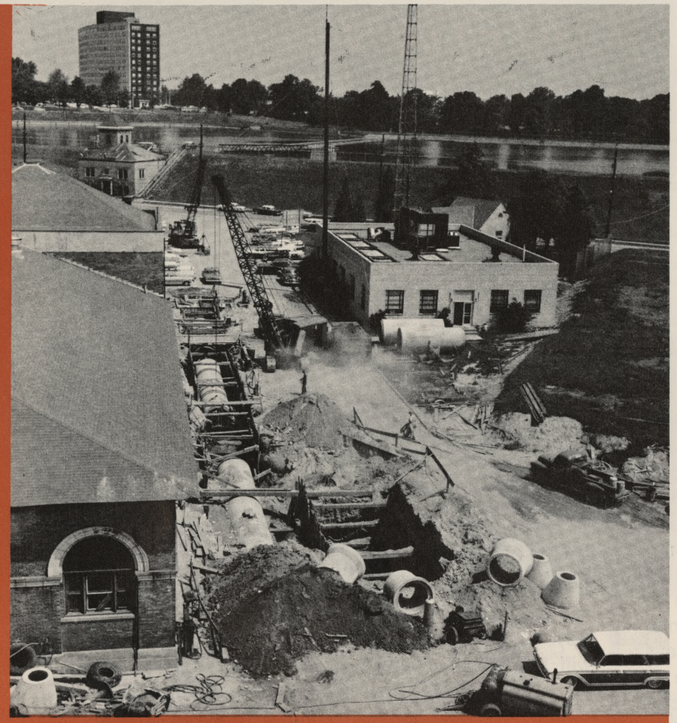
THE NEW BELMONT WATER PLANT

Rejuvenation was nowhere more apparent than in the graceful new buildings and basins of the Belmont Water Treatment Plant.

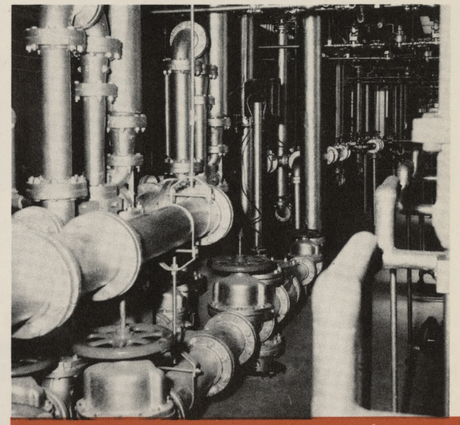
In the midst of an outworn, 60-year old plant, a new water treatment plant was rapidly taking shape, foreshadowing higher quality water for Phila-

* 326 million gallons a day.
** Includes only intake and distribution pumping stations still operating in August, 1962. Two closed stations no longer needed (because of distribution changes) are excluded, as are the fire-fighting high pressure stations.
*** Partial and Final Estimates. **** Limit of Contract.
NOTE: Dollar figures given above measure physical activity in the field, as indicated by partial and final estimates or limit of contract: They do not show what was actually paid out during the year. For a statement of accounting activity (showing actual expenditures and encumbrances, etc.) see the sections on "Capital Finance" and "Current Finance" with related tables.

belmont gets its vital organs – pipes, valves, and tanks

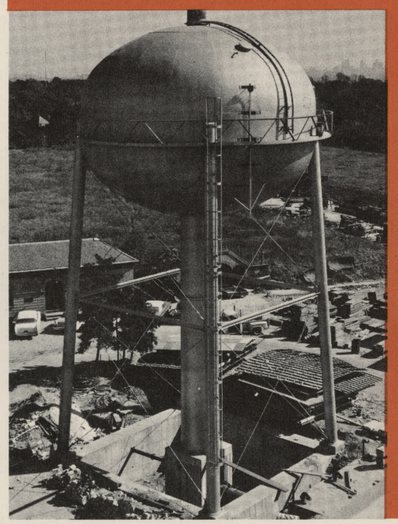


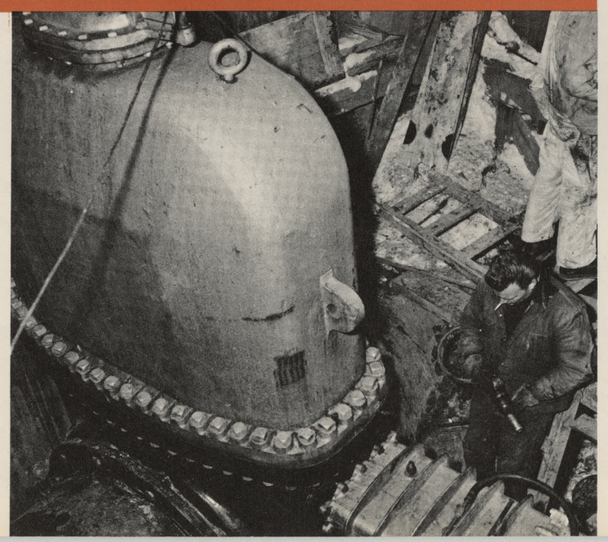
New Water Line: Crane lowers section of big conduit into place at the Belmont Water Treatment Plant. The reinforced concrete line, measuring 5½ feet in diameter, will carry river water from the pre-sedimentation basins in background to new treatment facilities.



Piping Maze: Miles of piping are going into the new Belmont Plant. The intricate network above is for application of chemicals to incoming river water.

Wash Water Tank: Holding 150,000 gallons, this 72-ft. high steel tank will provide wash water for the cleansing of the Belmont Plant's new filter beds.





48-inch Valve: Biggest of many big valves at the new water plant is the "insertion" valve at left, which was fitted into an existing water main without taking the main out of service.

delphians living west of the Schuylkill River. This would be the third and last of the new semi-automatic water works constructed by the Water Department.

At the end of 1963 more than $7 million of work had been done on the new $10.4 million plant. Some of its facilities were scheduled to go into service by the spring of 1964; the remainder in 1965.

Completed were two large sedimentation basins; also the foundations, steelwork, roofs, walls, windows, heating system, and other basic components of the pre-treatment building, and of the southern wing for the filter building. Work on interiors was moving forward. An elevated wash water tank and several big underground conduits were in place.

When all of the new plant is in service in 1965, it will have four concrete, sedimentation basins, holding 14.36 million gallons of water; six chambers for rapid mixing and eight chambers for slow mixing of water with chemicals; a renovated administration building with conference and storage rooms; and a new clear well containing five million gallons of filtered water.

Prominent features too will be the pre-treatment and filter buildings. Constructed of light brick with wide expanses of glass and aluminum trim, these structures will house extensive automatic and semi-automatic equipment. At the five-story pre-treatment building, chemicals will be applied automatically to the incoming water; at the one-story filter building, 12-rebuilt and 14 new rapid sand beds will filter the water through layers of sand and gravel. Operated by "push-button" from a central panel, each sand bed will process three million gallons of water daily under normal operation.

Though the new plant's rated water treatment capacity—78 million gallons of water daily—will be only 8 M.G.D. more than that of the old plant, it will be able to turn out considerably more water in emergencies. Its peak rate will be 108 M.G.D., compared with only 80 M.G.D. for the old water works.

Significant too of the efficiency of the new plant will be its greater compactness. Just one of the two half-acre wings of the new rapid sand building will take over the filtration function performed by 13 acres of old slow sand beds. Most of the latter will be converted eventually into underground basins for storage of filtered water.

Retained from the old plant will be two pre-sedimentation basins (72 M.G.) and a covered filtered water basin (16.5 M.G.) As part of the plant modernization, some work on valves and piping was done in the west pre-sedimentation basin in 1963.

THE WATER PLANTS: NEW DEMANDS

The physical improvement program produced some operating changes in the water treatment plants in 1963. As a result some operating costs rose; other costs, however, continued to fall because of greater plant efficiency.

1. The output of filtered water by the Queen Lane plant climbed to 106.2 million gallons daily, or 11.3 M. G. D. more than the previous year. The higher output was needed to service a large Northwest area* formerly served by the two small Roxborough plants, which were closed in the spring of 1962.

Some of the extra Queen Lane water also flowed to the East Park Reservoir to replenish withdrawals by West Philadelphia. With nine old filter beds shut down because of plant reconstruction, the Belmont water works was temporarily unable to meet all the needs of neighborhoods west of the Schuylkill River. The plant's actual daily output of 53.6 million gallons was 1.3 M. G. D. under 1962.

Output of the Torresdale plant fell by 4.4 million gallons daily, but this was of small significance because of that plant's sizeable production (172.3 M. G. D.).

2. Chemical costs rose at the two Schuylkill plants, but dropped to their lowest point in many years at Torresdale on the Delaware.

The increased water output helped to boost the chemical bill at Queen Lane by $137,000, but taste and odor problems resulting from Schuylkill River conditions were also responsible. The latter raised the cost of chemicals from $9.26 per million gallons (1962) to $11.83. Carbon was used in large quantities for the first time in several years, and more chlorine was needed. At Belmont the chemical cost per million gallons also rose—from $6.20 to $7.24—as a result of the river condition.

The cost of chemicals used at Torresdale was only $9.48 per million gallons, compared with $10.53 in 1962, and even higher costs in some other years. Closer control of chemical dosages by operating personnel, aided by modern equipment, helped to reduce these costs.

3. As with all new plants that have been in operation for several years, maintenance needs at Torresdale and Queen Lane were somewhat greater. There was much cleaning and repairing at both plants, and some equipment was replaced.

Several lead and copper pipelines were replaced at Queen Lane with corrosion resistant plastic piping, while at Belmont (where reconstruction precluded much maintenance) 28,000 cubic yards of silt was removed from the old coagulation basins and

* Roxborough, Manayunk, Chestnut Hill

the west pre-sedimentation basin.

Using an underwater diver and a bucket crane, the department completed replacement of 16 flap gates as an interim measure at the river intake to the Torresdale pre-sedimentation basin. This job, which required 46 diving days spread over two years, was complicated by tidal changes, river channel blasting, and piled up debris. Construction of a new river intake is scheduled to begin in 1964.

Cathodic protection devices were placed in basins and on wash water tanks at Torresdale; waterproofing of dry wells was far advanced; some valves and other equipment were replaced or overhauled by manufacturers.

IMPROVEMENTS IN WATER PUMPING

With purer and more abundant water flowing throughout the city in 1963, the Water Department concentrated increasingly on getting this water to consumers. To the many pumping improvements made in previous years it added others.

Thus more than $389,000* of work was done on eight pumping stations, raising the city's total investment in pumping station improvement to nearly $10.2 million. Most of this has been invested since 1952. With a dozen stations already substantially or fully modernized, other improvements were expected to be completed by 1965. Of the 16 stations which the city has, only a small booster station will be unimproved.

This program is intended to (1) increase pumping efficiency, (2) effect savings on power and personnel, and (3) strengthen water pressures and supply.

Tangible proof that these goals are being realized was the lower cost of energy in 1963. The power costs for pumping one million gallons of water to consumers was $11.97, a decline of 38 cents from the previous year and $1.82 from the pre-modernization period. Contributing to this decline were newer, more efficient pumps.

Pumping station personnel—falling in number for several years—decreased by an additional 12.

The volume of water (342.4 M.G.D.) pumped by the three intake stations to the treatment plants was almost unchanged. Of the 332.5 M.G.D.** leaving the latter, about 62% was pumped, and in some cases repumped, to consumers. The rest flowed by gravity.

Most of the construction during the year was centered in five stations, under contracts totaling more than $2 million.

* Figure excludes new Materials Testing Laboratory at one station.
** The difference between water pumped to plants and water leaving them results from use of water in washing filter beds.

Lardner's Point: Reaching back many years, the $3.4 million modernization of the city's most important filtered water station was virtually complete. Lardner's Point which pumps most of the Torresdale Plant output to half the city, has been undergoing changes since the 1940's.

The single remaining building—in which pumping operations had been concentrated — was thoroughly renovated. The building got a new, precast concrete roof, limestone coping, new roof ventilators and drains, cleaning and pointing, aluminum doors and windows, plastering and painting, and two steam boilers for heating. About $167,000 of work was done during the year, nearly completing the $324,000 renovation. Only some landscaping was still to be finished.

Equipped with six electric pumps, the station has a capacity of 210 million gallons daily.

Torresdale Raw Water: Work began in November on a $953,000 modernization of the Torresdale Raw Water Station. This station pumps water from a river side pre-sedimentation basin to the Torresdale Plant.

As part of the modernization, six horizontal pumps will be replaced with six vertical pumps, raising the station's capacity from 300 million gallons daily to 360 M.G.D. Other changes will include installation of a new aluminum ceiling, bricking up of windows, raising of the floor, removal of old electrical equipment, installation of new electric motor controls, rehabilitation of the overhead crane, and replacement of a discharge pipe with one of larger capacity. The conduits which connect the station with the pre-sedimentation basin will be cleaned.

Torresdale Filtered Water: To meet the future needs of new neighborhoods in the Far Northeast, some improvements were begun at the Torresdale Filtered Water Station. This station, built in 1949, serves those portions of Northeast Philadelphia unreached by Lardner's Point. It is equipped with both high and low service pumps.

The purpose of the $159,000 improvement is to expand high service capacity from 21 million gallons daily to 42 M. G. D. Three small pumps (3 M. G. D. each) will be replaced with larger pumps (10 M. G. D. each).

Two-thirds of the related electrical equipment had been installed by the end of the year; new valves and some piping were also in. Still to follow were the pumps and an extension to the surge relief system. The job was expected to be finished by the close of 1964.

Fox Chase Booster: Expansion of pumping capacity also started at another Northeast station—Fox Chase—in September. This station, which repumps filtered water into various Northeast neighborhoods, has been operating close to capacity for some time.

The $143,750 expansion includes the replacement of three old pumps with new ones, various electrical work, and installation of an additional suction and discharge pipeline. By the close of 1964 the pumping capacity of the station will jump from 12 million gallons daily to 29 million.

About $48,000 of work, principally on the pipeline, was done in 1963.

Queen Lane Filtered Water: Auguring more efficient service for the Northwest, the modernization of the Queen Lane Filtered Water Station was far advanced. More than $400,000 of reconstruction had been done on the $570,000 job.

The job involves renovation of the station interior, construction of new suction wells, and replacement of all pumps.

At the close of the year, three new pumps had been installed (with two operating), while platforms, a suction intake chamber, and discharge piping were being built for three additional pumps. Two of the latter were operating in a temporary shelter outside the station.

The six new electric pumps will increase station capacity from 65 million gallons daily to 77.5 M.G.D. The new pumps will be set about 16 feet lower than the old pumps, to provide pumping without suction.

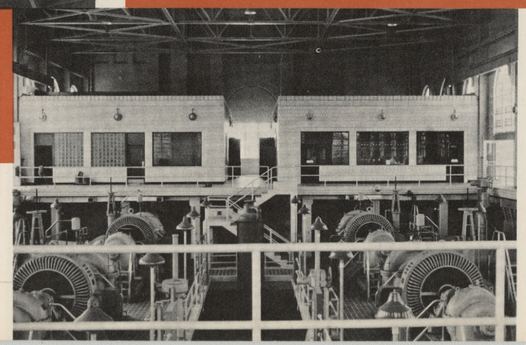
The station pumps 28% of the Queen Lane Plant output to consumers in Northwest Philadelphia and in some extreme northern portions of the city.

Other Stations: Only minor improvements were made at other pumping stations. A $21,000 electrical contract, started the year before, was finished at the Belmont Raw Water Station; a chain link fence and window guards ($2,600) were erected at the Queen Lane Raw Water Station; and $12,000 of finishing touches were put to the substantial modernization carried out at the Fairhill High Pressure Station in earlier years. Much work was done, however, on a new testing laboratory at Fairhill (see page 37).

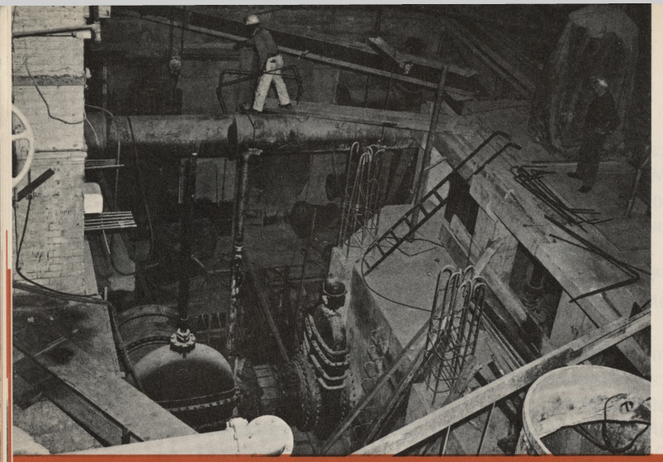
The two high pressure stations—Fairhill and Race Street—pumped 66.7 million gallons of water for multiple alarm fires. This was more than double the amount pumped the year before. They also pumped 74.4 million gallons for stand-by and test purposes.

Torresdale Raw Water Stations: A new ceiling and new ceiling lights go into this pumping station as part of a $953,000 modernization. Station, which pumps Delaware River water, will get pumps of larger capacity.

Lardner's Point: Final phase in $3.4 million modernization of this water pumping station was installation of aluminum-frame windows and doors, pointing and cleaning of exterior, and lowering of roof. Landscaping was still to come.



Lardner's Point: Six electric pumps move up to 210 million gallons of filtered water daily at this renovated station near the Delaware. The water comes down from the Torresdale Plant.



Queen Lane: Interior of the Queen Lane Filtered Water Pumping Station undergoes drastic face lifting, as it gets new pumps, valves, discharge piping, and other equipment.

Fairhill: A new roof goes on the Fairhill High Pressure Pumping Station as part of nearly completed modernization. New pumps were installed the year before.

USE OF CHEMICALS IN WATER TREATMENT

	Lbs. 1962	Lbs. 1963
Alum	25,439,197	23,413,760
Chlorine	9,820,242	10,648,167
Lime	8,990,789	9,790,863
Sodium Hexametaphosphate	669,178	730,016
Fluoride	830,129	841,271
Carbon	982,936	1,230,029
Sodium Chlorite	88,455	91,878
Copper Sulphate	31,648	29,042
Sulphur Dioxide	35,653	42,993
Experimental Chemicals	137,968	347,500
	47,026,195	47,165,519

Total cost of chemicals used in 1963 was $1,257,109, compared with $1,175,649 in 1962.

THE GROWING MICROWAVE NETWORK

Control of water distribution via microwave has grown rapidly since 1960. Since that year nine water pumping stations have become automatic, unmanned, and remotely controlled. Operated by microwave and telemeter signal from an electronic "intelligence" center, these stations have achieved lower personnel costs and greater efficiency.

Monitoring 120 points in the distribution system, including reservoirs, tanks, pumps, large valves, and other key facilities, the center receives second by second information on water pressures, flow, elevation, etc., and sends out its commands to pumps and valves in distant stations. Eight microwave towers carry these signals.

In 1963 the department took steps to add two more pumping stations to this automatic chain, known technically as a "Load Control System."

Monitoring and control equipment was installed at the Lardner's Point and Torresdale Filtered Water Stations, under a $37,000 contract. By the end of the year, Lardner's Point was being test-operated from the center, while work progressed at Torresdale. Both stations will become automatic and remotely operated in 1964.

Two other stations—Torresdale Raw and Queen Lane Filtered—will also be linked to the microwave network as part of current modernization.

WATER MAIN EXPANSION

The ever expanding City pipelines grew to 3,133 miles in 1963, bringing improved service into new and old neighborhoods.

More than 37 miles of new mains were built during the year, while 13.5 miles were abandoned. The net growth of the water main system as a whole since January 1, 1952 was about 390 miles.

This steady growth has greatly increased the capacity, the flexibility, and the reliability of the water main network. Pressures have been reinforced in many parts of the city. Thousands of new homes and many new industries have been serviced.

Spurring the growth is the development of new neighborhoods and the redevelopment of old areas. At the same time, the mileage of old mains that must be replaced is yearly increasing, for much of the water main network is still very old.

Since 1952 Philadelphians have invested $40 million in new water mains, and they are expected to invest $36 million more in the next six years. Much of the latter will be for replacement.

The reinforcement of water pressures to improve service was one of the department's most important goals. Thus after many years of piecemeal building, all the segments of a long water supply main were finally in place in the Northeast and went into service. The 3-ft. diameter steel pipeline carries water from the Torresdale Filtered Water Pumping Station, near the Delaware River, to the pressure equalization tanks in Somerton. It reinforces water pressures and supply throughout the Far Northeast.

The last links in this pipeline—a $170,000 segment in State Road between the pumping station and Pennypack Street, and a $314,000 main in Red Lion Road between Roosevelt Boulevard and Bustleton Avenue—were completed in 1963.

Started in November was a 20-inch supply main in Byberry Road from Roosevelt Boulevard to Bustleton Avenue. This $304,000 line will also reinforce some pressures in the Far Northeast.

To increase water supply in center city, a 4-ft. diameter steel main was laid along 13th Street. One segment ($232,000) was completed between Buttonwood and Green Streets early in the year, while in December work began on the extension ($690,000) of the line from Green to Poplar Street, with a spur on Poplar to Watts Street, where it will tie into the Broad Street main.

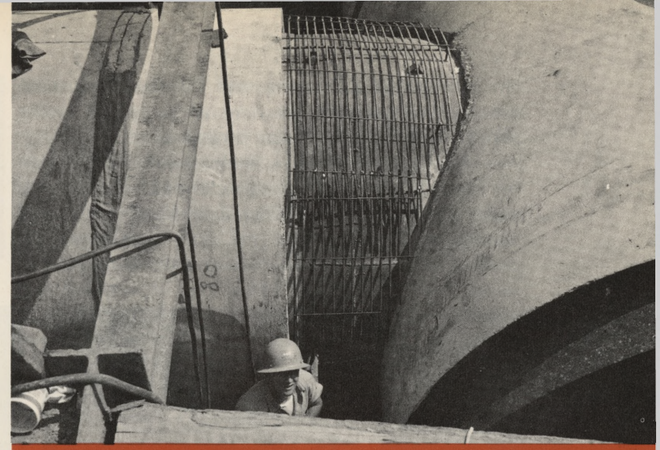
One of the more unusual projects was the construction of twin mains on piers in Silverwood Street from Domino Lane to Paoli Avenue. The concrete piers, rising 20 feet, were sunk deep into the soil, and the entire job was subsequently covered up to grade.

Many miles of old mains—some of them more than a century old—were replaced in 1963. At the same time, however, the Water Department continued to recondition many old mains.

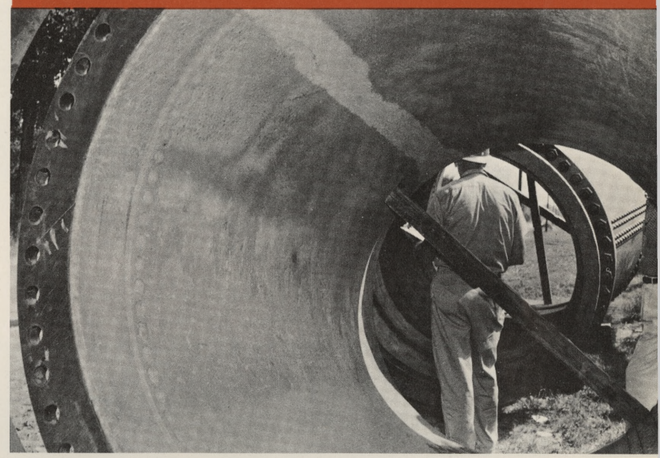
Thus about 13.4 miles of old mains were cleaned and cement lined. Removing accumulated corrosion particles and sediment, the cleaning increased pipeline carrying capacity, improved water pressures, and reduced water discoloration. The $1.7 million job covered mains ranging from six inches to four feet in diameter.

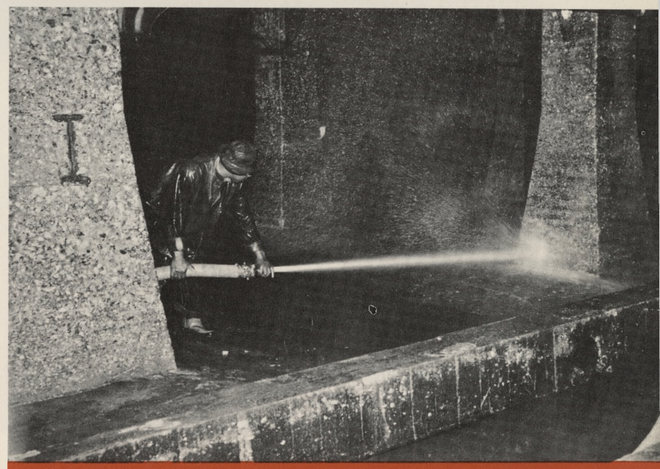
CREATION OF WATER STORAGE

Other distribution improvements also moved ahead. Among these, the increase of water storage loomed large in departmental planning.



For Water Storage: Giant piping (above) and Venturi meter sections (below) form part of system which will service new underground water basins at Torresdale. The basins, formed from abandoned filter beds, will hold 138 million gallons of filtered water.





Underground Basin: Workman shoots cement mixture into pillar crack as part of finishing touches given old underground filter bed. The bed is one of 65 such beds being prepared for future storage of filtered water at Torresdale.

Behind this planning was the desire to meet future emergencies, provide a protected water supply, and improve water pressures.

Most notable was a multi-million dollar plan for creation of large underground basins at various water plants. The plan, which calls for conversion of abandoned filter beds of the slow sand type, will provide storage for 232 million gallons of filtered water. As a result, by 1966, the department will have an efficient "first reserve" of 505 million gallons of filtered water. In addition, it will still have a "second reserve" of older, less efficient basins, capable of holding 625 million gallons.

Conversion of the first 21 slow sand beds at the Torresdale Plant advanced rapidly during the year, as four interconnected, underground basins emerged. The basins, together with a network of huge supply conduits, were 80% finished, and they were scheduled to go into service by the spring of 1964 They will hold 45 million gallons of water.

Toward the end of the year, work started on conversion of 44 remaining slow sand beds at Torresdale. These will store an additional 93 million gallons.

The concrete pipes serving the various basins are among the biggest laid in the city—from five feet to nearly 11 feet in diameter. Set at great depths, they are being interspersed with big Venturi tubes, valves, and other measuring or control devices. The basins will be regulated by "push-button" from the Torresdale Plant.

Conversion of the 65 filter beds at Torresdale will cost about $4.2 million. By the end of 1963, slightly more than $1.3 million of construction had been done on these.

Basins will be built at the other plants over the next three years.

WATER SYSTEM MAINTENANCE

To keep the $420 million water system in good operating condition is an around-the-clock job, requiring sizable maintenance forces.

Distribution: Sixty street crews worked day and night in 1963 to assure the flow of water to consumers. The number of jobs performed by them was well above the high level of previous years.

The increased performance stemmed from heavier emphasis on maintenance of valves and fire hydrants. With hundreds of old valves in need of repair or replacement, the department made nearly 39,000 valve inspections—a 70% increase over 1962—while it repaired 3,200. The repair of valves (600 more than the previous year) was part of the general rehabilitation of old pipelines, and it was intended to improve the flexibility and reliability of water delivery.

Repairs on high pressure fire hydrants almost tripled, while major repairs on other fire hydrants also climbed. More than 21,000 fire hydrants were painted, compared with 11,000 the year before.

Other maintenance activities, though running into many thousands of jobs, were largely routine. The 919 water main breaks were only slightly more than for the previous year, and most of the breaks were in small six-inch diameter lines. Only nine were in mains 18 inches or larger.

Some of the many jobs performed by street maintenance crews are listed below:

	1962	1963
Broken Mains Repaired	895	919
Joints Recaulked or Repaired	238	202
Valves Repaired	2,537	3,186
New Valves Installed	1,149	966
Valves Inspected	21,772	38,878
Hydrants Repaired (Major Jobs)	2,906	4,877
Hydrants Repaired (Minor Jobs)	11,242	9,023
New Hydrants Installed	339	382
Hydrant Inspections	76,459	73,867
Hydrants Painted	11,424	21,148
Ferrules Installed	5,984	5,257
Ferrules Shut Off or Drawn	1,263	1,259
New Fire and Supply Connections	115	119

Less routine was the installation by distribution crews of 41 electrolysis "stations" on center city water mains. These stations, consisting of cables fused to the mains and running to instrument boxes that gave amperage readings, were intended to solve a problem which has plagued the Water Department for years. This is the problem of stray electric currents which follow abandoned street car tracks, and at intervals jump from the tracks to mains and then back to the tracks, eating away in the process some of the metal from the mains.

The new "stations" will tell department engineers how much current is flowing through the mains, and whether the latter need to be grounded. Many mains in other sections of the city were grounded in previous years.

Building Maintenance: Though many building maintenance jobs were performed by contractors, department personnel did nearly 700 such jobs in 1963. Of special note were improvements at Distribution Headquarters, where a new storage building, electrical service, and roadways were constructed.

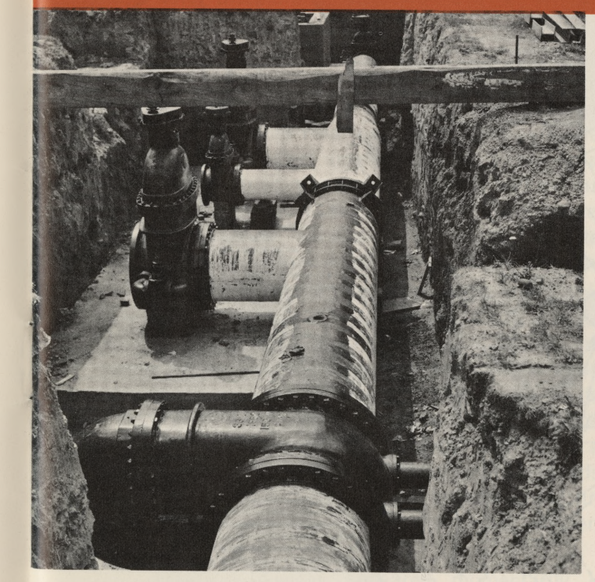
Logan Garage: Though number and type of maintenance jobs on departmental automotive equipment were practically unchanged, personnel costs at the big Logan Garage declined somewhat. Improved methods and tightened supervision had much to do with this.

More than 19,000 repairs and other services were performed on 313 trucks and passenger cars. In addition, there were 2,000 preventive maintenance checks. About 2,000 repairs were made on 761 pieces of off-the-road equipment.

Meter and Gauge Maintenance: With the automating of pumping stations and the steady increase of instrumentation throughout the distribution network, the maintenance of complex meters and gauges is becoming of increasing importance. The highly trained personnel assigned to this task were kept constantly on the job in 1963.

The Machine Repair Shop also made many major repairs.

Engineering Feat: Twin water mains on piers in Silverwood Street solved a difficult problem of terrain and soil. The concrete piers, 20 feet in height, were sunk deep into the soil, and both mains and piers were covered up to grade.



Water Supply: The final link in a long Northeast Philadelphia supply main nears completion outside the Torresdale Filtered Water Pumping Station. Valves and piping (above) connect the main to the station.

Pipe Cleaning: More than 13 miles of old water mains were cleaned and cement lined. Accumulation of sediment over years had cut down carrying capacity of some mains (see pipe sample at right).

DOLLAR EARNING METERS

Not merely water was flowing through the city's water meters in 1963. There was also a strong backward flow of revenue.

Ten years of intensive improvements by the Water Department Meter Shop had placed most of the 525,000 water meters in peak operating condition. As a result, the meters were serving consumers with increased efficiency, and they were providing reliable financial support for the water and sewerage systems.

Several developments in 1963 made this fact increasingly clear—

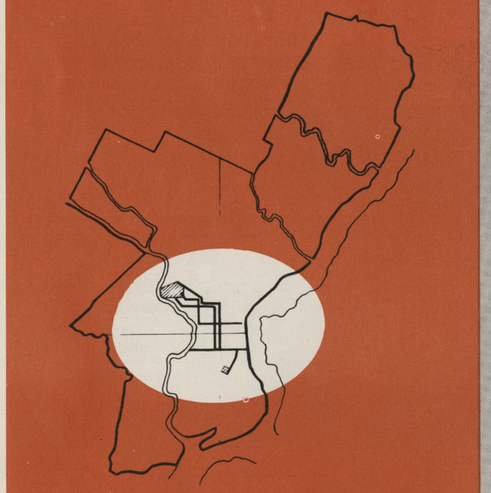
1. Overhaul or replacement of every large meter in the system was completed for the first time. The completion of rotation, after three years, was of special significance, for the 16,650 large meters (one inch or more in size) are used mainly by industries and businesses. They produce more than half of all water-sewer revenues attributable to **measured** consumption.

During the year, more than 2,500 large meters were rotated, and the Meter Shop began a second three-year rotational round. About 3,750 meters in all were removed and repaired by shop forces.

2. The planned 10-year rotation of 505,000 small meters (⅝ inch and ¾ inch) was far advanced. By the end of 1963, only 45,000 small meters remained to be overhauled or replaced as part of the rotation program, and this job was scheduled to be completed in 1964. About 44,500 small meters were rotated in 1963.

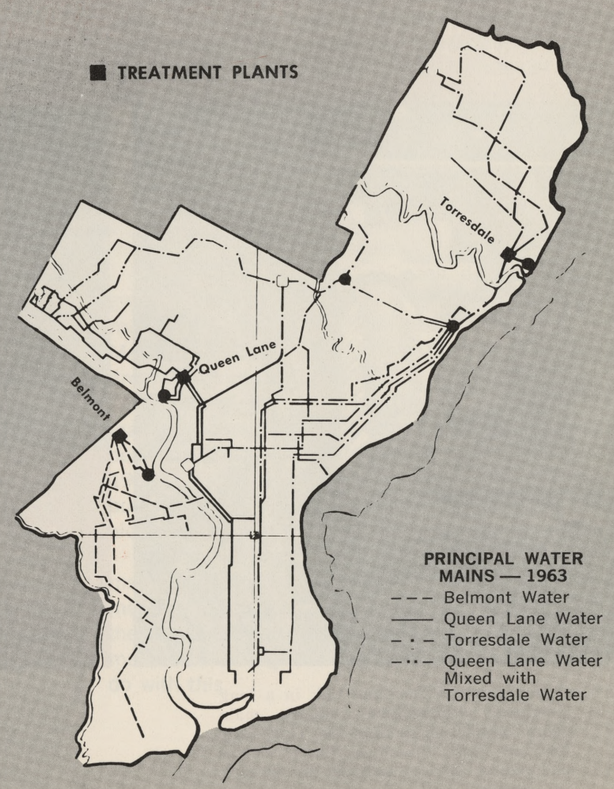
3. While the rotation programs moved forward, the Meter Shop continued to give high priority to non-registering and poorly functioning meters. Thanks to past efforts of shop personnel, such meters were down to 9,700 in 1963—a drop of 2,600 from the preceding year and the lowest level in a steady six-year decline.

4. The 75 employees of the Meter Shop performed more than 97,000 jobs. These included the repair of 62,000 meters in the shop and more than 11,000 meters in the field. Nearly 66,000 meters (including 3,500 large ones) were reset. The number of meters installed on "new services" declined, from the 5,100 of the previous year to 3,700.



PRINCIPAL WATER MAINS — 1853

Century of Expansion: In 1853 Philadelphia's boundaries were limited and its water system also. Its biggest mains (shown above) were 20 and 30 inches in diameter. The present system (right) is spread over a great area and so complex that only mains 36, 48, 60 inches and larger in diameter can be shown here.



water quality & research

IMPROVING WATER QUALITY

Most chemists would have agreed in 1963 about the high quality of the water turned out by the new treatment plants. The water issued clear and sparkling, and it flowed to the taps of most consumers without change.

Philadelphia water had become one of the nation's purest, with a coliform organism count of only 2.7% of that permitted under the drinking water standards of the U. S. Public Health Service for interstate carriers. Most of its tastes and odors—except in rare circumstances—had been banished, and water discoloration had largely disappeared in most areas of the city.

This happy situation, however, was not enjoyed in its entirety by all consumers. For some of the city's residents the clear product of the treatment plants became less clear as it flowed through miles of old and corroded small pipelines. These small pipelines, plagued with many deadends and difficult to flush satisfactorily, were located in 30 scattered neighborhoods of varying size. Discolored water complaints from these neighborhoods were recurrent.

Though the Water Department regularly flushed out these lines (providing temporary relief), it began to ready plans for a lasting solution to this its last serious water "quality" problem. Beginning in 1964, the department will invest $2 million yearly in the cleaning and lining of small mains in the affected neighborhoods. A study is also under way aimed at the further elimination of intersectional deadends, correction of flow patterns, and installation of fire hydrants at locations suitable for more efficient flushing of mains.

Discolored water appeared momentarily in some other areas of the city during the year. This was because of pumping and pressure district changes which reversed the flow of water in some mains.

If some water discoloration was the principal lingering problem, it was also a proof of how far Philadelphia had come in improving its water. Improved filtration, better chemical treatment, thorough sedimentation, new water mains, and the cleaning and lining of large older mains, were all combining to deliver better water to most consumers.

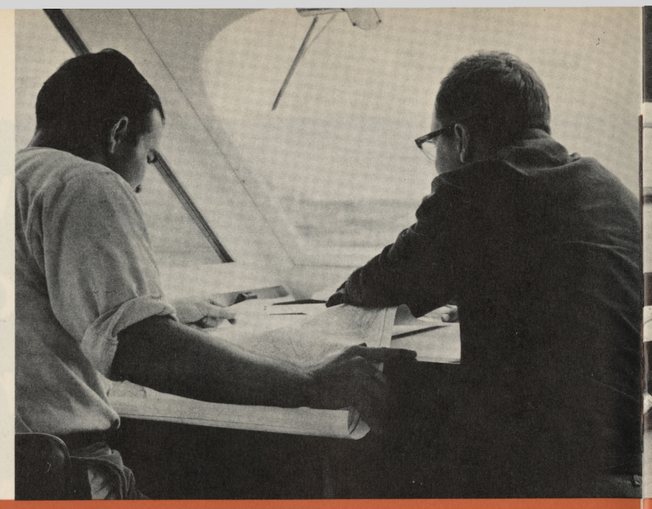
Despite unusual river conditions, the water plants solved their treatment problems satisfactorily.

All the plants continued to use free residual chlorination to destroy organic materials, and indeed their use of this was somewhat greater. Use of other chemicals, however, varied from one plant to the other depending upon the quality of the river water. The Queen Lane Plant resumed the use of carbon to control tastes and odors, while the Belmont Plant stepped up its consumption of alum for faster coagulation during reconstruction. Generally speaking, the tastes and odors of water issuing from the Schuylkill plants contained slightly "musty chlorinous" or "chemical chlorinous" odors, but these did not spread far into the distribution system.

The Torresdale Plant, faced with extreme changes in Delaware River turbidity, experimented with a variety of new coagulant chemicals. Fortunately, the sudden drop in river turbidity improved the quality of the river water in mid-summer, when stream flow and dissolved oxygen were very low. As a result, there was a marked reduction in tastes and odors at Torresdale during the second half of the year, and very little extra treatment was needed for these.

Departmental chemists and sanitary engineers maintained tight control over water quality. A million

Floating Laboratory: With the purchase of a new cabin cruiser, the Water Department greatly stepped up its study of Delaware River conditions. Crammed with laboratory counters and equipment, the cruiser enabled the department to do faster and more extensive sampling of the river.



On Board Analysis: Many hours were saved by the department's new cabin cruiser for river research, thanks to "on board" testing of water samples. Technician (above left) draws river water sample which is pumped through bottom of boat as the latter moves across the river. Samples are checked at right.

and a half tests were made on tens of thousands of water samples collected throughout the water system. The 10,000 samples taken from pipelines and reservoirs for coliform testing alone were more than double the number recommended by the U. S. Public Health Service for cities of two million population.

Of 1,500 consumer complaints, a little more than one-third related to discolored water; less than 200 to tastes and odors, usually so transient that they could not be detected by field employees.

With increased use of the big East Park Reservoir, algae and crustacea floated into South and Southwest Philadelphia during the year, causing some problems for industries in the Grays Ferry area. Application of copper sulphate at the reservoir helped to control these, but the problem was solved only when use of East Park water was reduced.

Algae growth in the smaller Oak Lane Reservoir was closely controlled with chlorine and chlorine dioxide. Cleaning of the basin bottoms was planned for 1964 to eliminate midges.

CHANGING RIVER CONDITIONS

Summertime drought struck the Delaware River Basin for the third successive year. Though this did not affect the adequacy of the city's water supply, it created many water quality problems (as noted earlier) for the treatment plants.

Fortunately, the general condition of the Delaware and Schuylkill Rivers had improved so greatly, as a result of federal, state, and local clean-up of those streams in past years, that the drought could not impair the quality of the treated water distributed to consumers.

Rainfall during the year, as measured at Philadelphia International Airport, amounted to 34.95 inches, or 7.53 inches below the norm for the 1931-60 period.

On the Delaware River record low flows were recorded from August through October. The mean flow for the year, as recorded at Trenton, was 7,115 cubic feet per second, compared with a normal median flow of 12,400 C. F. S. Upstream diversion and lack of sufficient upstream storage (for timely water release) sometimes contributed to an erratic flow.

Because of low flow, high river turbidity, and some continued pollution, the dissolved oxygen in the Delaware fell to nearly zero parts per million in some portions of the river. Chloride levels rose, thousands of fish died, and the quality of the river water deteriorated.

With the end of upstream channel dredging by the U. S. Army Corps of Engineers, the turbidity fell markedly in mid-summer. This had ranged as high as 500 to 700 units (as shown by individual tests) in upper reaches of the Delaware and up to 290 units opposite the Torresdale intake. The sudden drop, as already noted, quickly restored the quality of the river water despite the continued drought. Improved release of dissolved oxygen by plant life, under the stimulus of more easily penetrating sunlight, may have contributed to this.

Turbidity in the Schuylkill River was very low, but the drought further increased the hardness of the water, which normally is moderately hard. Schuylkill hardness ranged from 4.7 to 14.1 grains per gallon, with an annual average of 9.1 grains. By contrast, the normally soft Delaware water had a hardness range of 2.9 to 4.5 grains per gallon, averaging 3.8 grains for the year.

The washing of pollutants from the Wissahickon watershed into the Schuylkill raised the coliform organism count at the Queen Lane intake to one of the highest points in years. Farther down the river at the Belmont intake, however, coliform organisms were at one of their lowest levels. At Torresdale too, despite much continued pollution in the Delaware estuary, the coliform organism count was well below a 14-year average. While the count at Queen Lane was a temporary phenomenon, that at the other two intakes was representative of long range improvements in the streams.

Radioactivity rose in the two rivers, as a result of fallout carried by strong winds from Canada. The amount recorded—41 micro-microcuries per liter in the Delaware and 49 micro-microcuries in the Schuylkill—was nevertheless negligible, and more than half was removed by the treatment plants.

There were no significant changes in other chemical characteristics of the two streams.

THE GROWTH OF FRESH WATER RESEARCH

Some of the country's most advanced fresh water research moved forward along the Delaware River.

The U. S. Public Health Service and the Philadelphia Water Department divided the river between them for a special two-year study. While USPHS sampled the river from Reedy Island to Marcus Hook, the Water Department collected midstream samples once each week from Marcus Hook all the way north to Trenton. The purpose of the study was to gather a mass of data on the changing quality of the river water—data that would be fed eventually into computers to provide a long range picture of the Delaware.

This study was an extension of research already being done by the Water Department and the U. S. Geological Survey. Both agencies had sampled the stream continuously since 1949, and within the last few years they had set up six automatic monitoring stations. The latter measured and recorded dissolved oxygen, salinity, temperature, turbidity, "pH", and other stream conditions 24 hours daily.

In 1962 these two agencies, together with the U. S. Army Corps of Engineers and the New Jersey Division of Water Supply and Policy, launched a study of volume and patterns of river flow. Three gauging stations for water elevation (1962) and a tidal current meter (1963) were set up for this study.

As a result of the various studies in progress, data on the Delaware River has accumulated rapidly. To facilitate the translating of this data to computer tapes, the Water Department experimented in 1963 with a digital tape recorder which was linked to the measuring instruments at one of the river stations. The experiment went so well that the U. S. Public Health Service planned to supply two more such

recorders in 1964 as its contribution to the study.

During the year, the Water Department—

1. Tested a new type of "package" monitoring device that would eliminate the need for each river station to have several measuring instruments.

2. Purchased a high speed, laboratory equipped, cabin cruiser to make fast and wide ranging 24-hour surveys of midstream conditions.

3. Joined with the Philadelphia Health Department in collecting water samples for radioactivity testing at 21 points on the Delaware and tributary streams.

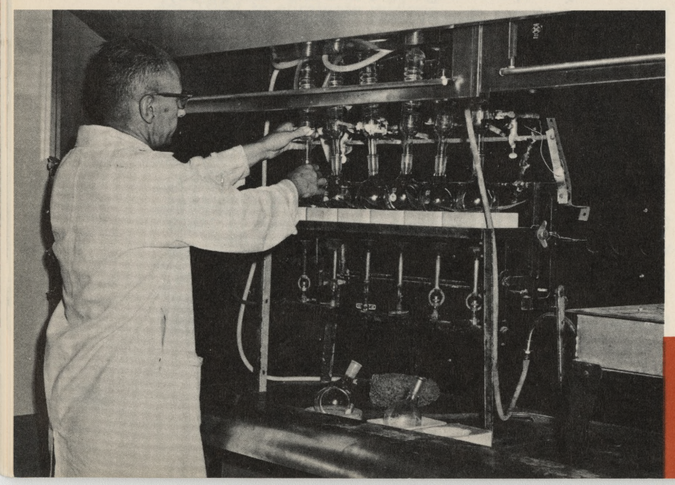
Vital as were the river studies, they were only one aspect of Water Department research in 1963. The department also continued its research of many years to improve the processing of river water.

Thus laboratory personnel of the Torresdale Water Plant—

1. Worked with a research team from the Franklin Institute to find better means for identifying and measuring tastes and odors.

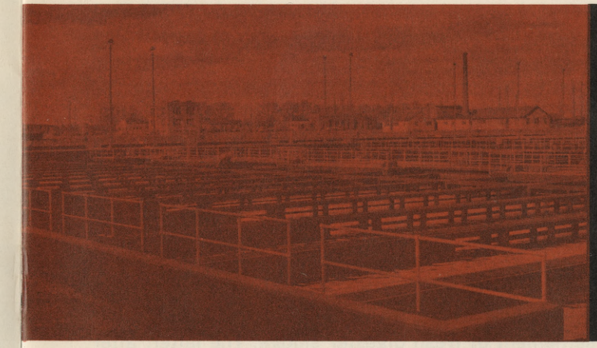
2. Made extensive tests on new coagulant chemicals, such as Nalco, Jaguar, and Narvon clay Z-3—operating the flexible Torresdale plant as two independent halves for the purpose of comparative chemical studies.

3. Studied the location of monitoring devices at the Torresdale intake.



New Research Center: Personnel of the Water Quality Control and Research Unit moved into a new home—a renovated building at the Belmont Plant—fitted out with modern laboratories and equipment. Unit keeps tabs on water quality and brainstorms improvements.

Testing the Product: To ensure good water for consumers, Water Department laboratories made one and one-half million tests on tens of thousands of water samples collected throughout the water system.



the sewerage system

CLEANING UP THE STREAMS

That the Delaware and Schuylkill Rivers will continue to provide a usable water supply in future years, there are many indications. Perhaps the most encouraging of these is the growing success of Philadelphia's multi-million dollar stream clean-up effort.

The city, though possessing adequate and modern sewage disposal facilities for a few years only, was treating 354 million gallons of sewage daily in 1963. This was one of the highest flows to the sewage plants in years.

The daily flow to the plants represented 99% of all Philadelphia's raw sewage, and included 35 million gallons daily from neighboring communities. By 1965 the untreated 1% of the city's raw sewage will also be diverted to the plants. By that year too, treatment capacity will have been further expanded.

Thus a long held dream of Philadelphians—the restoration of the Delaware and Schuylkill Rivers to an acceptable cleanness—is being gradually approached. As a step toward this, the city's plants removed 82,000 tons of sewage solids in 1963, preventing them from entering the streams.

Philadelphia, of course, is not alone in advancing stream clean-up. Many other communities, as well as many private industries, throughout the Delaware River Basin are treating their wastes. Coupled with extensive stream studies by public agencies (see page 21), this vast clean-up effort is improving the condition of the rivers and winning growing public support.

* Partial and Final Estimates. ** Limit of Contract.
NOTE: Dollar figures given above measure physical activity in the field, as indicated by partial and final estimates or limit of contract. They do not show what was actually paid out during the year. For a statement of accounting activity (showing actual expenditures and encumbrances, etc.) see the sections on "Capital Finance" and "Current Finance" with related tables.

In Philadelphia stream clean-up is closely related to other elements of a $302 million modernization and expansion program (1946-69) for the sewerage system. Much construction was done under this program in 1963.

To protect the rivers, more than $4 million* was invested in plant expansion and interceptor sewers, compared with $2.4 million the year before. At the same time, $9.2 million* (about $5 million below 1962) went into new sanitary and storm water sewers to service domestic and industrial needs. Included in the latter figure was a small amount for water mains, built as part of sewer contracts.

The year also saw 152 contracts (many of them started in earlier years) brought to completion. Totaling $10 million**, they included $8.9 million for sanitary and storm sewers and the balance for sewage disposal. New contracts awarded amounted to $17.6 million**, or $4.9 million more than the year before. On December 31, there were 118 sewerage contracts in force, valued at $23.5 million**. Work was still to start on 44 of these, valued at $4 million.

EXPANSION OF TREATMENT PLANTS

Though the city's three sewage treatment plants were only a few years old, mounting sewage flow was already pressing hard upon some of their facilities. To handle adequately the incoming flow and to meet still larger future needs, the Water Department pushed new construction vigorously.

Northeast Works: At the Northeast Works, which serves the northern and northeastern reaches of the city, $2.3 million of construction was done as part of a $5.3 million expansion plan.

By late December the concrete walls and bottoms of four "final settling" tanks had been poured, and the internal partitions of these began to appear. Most of the base and outer walls of a new "aeration" tank had also been poured. Other facilities—such as a new storage building and extension of the blower building—were more than half finished. Work on conduits, piping, channels, etc. was moving forward. Two sludge pumping installations were to follow.

The new facilities are scheduled to go into service late in 1964. They will raise the rated treatment capacity of the Northeast plant from 125 million gallons of sewage daily to 175 M.G.D. As for several years past, sewage inflow in 1963, amounting to 137 million gallons daily, was well above the plant's rated capacity. With the population of Northeast Philadelphia growing steadily, the influx of industrial and domestic wastes will become even greater in the next few years.

Improvements were also made at the Northeast Works under $328,000 of minor contracts. Virtually completed, these included replacement of grit elevators and conveyors, demolition of old sedimentation tanks, installation of new aeration header pipes, interior cleaning and painting of digester tanks, replacement of parts on collecting equipment, and installation of central tower supports in two digester tanks.

Because of overflowing lagoons, the Northeast Works continued to send two-thirds of its digested sludge to sea. About 43 million gallons of sludge was barged by private contractor at a prorated cost of $252,000 in 1963.

Late in the year, the department put into effect a plan for sending less watery sludge to sea . . . disposing of twice the solids for the same cost.

With a newly purchased hydraulic dredge ($101,000), it began to pump sludge from the lagoons, and this sludge, denser than that from the digester tanks, was carried by barge to the Atlantic Ocean. Though the new dredge worked well, the pumping of the denser sludge at sea proved difficult. Pending study of barge modifications, the barging of lagoon sludge was temporarily halted.

It is planned to clear the Northeast lagoons eventually, making them once again available for settlement of fresh digester sludge. The latter, after settlement and some evaporation, will then be transported to sea.

Southwest Works: Disposal of sewage sludge was also a pressing problem at the Southwest Treatment Works. With five existing lagoons already full, the plant had to put a new lagoon into service even though the latter was still under construction. The new $206,000 lagoon was about 70% finished.

The new lagoon was badly needed, for sewage flow reached 117 million gallons daily—the highest level in the plant's nine-year history. Most of the increase in flow (about 10 M.G.D. over 1962) was carried to the plant by a new interceptor sewer, which went into service in February. The plant remained, however, within its rated treatment capacity of 136 million gallons daily.

Various minor improvements were made at Southwest. These included sewage pump overhaul, a new sludge drainage system in the heater building, new steam heating equipment, various meters, and central tower supports for two digester tanks. The finishing touches were also put on rehabilitation of the pumping station. About $50,000 of work was done during the year under various small contracts at the plant.

The plant also tested successfully a new type of non-clog sludge pump, an event of some importance because of persistent pumping failures at the plant in past years.

Southeast Works: There were no significant changes at the Southeast Works. Sewage treated—100 million gallons daily—was the same as in 1962.

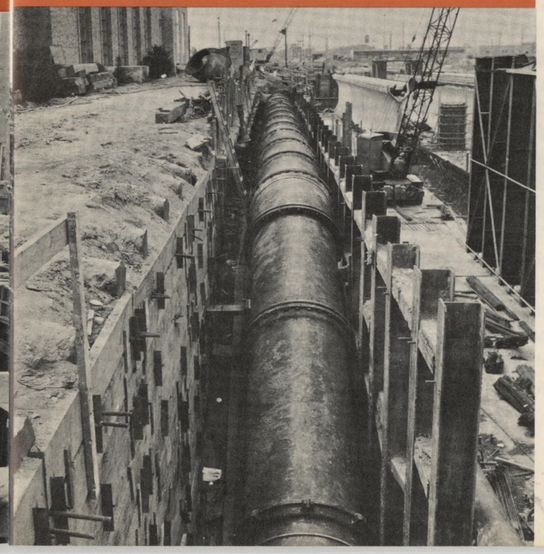
Repairs started on a remote control system which regulates the pumping station, blower building, and grit-and-screenings building. Pending completion of the $35,000 job, electrical equipment in these buildings must be energized manually.

Despite construction or other difficulties, all the treatment plants performed with good efficiency. The Northeast Works, which provides both primary and secondary treatment, removed 76% of suspended solids and 70% of biochemical oxygen demand (a measure of pollution) from the sewage. At the other two plants, which provide only primary treatment, the removals were somewhat lower. Southeast took out 50% of suspended solids and 44% of biochemical oxygen demand, while at Southwest the removals were 47% and 29% respectively. Plans are being made to improve biochemical oxygen demand removal at Southwest, where the nature of the sewage has kept such removal lower than desired.

Plant Expansion: One of four final settling tanks under construction at the Northeast Sewage Works will raise that plant's daily treatment capacity from 125 million gallons to 175 million. Each tank will hold 1.4 million gallons.

Nearing Completion: A new aeration tank takes form as part of a $5.3 million expansion at Northeast Works. Built of reinforced concrete, the aeration tank is 412 feet long, 95 feet wide, and 17 feet deep.

New Air Line: A large steel pipe, 4½ feet in diameter, goes into place alongside a new aeration tank at Northeast Works. Pipe will carry air to sewage in tank.



THE INTERCEPTING NETWORK

To pick up sewage from branch sewers and carry it to the treatment plants, the city has steadily expanded its intercepting network. This network consists of sewage pumping stations, intercepting and metering chambers, and 138 miles of big intercepting sewers.

Because of the yearly growth of the intercepting system, more and more of the city's raw sewage has been diverted away from the rivers to the treatment plants. In 1963, under five million gallons daily, or 1% of the city's untreated sewage, entered the lower Schuylkill River at four outfalls south of Grays Ferry Avenue Bridge. Further extension of intercepting sewers (76 miles have been built since 1946) will plug these outfalls by 1965.

No untreated city sewage now enters the Delaware River.

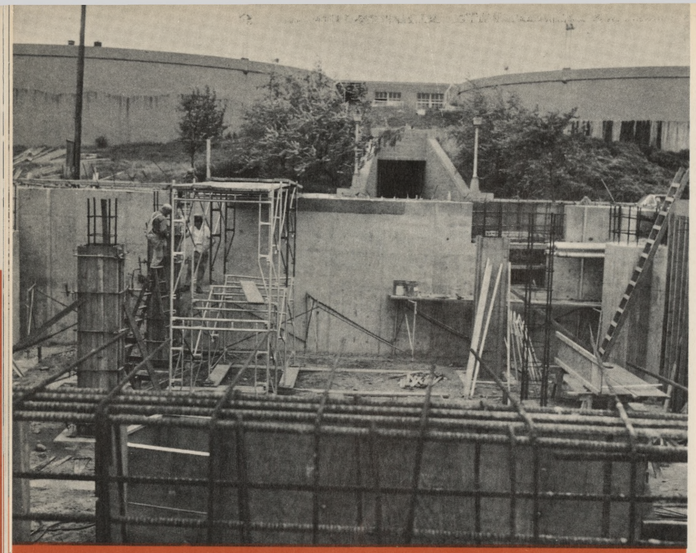
Schuylkill, West Bank: The year's most important stream clean-up advance was a new three-mile interceptor, which went into service in February on the west bank of the Schuylkill. Diverting several million gallons of sewage daily away from the river, the $3.1 million line extended from 56th Street southward to the Southwest Treatment Works. A concrete sewer in tunnel, the line could carry up to 14 million gallons daily.

Late in the year, construction began on a half-mile addition to this interceptor. The $651,000 extension will run through Bartram Park to 51st Street, and thence along Botanic Avenue to 49th Street. Also built in a tunnel, it will consist of a vitrified pipe, 21 to 24 inches in diameter, merging into the larger (3 ft. to 4½ ft.) line to the south.

Schuylkill, East Bank: One urgent need could no longer be postponed. This was replacement of an 1883-built interceptor running along the east side of the Schuylkill River. The old brick sewer, which has carried sewage and storm flow for 80 years from Manayunk to Fairmount Dam, has long been overloaded and deteriorating. Many illegal storm connections were made to it in past decades.

The first steps toward eventual replacement and extension of the sewer, all the way from the dam northward to the city line, were taken in August. Work began under two contracts, totaling $1,570,000. These were for construction of a new concrete sewer, extending 7,000 feet northward from the dam to the Girard Avenue Bridge. A 6½ ft. x 6½ ft. box, the new line moved quickly forward in an open cut a few feet west of the old sewer. It was scheduled for completion in the spring of 1964.

In future years other portions of the old interceptor will be replaced as far as Manayunk, and the



Northeast Sewage Works: Walls go up for an extension to the blower building. The extension will house additional air blowers and pumps to provide air for a new aeration tank.

sewer will then be extended to the county boundary. The total cost for replacement and extension of the entire line will be $6 million.

With several times the carrying capacity of the old sewer, the new one will have no storm connections but will carry wastes only. This flow will continue to reach the Southwest Sewage Treatment Works.

Small interceptors were also built elsewhere in the city in 1963 to meet neighborhood needs. These included 3,862 feet along Byberry Creek in the Far Northeast, under a $58,000 contract.

SEWERS FOR GROWING NEEDS

Sewers, like water mains, must respond to changing community needs. These changing needs were strikingly apparent in 1963, as Philadelphia built 26 miles of sanitary and small storm sewers. The new mileage continued the progress of a decade, a progress which had made a **net** addition to the sewer system of 387 miles of sewers of all types.

The changing needs were reflected in shifting population, new housing developments, new industrial areas, and greater demands upon old facilities. To meet these needs, the Water Department expanded its sewer system to 2,424 miles.

Among the developments of the year were:

New Housing and Industrial Development: As part of the city's continuing campaign to attract new residents and industries, the department built 13 miles of sewers at a cost of more than $2 million. Most of these sewers were built in the Northeast, where much open space is still available for housing and manufacturing plants.

About two miles of Northeast sewer lines (together with some water mains) were constructed for industrial parks. This work included sewers in Norcum Road between Comly and Red Lion Road ($365,000); Caroline Road between Comly and Charter Roads ($170,000); and Ashton Road near North Philadelphia Airport ($53,000). In Southwest Philadelphia, sewers were also laid for industries near International Airport ($64,000).

Sewers for new housing moved ahead both in the Northeast and in Eastwick.

Relief of Insanitary Conditions: Many more homes in older neighborhoods were connected for the first time to the city sewer system. More than two dozen projects were under way and 3.7 miles of sewers were built for this purpose.

To fill some of the most pressing needs, nearly 2,000 feet of sanitary and storm water lines were completed in Bell's Mill Road between Norwood and Germantown Avenues, while a start was made on similar lines in Kelvin Avenue, Worthington and Byberry Roads. The cost of each project was $148,000.

Reconstruction of Old Sewers: With more than one-third of the city's sewer mileage antedating the year 1900, the replacement of old sewers will become increasingly urgent.

Many of the old brick sewers are deteriorating under the wear of time and vibrations from overhead traffic. Literally hundreds of miles of such sewers must be replaced during the next quarter century.

In 1963 the Water Department reconstructed 9.5 miles of old sewers in all parts of the city.

The biggest job started was replacement of the Reed Street Sewer, running from a point 715 feet east of Delaware Avenue to 9th Street. The $1,125,000 project, which includes some water main relay, was half finished.

Vital too were four projects ($771,000) begun in center city. These included sewer replacement in Spring Garden Street between 9th and 11th Streets; in 13th Street between Green and Poplar Streets; and in two portions of 11th Street, between Market and Vine Streets and from Ridge Avenue to Green Street.

Reconstruction started on a collapsing portion of the huge Willow Street Sewer between 3rd and Orianna Streets ($130,000), and the entire Willow Street Sewer system—extending through much of North Philadelphia—was under study.

Dragon at Work: The Water Department's new floating dredge began to pump out overflowing sludge lagoons at the Northeast Sewage Plant. Sludge was pumped to a barge for transport to sea.

Southwest Sewage Works: New piping carried sewage sludge to a partially finished lagoon above. With sewage flow to the plant increasing, the existing lagoons at the Southwest Works were full.

CONTROL OF STORM FLOODING

Drier cellars became an actuality for some Philadelphians and a realizable hope for others in 1963. This resulted from several sizable projects to control storm flooding.

For many years some neighborhoods had wrestled with overtaxed storm sewers—sewers which in time of heavy rain poured their contents down streets and into basements. To prevent such flooding, the Water Department initiated a $40 million control program in 1952, and this program produced increasingly beneficial results in the following years.

To the flood control measures of the past, these further steps were added in 1963:

Wakeling Street Relief Sewer: A long awaited Relief Sewer in the Northeast went into service in March. Running for two miles from the Roosevelt Boulevard (at Oakland Street) southeastward to the Delaware River, the new sewer brought important storm flood relief to Frankford and neighboring areas.

The Relief Sewer, built at a cost of $5 million over a period of three and one-half years, diverts about two-thirds of the storm flow from the frequently swollen Wakeling Street Sewer. It can carry more than a million gallons of storm water per minute.

A 13-ft. diameter concrete tube in a tunnel for 7,700 feet, the new sewer becomes twin boxes, 8 ft. x 12½ ft. each, for the last 2,550 feet. Approximately $308,000 of completion work was done on it in 1963.

Mill Creek Sewer: Flash floods rolling down the old Mill Creek from upcountry had long troubled West Philadelphians. The old sewer, built in the 1880's, of inadequate capacity, and its bricks deteriorating with time, sometimes spilled its contents into streets or simply collapsed at overburdened points.

As these problems mounted, the Water Department replaced important portions of the eight-mile sewer with larger, reinforced concrete segments. More than $3 million was spent for this purpose in recent years.

In 1963 this replacement process continued. Drastic surgery and rebuilding were started on one mile of sewer, running from 50th and Brown Streets to 55th and Master Streets. By the end of the year, a half million dollars of work had been done under $2.83 million of contracts.

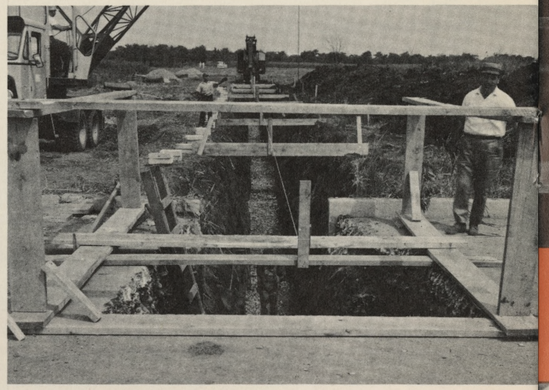
The old brick portion will be replaced with a reinforced concrete box—16 ft. x 18 ft. for much of its length—and will have much greater capacity than the old sewer. It is scheduled for completion late in 1964.

During the year, the department studied future reconstruction of the sewer all the way to the city line; it also considered the building of a relief branch which would empty excess storm water into the Schuylkill River above Fairmount Dam. The main sewer empties below the dam.

an expanding sewer system meets many community needs

For Sanitation: 3.7 miles of sanitary and small storm sewers were laid to service existing homes. Above, sewer goes in at Bickley St.

For New Homes: Sewers kept pace with city growth. More than 13 miles of sewers were built for new homes and industries.

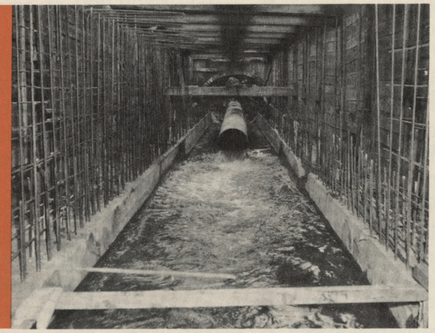


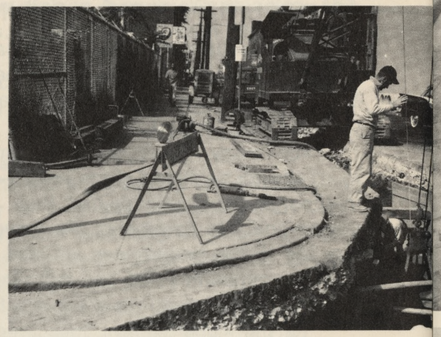
For Industries: Trench is dug for a new sanitary sewer near International Airport. Sewer will serve industries in area.

For Flood Relief: To prevent future storm flooding in West Philadelphia, the city began to reconstruct another portion of the old Mill Creek Sewer. The brick line is being replaced for a mile with a new reinforced concrete box.

No Foot Wiper This: Crane moves giant steel mat into place at reconstruction site of Mill Creek Sewer. Mat will be used to control effects of rock blasting at $3 million job, extending from 50th and Brown Sts. to 55th and Master Sts.

For Replacement: Parts of the big Willow Creek Sewer (right) and the smaller Jefferson Street Sewer (far right) were among nine miles of old sewers replaced in 1963. With more than one-third of the city's sewers antedating the year 1900, replacement is a continuing program.





For Drainage: To carry away storm run-off more efficiently, a concrete walled channel with stone bed was built for Sandy Run in Pennypack Creek Park. Improvements were also made to stream channels in other parts of the city.

For Flood Relief: In South Philadelphia a big storm relief sewer moved along Passyunk Avenue to the Schuylkill River. Built half in open cut and half in tunnel, the sewer will carry up to 209,000 gallons of storm water per minute. Tunnel, above, lined with wooden sheathing, emerges at river below. Vertical shaft to tunnel at right.

Passyunk Avenue Relief Sewer: For South Philadelphia there was also the prospect of future relief from storm flooding. Work started on the much needed Passyunk Relief Sewer, a $3 million project. This sewer, when finished in 1965, will greatly reduce storm flooding in an area bounded by Mifflin, 16th, Shunk, and 22nd Streets.

Running for 1.4 miles, the new sewer will extend along Passyunk Avenue from 16th Street to Ritner Street, continue in Ritner to 24th Street, shoot under the Schuylkill Expressway to the north side of Passyunk Avenue, and finish at the Schuylkill River. For half of its length a reinforced concrete box, increasing to 9 feet x 10 feet in size and built in an open cut, it will terminate as a 10½ ft. concrete tube in a tunnel near the river. About 4,200 feet, including both tunnel and box, were completed in 1963. The value of the work done was $900,000.

The new sewer will be able to divert 209,000 gallons of storm water per minute from the overloaded 16th-Shunk Streets Sewer. The excessive load on the latter during heavy rain sometimes causes flooding of low lying ground.

New Mingo Creek Station: Assuring future flood control in the expanding International Airport and Eastwick areas, the city's biggest storm water pumping station was almost ready to go into service. The new $965,000 station is located at Mingo Creek just north of the Penrose Avenue Bridge.

The single building stood ready at the end of the year, and all the pumps and other facilities were in place. Only some minor problems remained to be solved before the station went into operation in the summer of 1964.

Designed to pump 235,000 gallons of storm water per minute eventually, the new station will replace an older station of 65,000 gallons capacity. It will be automatic, without need for personnel, and will lift storm water 10 feet from Mingo Creek into the Schuylkill River.

SEWER MAINTENANCE

To keep the city's 2,422 miles of sewers in good condition, maintenance crews worked more days and did more jobs than at any time in five years. The 11 crews, though under strength, worked 21,000 days—a 50% rise over 1959—and performed nearly 14,000 jobs of all descriptions.

Much of the increased activity stemmed from increasing attention to older sewers. To meet future needs and to avert sewer breaks, the department inspected 85 miles of old sewers—two and one-half times the mileage of the preceding year. About 13 miles of old sewers were recommended for reconstruction, while many miles more underwent repair, cleaning and flushing.

Maintenance forces repaired 44 sewer breaks, of which 10 involved broken lengths of 10 feet or more. One of the most serious breaks (repaired by private contractor) occurred in a 9-ft. diameter sewer at 55th Street and Baltimore Avenue; the top half of a brick section 75 feet long was replaced with a reinforced concrete box.

Inspection, cleaning, and repair also moved forward on thousands of inlets, manholes, laterals, small stream beds, and drainage rights-of-way. The repeated filling of drainage rights-of-way with debris from expanding residential developments required regular patrol of these areas.

Much assistance was given home owners and business men with their drainage problems.

CONTROL OF INDUSTRIAL WASTES

The future usability of streams in the Delaware Basin depends in good measure upon the willingness of industries to intercept or bottle up their wastes. Within the past 15 years, literally hundreds of Philadelphia industries—and hundreds more outside the city—have installed devices for treatment or recapture of their wastes.

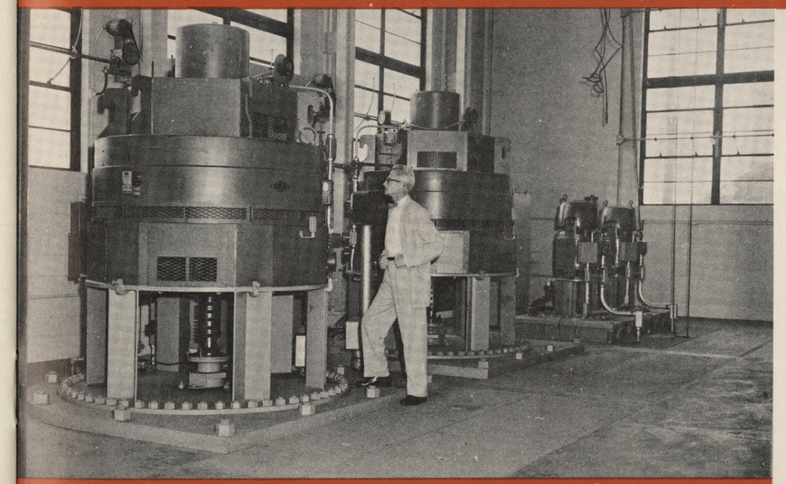
For many industries the recapture and reuse of wastes has meant sizable financial savings. For Delaware Basin communities at large it has resulted in cleaner rivers and more potable water.

Though many factors have influenced the success of this program, one of the most effectual is the persistent effort of the Water Department's small industrial wastes control staff. This well trained staff makes a regular round of industrial plants, spotting wastes that may be injurious to the rivers or to the city sewer system. Staff members advise plant management on ways of intercepting or reducing the effects of these wastes.

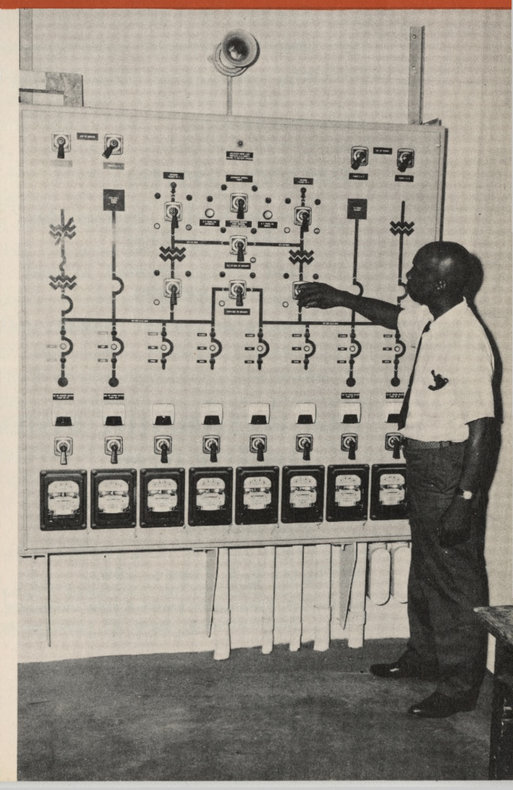
Waste control personnel visited 165 industrial plants in 1963, compared with 94 the year before. These increased visits were made despite a continuing shortage of personnel. In the past 15 years, staff members have visited 850 industries, which collectively account for 80% of the industrial pollution reaching the sewers and the rivers from Philadelphia sources. More than half of industrial pollution has been eliminated as a result of this program.

Plants visited in 1963 represented such varied activities as laundries, ice cream, plating, pigments, wire products, packing, chemicals, dyeing, roofing, paper products, marble polishing, storage batteries, textiles, containers, meat products, engraving, distilling, printing, wool scouring, rendering, smelting, fruit packing, metals, drugs, plastics, rubber, dairy products.

Mingo Creek Station: Nearly completed was the new storm water pumping station at Mingo Creek just north of the Penrose Avenue Bridge. The $965,000 station, which will lift storm water from Mingo Creek into the Schuylkill River, will serve Eastwick and the International Airport. Old station in background will be torn down.



High Pumping Capacity: Powerful electric pumps will give the new Mingo Creek Station an initial capacity of 123,000 gallons of storm water per minute. Later this will be raised to 235,000 gallons.



Automatic Operation: Pumps of the new Mingo Creek Station will operate without personnel in attendance. They and other station equipment will be automatic, set in advance through special controls.

facts in brief

POPULATION	1963 2,002,512 (a)	1962 2,002,512 (a)	1953 2,111,200 (b)
WATER SYSTEM:			
Meters in system: Dec. 31	525,299 (c)	522,632 (c)	341,000
Unmetered accounts: Dec. 31	2,435	2,599	160,000
Total services: December 31	527,734	525,231	501,000
Consumption per person, average day (gallons)	163	163.7	174
Consumption, average day (million gallons)	326	327.8	370
Consumption, maximum day (million gallons)	459.1(d)	430.5	496.5
Total annual consumption of filtered water (billion gallons)	119	119.6	135.1
Total annual raw water pumped (billion gallons)	125	125	143.9
Pipelines in filtered water system (miles)	3,133.5	3,108.1	2,795.5
Valves in filtered water system	70,302	69,034	58,631
Fire hydrants in filtered water system	24,553	24,325	22,796
SEWERAGE SYSTEM:			
Sewage treated, average day (million gallons)	354	347.2	86.6
Total sewage treated in year (billion gallons)	129.2	126.7	31.6
Sewers in system (miles)	2,423.6	2,404	2,072.2
HIGH PRESSURE FIRE SYSTEM:			
Pipelines in system	63.3	63.3	63.3
Valves in system	1,870	1,870	1,873
Fire hydrants	1,043	1,050	1,069

NOTE: (a) U. S. Census, 1960.
(b) Chamber of Commerce estimate.
(c) Includes special rate accounts. Estimate based on billings.
(d) Thursday, June 27, 1963 — temperature 97 degrees.

management & engineering services

TOWARD AN EFFICIENT BUSINESS

If the Water Department is to provide good service at reasonable cost, it must operate as an efficient business.

For this reason, the department has given increasing attention in recent years to the updating of its management and engineering practices. There has been a steady effort to improve the quality and training of personnel, promote a customer service consciousness among employees, reduce operating costs, tighten fiscal planning and controls, modernize engineering procedures, and win public good will.

Spurring this effort are (1) the large financial demands of a big physical improvement program, and (2) the creation of many automated and other advanced facilities. Obviously only highly trained personnel, operating under business-like procedures and backed by intelligent programming, can hold modernization costs to reasonable levels, while producing the best service for the consumer from complex "push-button" facilities.

In 1963 the department continued to modernize its staff services. At the same time it carried on extensive management studies, looking toward further reorganization and improvement.

FISCAL REORGANIZATION

Some of the most significant changes occurred in fiscal operations. For the first time all of these operations were merged into a single Fiscal Division, while at the same time the department continued to improve—as it had done for several years—its accounting procedures.

1. To tighten coordination of its fiscal operations, the department merged the general accounting and cost accounting sections, as well as the IBM, operating budget, and rate analysis units, into a single division. The last two units had formerly been independent of the accounting chief, who now became head of the new Fiscal Division. The latter is composed of 53 employees.

For the first time too, the new Fiscal Division began to work intensively with line division chiefs on preparation of the annual capital budget and six-year capital program—both formerly the responsibility principally of line officials.

2. To the many reporting improvements on fiscal matters made in previous years, a new one was added. Unit cost reports were started for five departmental operations, and it was expected to expand this reporting system in the future. The new reports, supplementing the department's other cost statements, enabled management to see at a glance the trend of costs for individual operations.

3. Keeping tabs on the 11,000 purchase requisitions, orders, and vouchers that moved back and forth between the Water Department and other City agencies presented a growing problem. The new Fiscal Division set up a special "follow-up" system, which was a big improvement over past follow-up procedures.

4. Cooperation between the Water Department and the City Department of Collections (which collects all water and sewer revenues) was further tightened. As part of this tightening, the Water Department trained a special group of employees within its IBM Unit to handle all customer billing problems arising between the two departments. Daily billing transcripts were also supplied to the Water Department for the first time by the Department of Collections.

5. A "reference library" of job procedures was begun for use of machine tabulating personnel. The library, which will help to speed up accounting jobs, will be completed in 1965.

New Talent: Recent college graduates visit the Water Department to discuss an engineering career. Nine were hired as a result of intensive recruitment in Northeast U. S. colleges.

In 1963 accounting personnel processed $29.5 million of contracts—259 contracts for public works and 17 for professional services. Complete inventories of real property, materials and supplies were made during the year.

PERSONNEL CHANGES

Personnel strength was well below the levels of some earlier years. The 1,561 employees on December 31 were 25 less than the preceding year and had fallen by 100 since 1958.

Departmental reorganizations, new operating methods, and the increasing compactness and efficiency of the physical plant, have been the principal causes of this long-term decline. Additional factors in 1963 were labor market shortages and self-imposed City Government ceilings on the filling of vacancies.

The actual drop in personnel strength for 1963, indeed, was greater than the statistics indicate, for the department created and filled 25 additional engineering positions in its Construction Branch. These new positions were needed to meet the sudden demands of an accelerated public works program, partly financed by the Federal Government.

Continued competition by private industry for engineering talent made it difficult to satisfy all the Water Department's needs. An intensive recruitment campaign was conducted in Northeastern U. S. colleges, resulting in the hiring of nine graduate engineers. Most of these were assigned to departmental operations other than construction.

Turnover and Sick Leave: Personnel turnover was 9.8%, a drop of 1.3% from 1962. Thus the rate was close to the normally moderate levels of other years. Improved working conditions and satisfactory personnel practices had much to do with the amount of turnover.

Sick leave usage rose slightly from 9.1 days to 9.6 days per employee.

Training: Faced with shortages of trained personnel in the labor market, the Water Department continued to train its own employees to cope with "push-button" facilities and sophisticated water quality research. During the year, 34 employees attended special courses given by the department or outside schools.

These courses covered such subjects as filter plant operation, instrumentation, basic radiological health, radionuclides in water, mathematics, and public administration.

During the year, the department also held orientation sessions for 97 employees. These were divided for the first time into two orientation groups, according to education and skills.

Twenty-one middle management officials completed an executive training course, conducted by a management consultant firm.

Employee Activities: As in past years, Water Department employees took part in many morale building activities. The Employees' Recreation Association provided noontime games, afterhours sports competition, and special discount theater tickets for its 900 members. The association also opened a "game room" at Water Distribution headquarters.

PERSONNEL CHANGES

Among the more significant personnel changes in 1963:

PROMOTIONS

Carmen Guarino, from Sanitary Engineer III to Chief of Sewage Operations, 12/9/63.

Azad Attarian, from Administrative Assistant II to III, assisting Deputy Water Commissioner, 3/4/63.

Richard Boggs, from Civil Engineer III to IV (Construction), 3/4/63.

Ernest Ferrero, from Civil Engineer III to IV (Construction), 3/4/63.

Gus Van Nynatten, from Electrical Engineer III to IV (Design), 1/21/63.

David Anderson, from Civil Engineer II to III (Construction), 9/30/63.

Hugh Ireland, from Civil Engineer II to III (Construction), 5/27/63.

SEPARATIONS

Gerald E. Arnold, Deputy Commissioner, Water Operations, retired effective 2/7/64, but left for Manila in December, 1963, to become special consultant and chief deputy to the manager of the Philippine National Water Works and Sewage Authority.

Edward Bastian, Deputy Commissioner, Sewage Operations, resigned for position in private industry, 6/28/63.

Samuel Wilson, Civil Engineer V, with responsibility as Chief of Construction, resigned for position in private industry, 6/10/63. Reappointed Civil Engineer V and Chief of Construction on 3/19/64.

Edgar Tohlin, Civil Engineer IV (Construction), retired 3/15/63.

NEW APPOINTMENTS

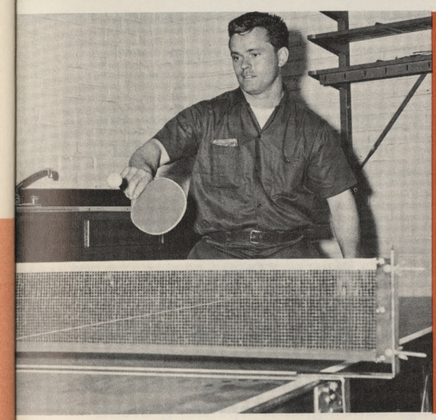
Celestino Pennoni, Civil Engineer III (Construction), 3/18/63.

Louis Benoff, Civil Engineer III (Design), 5/20/63.

DECEASED

Walter Ringer, Sanitary Engineer III, with responsibility as Chief of Water Quality Control and Research, deceased 8/3/63.

Picnic Time: One of the biggest events of the year was the Water Department picnic. One thousand employees and family members turned out for a day of sunshine and fun, filled with free games, free rides, and free snacks, at Willow Grove Park.



OFF DUTY HOURS

For Water Department employees it was not all work and no play. Employees took part in many activities outside the office. Some activities are shown on this page. New Recreation Room at Distribution Headquarters (photos at left and right) drew many off-duty enthusiasts.

Christmas Carols: Nothing is so worth repeating as a good custom, and Water Department employees repeated one at Christmas time. They sang carols in City Hall courtyard for all who would listen.

Driver Incentive: Meter Shop's safest driver is assigned newest truck in recognition of his achievement. This was part of a "safety education" plan for drivers, who are constantly encouraged to drive safely.

For Topside Safety: Field employees of the Meter Shop donned bump caps for the first time. Caps protect them against low cellar beams and other hazards when checking on water meters in homes and industries.

The Water Department house organ, edited and published by employees, served as a link between management and personnel. In August 1,000 employees, and family members attended the first departmental picnic.

Employees contributed $26,631 to the annual United Fund drive, designed to aid local welfare organizations.

THE SAFETY PROGRAM

The disabling accident frequency rate, which in 1962 had been the lowest in the department's history, bounded upward. The rate (which measures the number of disabling injuries in relation to the number of man hours worked) rose from 14.1 to 17.1. The new rate, however, was well below the rates registered in the years preceding 1962.

Though disabling injuries climbed from the 46 of the previous year to 61 in 1963, the number of medical treatment cases fell from 172 to 127. A large number of back injuries, particularly among maintenance crews, contributed to a rise in actual days lost, from 638 to 1,113. Preventable motor vehicle accidents fell slightly.

The intensive safety education campaign, which has whittled down the department's accident rate over the last few years, continued. Four hundred seat belts were installed in departmental vehicles; ladder guards were placed on tanks and microwave towers; lightweight bump caps were issued to Meter Shop field personnel; and much emphasis was put on the use of other safety equipment, including hard hats, goggles, and safety shoes, by construction and maintenance men. "Safe driver" awards were given to 204 employees who drove without an accident for a year.

During 1963 also, a safety discipline procedure and a safety manual were drafted. These were to be reviewed and put into effect in 1964.

ENGINEERING SERVICES

Engineers and chemists made large contributions to water and sewerage improvements in 1963, as they have done for many years. Serving as the planning, designing, building, and operating brains of the department, they kept a billion dollar complex of facilities functioning.

Though much of this report testifies to their contributions, brief note will be taken of several engineering units:

Planning: Formed in 1961, the department's newest engineering unit, Water and Sewer Systems Planning, made extensive studies of the water distribution and sewer networks. During the year, this small planning group studied over 700 locations for the relay of small water mains, reviewed design work for several new development tracts, investigated water pressure districts, and made preliminary designs for sewer reconstruction at 148 locations. In addition, it made comprehensive hydraulic studies for future expansion or replacement of four big storm water systems.

Design: The Design Branch, though at its lowest personnel strength in years, was busier than ever. The 87 employees worked on $25.3 million of "plans, specifications, and estimates" for plants and pipelines. These included 19 miles of new sewers, 66 miles of water mains, several large water storage basins, and new facilities at the sewage treatment plants.

The unit prepared 132 reports on drainage and flooding, and worked closely with the State Highways Department on water main and sewer problems related to big highway projects in the city.

The personnel shortage required the farming out of some work to consultants, who drew up most of the plans and specifications for $6.6 million of sewer reconstruction.

Construction: Through heat and sweat, rain and mud, the employees of the Construction Branch converted multi-million dollar plans into concrete and steel. The branch's numerous engineers and inspectors spent most of their time outdoors, checking on 382 projects valued at $56.9 million.

Because of the accelerated public works programs, launched jointly by the Federal and City Governments, the unit started some projects ahead of previous schedules. This required the hiring of 25 new employees, increasing Construction Branch personnel to 182. The unit completed 115 surveys and 40 return plans.

Materials Testing: Important news for the small, hard pressed staff of the Materials Testing Laboratory was the impending completion of new laboratory quarters. The quarters were being created in surplus space at the Fairhill High Pressure Pumping Station. They would replace the cramped, dark, and outmoded rooms of City Hall.

The new quarters, which are being built under $313,000 of contracts, will occupy two floors at the rear of the pumping station. Except for electrical work, the new laboratories and offices were about 85% finished at the end of the year.

Notwithstanding many inconveniences, the Materials Testing Laboratory handled more samples and made more tests in 1963 than in several years. It received 3,862 samples and made 38,544 tests on these. About one-third of these samples came from the Water Department, and the rest from other City agencies.

To make sure that City departments got full dollar value for their millions of dollars of purchases, the laboratory staff tested a great variety of materials. These included instruments, coal, petroleum products, metals, paints, roofing materials, sand, driers, cement, paper, wood, ink, food, chemicals, soils, seeds, soaps, and insecticides.

To keep up with the great number of new products resulting from industrial research, the laboratory continued to acquire new analytical instrumentation and to train personnel in its use. Not all equipment was readily available on the market, however, and thus laboratory personnel designed and built a special apparatus to test plastic electrical conduits.

CUSTOMER SERVICE

Water customers asked more questions and demanded more emergency services in 1963 than in many years. This resulted in part from an increasing awareness of the customer services offered by the Water Department.

The centralization of all customer services in one unit in 1961, and the subsequent publicizing of the special telephone number of this unit, brought a growing flood of telephone calls. More than 135,000 such calls were received in 1963, setting an all time record.

As a result of these calls, and nearly 12,000 more by radio, Customer Service personnel were busy around the clock, seven days a week. They made 76,000 field inspections, covering missing or leaking water meters, flooded basements, new service pipelines, faulty drainage, low water pressure, discolored water, broken mains, and many other problems.

Serving as a central information bureau, Customer Service personnel called upon other departmental units to flush out mains, pump out cellars, correct public drainage, or otherwise assist home owners.

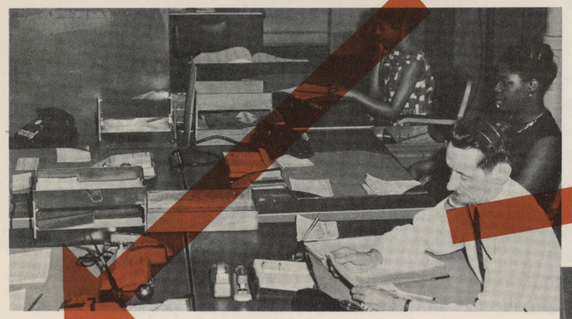
The unit's employees also collected billing information for the City Department of Collections, and served as an emergency weather patrol during winter months. A new teletype machine expedited messages between the unit, located at Distribution Headquarters, and the radio dispatchers in City Hall, thus avoiding time consuming telephone calls.

Public Information: Water customers learned about Water Department operations through a many-sided information program. This exhibit, set up at several shows, attracted the attention of thousands of Philadelphians.

147,000 customer calls got fast service in 1963

A customer reports water in her cellar to the Water Department Customer Service Unit (MU 6-3900).

①



A Customer Service representative at Water Distribution Headquarters takes the call and passes the message to a teletype operator.

②

The teletype operator speeds the message to the radio dispatchers at City Hall.

③

A radio dispatcher sends the message over the air waves to a roving Customer Service inspector.

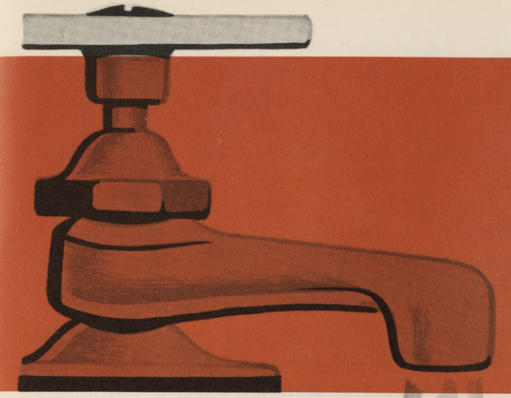
④

The Customer Service inspector gets the call just as he is about to check on an open fire hydrant in a small street.

⑤

Closing the fire hydrant, the inspector hurries to answer the new call. On arriving he listens to the water service pipe for a possible leak that may be reaching the customer's cellar.

⑥



financial progress

CURRENT FINANCE

The rising financial strength of the Water Department in 1963 was a good augury for the future. Revenue more than kept pace with climbing costs, and it was evident that there would be no increase in water and sewer rates until 1967.

This fortunate situation resulted from several factors:

1. The current water and sewer rates, established in 1962, had been planned to meet rising costs over a period of years.

2. More water customers paid their current water and sewer bills than ever before.

3. The Water and Collections Departments continued their vigorous and successful water shut-off plan to enforce payment of delinquent water and sewer bills.

4. The Water Department held spending below the levels projected in 1961.

5. The Sewer Fund continued to receive increased State aid.

As a result of these factors, the self-supporting Water and Sewer Funds, which meet all departmental expenses, closed the year with a surplus of $9,518,000. It was expected, however, that increasing debt service and operating costs would gradually wipe out this surplus by 1967.

Because of the Water Department's good financial position, the City was able to reduce the cost of water and sewer services for many domestic consumers. Thus, customers with the small, ⅝-inch water meter were permitted to draw 6,000 cubic feet of water annually for the same basic minimum price that they had been paying for 4,000 cubic feet. This change benefited the 388,000 small-meter customers who were actually using more than 4,000 cubic feet of water annually.

Water Fund: The income of the Water Fund in 1963 totaled $22,127,000, a drop of $775,000 from the previous year.

The principal reason for this decline was that the City was gradually reducing the number of delinquent water-sewer bill customers. Delinquent collections soared to $3,270,000 in 1962, but the declining number of non-payers brought in only $2,035,000 in 1963. Actual water shut-offs also fell from 12,800 to 9,000.

The drop in delinquent collections was offset in part by a rise of $474,000 in City General Fund payments to the Water Fund. These payments included $1,066,000 for water service to the Fire Department and $746,000 for water supplied to other City agencies. The fire-fighting charge was $291,000 higher because of a $10 increase for each low pressure fire hydrant.

Water Fund outgo — $21,827,000 — was up $476,000 from 1962. This resulted largely from a jump of $542,000 in debt service. This debt service was $7,802,000 in 1963, or about 7% higher than the previous year. Debt service accounted for 36% of the year's obligations, and in addition, $500,000 of operating funds were for "pay-as-you-go" financing of the capital budget.

All other operating outgo—$13,525,000—ran $66,000 under 1962. The largest drop ($130,000) was in the cost of services rendered the Water Department by the City Government's fiscal agencies. The lower $859,000 cost of these services reflected an increasing mechanization of billing processes.

Other expenditures: Personal services, $5,426,000, were little changed; materials, supplies and equipment, $3,374,000, dropped by $100,000; purchase of services, $2,335,000, was $53,000 higher.

Despite the drop in Water Fund income and the rise in outgo, the Fund's 1963 revenues were higher than obligations. This was as planned under the rate schedules.

In budgetary terms, total Water Fund income in 1963 fell $546,000 below revised budget estimates. Water sales (both current and past due) were chiefly responsible for this, reaching $18,869,000, or 96% of the amount expected. Payments from the General Fund were $143,000 more than expected, those from the Sewer Fund $47,000 less, and other payments $56,000 more.

Total water obligations fell $549,000 short of available appropriations: This resulted in part from lapses of $189,000 in personal services and $55,000 in interest; at the same time, $230,000 was added to surplus by merging prior years' encumbrances.

As a result, the Water Fund ended 1963 with a cumulative cash surplus of $3,695,000. This was an increase of $530,000 from December 31, 1962.

Sewer Fund: Totaling $17,344,000, Sewer Fund income was $66,000 higher in 1963. This resulted largely from a sizable jump in State aid to $1,452,000, or $1,085,000 more than the year before.

The State payment represented partial reimbursement of the capital costs of Philadelphia's sewage treatment facilities. In 1963 the Water Department received the full annual 2% capital cost reimbursement authorized by law, plus part of the State aid due for 1962. The total payment accounted for 8% of the Sewer Fund's income.

The increase in State aid offset a drop in the collection of delinquent sewer bills. These delinquent payments amounted to $1,717,000, compared with $2,797,000 the year before. Fewer delinquent customers, as a result of vigorous bill collection, was the reason for this drop.

Payments to the Sewer Fund from other City Government agencies for sewer services were $88,000 higher than in 1962, while interest earned on daily deposits was up $43,000. Other revenues were down $42,000.

Sewer Fund obligations rose by $316,000 to $16,082,000 in 1963, with debt service accounting for 65% of the total expenditures as well as for most of the rise. The $10,415,000 of debt service outgo was $193,000 higher. Fiscal services provided by other City agencies were down to $91,000 but most other expenditures were greater: Purchase of services by $121,000; personal services by $53,000; pensions by $37,000.

Sewer Fund income in 1963 exceeded outgo, as planned, by $1,252,000.

In budgetary terms, sewer income exceeded revised budget estimates by $411,000: Thus State aid was $852,000 more than expected, General Fund payments $62,000 more, and interest earnings $45,000 more. These increases offset drops of $498,000 in expected sewer charges (both current and past due) and $50,000 in other estimates.

Sewer Fund obligations ran $867,000 below available appropriations. This resulted in part from substantial lapses in some appropriations. Among the lapses: $89,000 for services rendered to the department by other City Government agencies; $83,000 for purchase of services; $47,000 for services rendered by the Water Fund; $27,000 for personal services; and $20,000 for debt service.

The merger of prior years' encumbrances added $82,000 to surplus.

As a result, the Sewer Fund closed 1963 with a cumulative cash surplus of $5,823,000, or $1,344,000 more than at the end of 1962.

CAPITAL ACTIVITY – 1963

	Water Works	Sewer Works	Storm Flood Works	Total
Capital contracts encumbered January 1, 1963	$16,501,189	$11,492,135	$ 851,656	$28,844,980
Add: Capital work put under way in 1963	10,569,605	15,198,012	2,593,780	28,361,397
Total: Net capital activity in 1963	$27,070,794	$26,690,147	$3,445,436	$57,206,377
Less: Capital expenditures in 1963	12,200,849	11,521,648	867,449	24,589,946
Capital contracts still encumbered December 31, 1963	$14,869,945	$15,168,499	$2,577,987	$32,616,431

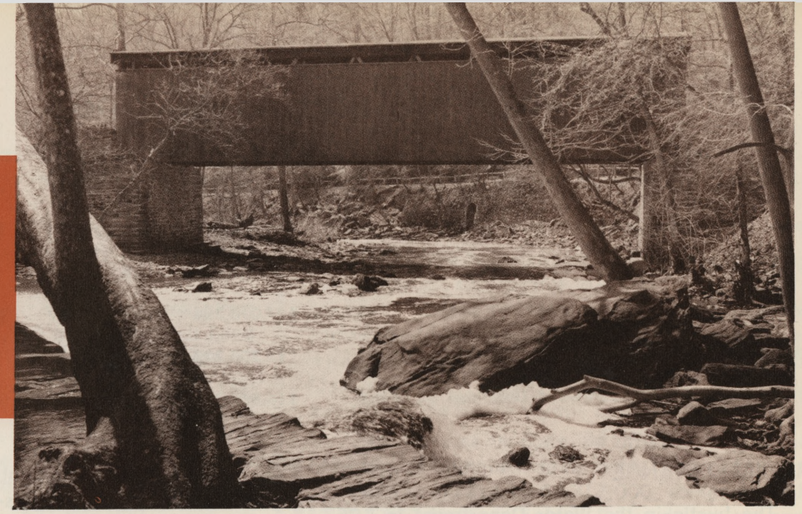
CAPITAL FINANCE

The bustle in the Water Department in 1963 could be measured by its climbing "net capital activity." This "activity" (all contracts encumbered on the department's books less recredits on those completed) totaled $57,026,000—a jump of $2.5 million over 1962 and $19.5 million in three years.

During the year the department made $28,361,000 of new net capital commitments. This was $4,679,000 more than was added in 1962. Much of this increase stemmed from the accelerated public works program, which was being financed jointly by the City and Federal Governments.

The new commitments—encumbered against the 1962 and 1963 budgets—included $10,570,000 for water projects, $15,198,000 for sewerage projects, and $2,594,000 for storm flood control. Among bigger projects were the Upper Schuylkill Intercepting Sewer, $2,450,000; the Passyunk Avenue Relief Sewer, $1,609,000; the Northeast Sewage Works expansion, $1,034,000; replacement of old sewers, $6,494,000; and replacement of old water mains, $5,022,000.

Actual capital expenditures for all purposes during the year totaled $24,590,000, and there were $32,616,000 of capital projects on the department's books at the end of the year.



WATER DEPARTMENT MODERNIZATION

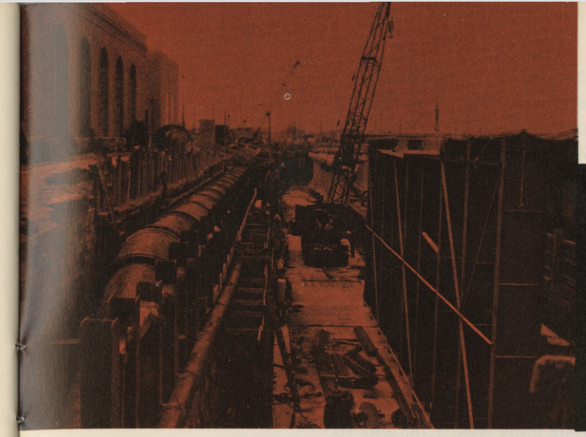
1946-69

WATER SYSTEM

	Encumbered — Expended 1946 - 1963	Scheduled 1964 - 1969
Load Control Center	$ 483,435	$ 271,000
Torresdale Plant	23,381,312	2,298,000
Queen Lane Plant	11,460,524	1,064,000
Belmont Plant	12,245,590	0
Water Pumping Stations	10,174,444	972,000
Water Mains—Built, Replaced, Cleaned, Lined	56,970,889	34,901,690
Filtered Water Storage	7,214,336	5,281,000
Universal Metering	4,788,064	0
Miscellaneous	3,405,538	0
High Pressure Fire System	1,786,422	3,257,000
Water System Capital Improvements	**$131,910,554**	**$48,044,690**

SEWERAGE SYSTEM

	Encumbered — Expended 1946 - 1963	Scheduled 1964 - 1969
Northeast Works	$15,096,829	$ 4,167,000
Southeast Works	6,624,501	90,000
Southwest Works	8,633,723	1,523,000
Sewage Pumping Stations	2,611,122	0
Interceptors	52,344,223	4,280,000
Sewers—Built, Replaced	111,055,982	63,431,000
Miscellaneous	1,540,783	157,900
Storm Flood Relief	26,808,287	3,856,000
Sewerage System Capital Improvements	**$224,715,450**	**$77,504,900**



1963 capital projects

WATER PLANTS & DISTRIBUTION SYSTEMS

Major Projects Completed During 1963

		Cost
1.	Fairhill Pumping Station: General, mechanical and electrical construction.	$ 427,867
2.	Fox Chase Booster District: 1.5 M.G. elevated water storage tank, at former Shelmire Ave., 1021′ N.W. of Central Ave.	571,222
3.	Lardner's Point Pumping Station: Rehabilitation of station; installation of a lighting system, ventilation fans, and two new steam boilers; removing heating system from demolished center house.	291,977
4.	Cleaning and cement mortar lining 48″, 36″, 30″, 24″, 20″ and 16″ cast iron water mains in various locations under four contracts; replacement of line valves.	1,053,759
5.	Relay of twin 30″ steel water mains in Silverwood St. from Domino Lane to approx. 54′ S.E. of Paoli Ave.	203,340
6.	Reinforcing Mains: 36″ main in Red Lion Rd. from Decatur Rd. to the Roosevelt Blvd.	284,217
7.	Reinforcing Mains: 36″ steel express main and steel manifold piping in State Rd. from Pennypack St. to Torresdale Pumping Sta.	170,338
8.	Reinforcing Mains: 36″ concrete reinforcing main in Red Lion Rd. from Roosevelt Blvd. to Bustleton Ave.	313,692

Some of the Larger Projects under Construction at Year's End

			Limit of Contract
1.	W-1101 to 05 1295 1298	Belmont Filter Plant Rehabilitation: General construction, filter equipment, electrical system; heating and ventilating system, and plumbing system. Also laboratory equipment and plumbing for Quality Control Building. Also 48″ line valve, and new steel water piping from Belmont filtered water basin to the east 48″ steel water main in Monument Avenue.	$10,231,200
2.	W-977 W-1166 W-1167 W-1168	Fairhill Pumping Station: Conversion, plumbing, steam heat and exhaust system, and electrical work for new Materials Testing Laboratory.	310,925
3.	W-1283	Fox Chase Booster Pumping Station: New pumps and piping; 20″ dia. cast iron suction and discharge water mains.	113,750
4.	W-947 W-949 W-978	Queen Lane Filtered Water Pumping Station: Installation of six new centrifugal pumps, complete with motors, controls, wiring, etc.; new structures and piping; power lighting and controls; chain link fence.	587,000

5.	W-1246	Upper and Lower Roxborough Filter Plants: Installation of new piping and new valves for underground basin at abandoned Lower Roxborough Filter Plant; construction of 37″ steel water main in line of Minerva St. from Silverwood St. to Fowler St. and other connections, cleaning and cement mortar lining of existing and new mains.	250,000
6.	W-722 W-1187 W-1254 W-1305 W-1306 W-1308 W-1331	Torresdale Filter Plant: Landscaping; general construction and electrical work for conversion of slow sand filters—Stage 1; general construction for conversion of slow sand filters—Stages 2A, 2B, and 3; waterproofing of four dry wells in flocculator basins.	4,505,500
7.	W-1165 W-1271	Torresdale Filtered Water Pumping Station: New pumps and piping; electrical equipment for pumping units Nos. 7, 8, and 10.	159,000
8.	W-988	Torresdale Raw Water Pumping Station: New pumps, piping and appurtenant work.	838,000
9.	W-1320 -CDO	Water Main Construction—Distribution System Rehabilitation: Various intersections of the city.	150,000
10.	W-1228-D	Cleaning and cement mortar lining and replacing line valves in 12″ and 10″ cast iron water mains in various locations. 99% complete	650,000
11.	W-1329-D	7th St. from Columbia to Girard Ave. 50% complete	127,000
12.	W-1272-M	Reinforcing Mains: 20″ cast iron and steel water supply main in Byberry Rd. from Bustleton Ave. to the west curb line of the Roosevelt Blvd. 2% complete	304,000
13.	PUBLIC PROPERTY BID 4818	Miscellaneous: Underground sewer and water lines adjacent to underground Municipal Service Garage, 15th and Arch Streets. 20% complete	300,530

SEWAGE TREATMENT WORKS AND SEWERS

Major Projects Completed During 1963

		Cost
1.	Lower Schuylkill East Side Intercepting System: Intercepting sewer in 26th Street from R/W (formerly Shunk St.) to Penrose Avenue.	$ 355,612
2.	Northeast Sewage Treatment Works: Replacement of 7 existing grit elevators and grit conveyor, etc.; installation of underground feeder for dual service to existing 2.4 KV indoor switch-gear, and low voltage underground feeders to the garage; transportation and disposal in the Atlantic Ocean of digested sludge from Northeast Sewage Works; demolition of old sedimentation tanks and chimney; installation of 768 new aeration header pipes; furnishing and installation of new floating hydraulic pipeline dredge; interior painting of floating covers for sludge digestion tanks Nos. 2, 3, 4, 5, 6, 7, and 8, including cleaning and appurtenant work; painting of elevated steel water tank.	557,848
3.	Sewer for New Development: Belgreen Rd. from Dunks Ferry Rd. to Wyndom Rd., etc.	113,402
4.	Sewers to Relieve Insanitary Conditions: Bell's Mill Rd. from D/R/W (former Norwood Ave.) to Green Tree Rd.; Bell's Mill Rd. from Green Tree Rd. to Germantown Ave.; also sanitary sewer in D/R/W (N.E. of Green Tree Rd.) from Bell's Mill Rd. to Sunset Ave.	131,174
5.	Sewer to Relieve Insanitary Conditions—Distribution System Rehabilitation: Grant Ave. from Frankford Ave. to 221′ east of the Roosevelt Blvd.	406,189
6.	Industrial Land Development: Norcum Rd. from Comly Rd. to Red Lion Rd., etc.—Grading in Red Lion Road from Roosevelt Blvd. to Norcum Rd.	297,207
7.	Industrial Land Development: Caroline Rd. from Comly Rd. to Charter Rd., etc., including stormwater culvert across Caroline Rd. between Comly Rd. and Charter Rd. Water mains in Caroline Rd. from Comly Rd. to Charter Rd., etc.	109,543
8.	Intercepting manhole, tide gate chamber and sewer across Delaware Ave. on line of Canal St. from Penn St. to Beach St., etc.	160,470

Some of the Larger Projects under Construction at Year's End

			Limit of Contract
1.	SD-277-SW	Lower Schuylkill West Side Intercepting System: Construction of intercepting sewer and chambers in Bartram Park (Fairmount Park), railroad property from 56th St. to 51st St.; 51st St. from Reading Co. R/W to Botanic Ave.; Botanic Ave. from 51st St. to 49th St., etc.	$ 651,000
2.	SD-292-SW (Project SD-293-SW (Project	Upper Schuylkill East Side Intercepting System: Reconstruction of intercepting sewer in Fairmount Park from a point 150′ S. of Aquarium Dr. S. to a point along E. River Dr. 950′ N. of Lemon Hill Dr.; also along E. River Dr. 950′ N. of Lemon Hill Dr. to a point 406′ S. of Fountain Green Dr.	1,570,000
3.	SD-298-NE SD-312-NE SD-232-NE SD-337-NE SD-341-NE SD-344-NE SD-347-NE SD-348-NE SD-350-NE-O SD-352-NE SD-253-NE SD-354-NE-O SD-359-NE-O	Northeast Sewage Treatment Works: Installation of electrical equipment for two 250 H.P., 2300 volts, two phase vertical synchronous motors and their associated motorized discharge gate valves; also two vertical motor-driven mixed-flow sewage pumps, piping and valves; construction of one new aeration tank and four final settling tanks; rehabilitation of sewage sludge digestion tank No. 1; installation of motor control center electrical conduit and wiring systems, etc.; const. of an extension for the blower bldg., including general construction, electrical work, blower motor control equipment, etc.; general construction, electrical work, plumbing, heating and ventilating and piping for new storage building; replace all chains and install new redwood flights on the longitudinal collectors in the primary tanks; overhauling No. 1 and No. 6 lift pumps in the raw sewage pump station; transportation and disposal in the Atlantic Ocean of digested sludge from municipal waste treatment processes.	4,865,800
4.	SD-289-SW SD-291-SW-O SD-300-SW-O	Southwest Sewage Treatment Works: General Construction and mechanical piping for sludge lagoon "F"; installation of watt hour meters; also a new sludge drainage system for basement below sludge heater room in the sludge handling building.	228,500
5.	S-2942-A	Sewers for New Development: S. Keswick Pl. from S. Keswick Rd. to Cul-de-sac approx. 344′ S. of S. Keswick Rd., etc. 75% complete	197,000
6.	S-3287-A	Sewers in President St. from Cowden St. to Wistaria St.—Clark St. from President St. to Dungan Rd., etc. 20% complete	169,250
7.	S-3311-A	Sewers in Deerrun Rd. from Nanton Dr. to Genessee Pl. Dr.; Genessee Dr. from Genessee Pl., etc. 2% complete	109,000
8.	S-2995-ADM	Sewers in Red Lion Rd. from Keswick Rd. /E. Keswick Rd. to Academy Rd., including water main. 10% complete	131,000
9.	S-3209-B	Sewers to Relieve Insanitary Conditions: D/R/W (former Delaware Ave.) from D/R/W (former Kirkbridge St.) to Jenks St.; Jenks St. from D/R/W (former Delaware Ave.) to Bath St. etc. 3% complete	158,000
10.	S-3288-B	Worthington Rd. from Lindenhurst St. to Byberry Rd., including stormwater conduit in D/R/W approx. 100′ S.W. of Lindenhurst St., etc. 6% complete	148,000

11.	S-2710-E S-2731-E	Mingo Creek Storm Water Pumping Station: General construction, mechanical equipment and piping, heating and ventilation; also electrical sub-station, 2300 KVA 13.8 KV/550 V 3 ph. 91% complete	965,000
12.	S-2956-R	Reconstruction of Old Sewers: Mill Creek Sewer from 50th and Brown Sts. to 53rd and Poplar Sts. 18% complete	1,700,000
13.	S-3096-RD	Mill Creek Sewer: Reconstruction in Poplar St. from 53rd St. to 55th St., etc.; relay of water main in Poplar St. from 53rd St. to 55th St. and in 55th St. from Poplar St. to Master St. 20% complete	1,130,000
14.	S-3352-R	Reconstruction of sewer in Willow St. from 3rd St. to Orianna St. 15% complete	130,600
15.	S-2880-RD	Reconstruction of Old Sewers—Distribution System Rehabilitation: 48″ steel water main (Section No. 2) 13th St. Green St. to Polar St., etc.; including relay of service mains and reconstruction of sewer 13th St.; Mt. Vernon-Fairmount Ave., etc. 2% complete	850,000
16.	S-3155-R	Reconstruction of sewer in 24th St. from N. College Ave. to Nicholas St. 98% complete	240,000
17.	S-2974-RD	Reconstruction of sewer in Reed St. from a point 715.8 feet east of Delaware Ave. to 9th St.; relay of water mains in Reed St. from a point 600′ E. of Delaware Ave. to 9th St. 48% complete	1,125,000
18.	S-3126-RD	Reconstruction of sewer in 6th St. from Willow St. to Green St., also relay of water main. 80% complete	140,000
19.	S-3142-RD	Reconstruction of sewer in 11th St. from Market St. to Vine St., including relay of water main in 11th St. from Market St. to Filbert St. and from Filbert St. to Vine St. 5% complete	335,000
20.	S-3159-RD	Reconstruction of sewer in Jasper St. from Ontario St. to Venango St., including relay of water mains in Jasper St. from Ontario St. to Schiller St., etc. 65% complete	240,000

STORM FLOOD RELIEF

Major Projects Completed During 1963

		Total Cost
1.	Wakeling St. Relief Sewer in Wissinoming Park, in North Cedar Hill Cemetery and in Benner St.	$ 2,372,286

Under Construction at Year's End

			Limit of Contract
1.	S-3117-F	Passyunk Relief Sewer in City property (Phila. Gas Works—Station A) and private property (north of Passyunk Ave.) from Schuylkill River to 28th St., 28th St. from Passyunk Ave. to 86′ north of Passyunk Ave. 20% complete	$ 1,135,000
2.	S-3118-FD	Passyunk Relief Sewer from a point 86′ north of Passyunk Ave. to a point 245′ north of Passyunk Ave. to proposed R/W in private property; Delaware River Port Authority Property and Schuylkill Expressway from 28th St. to Ritner St., and in Ritner St. from 589′ west of 25th St. to 24th St.; also relay of water mains in Ritner St. from Vare Ave. to a point approx. 160′ east of D/R/W (225′ west of 25th St.); Ritner St. from 25th St. to 24th St. 13% complete	1,050,000
3.	S-3119-FD	Passyunk Relief Sewer in Ritner St. from 24th St. to Passyunk Ave., etc. 72% complete	815,000

brief financial statement – water system

BALANCE SHEET

ASSETS AND OTHER DEBITS

	December 31 1963	1962
Utility Plant		
Utility Plant in Service	$234,492,311	$222,819,353
Construction Work in Progress	5,874,694	5,313,467
Unexpended Construction Authorizations	20,062,936	23,370,359
	$260,429,941	**$251,503,179**
Current Assets		
Cash	$ 5,530,132	$ 4,716,090
Accounts Receivable:		
Customers, for Utility Service	5,949,154	6,051,181
Other	175,346	171,176
Estimated Uncollectible Receivables	(2,618,921)	(2,983,839)
Materials and Supplies at Standard Cost	1,518,666	1,366,612
Advances to Other Municipal Funds	137,253	167,746
Prepaid Expenses	32,597	319
	$ 10,724,227	**$ 9,489,285**
	$271,154,168	**$260,992,464**

LIABILITIES AND OTHER CREDITS

Long Term Debt and Other Credits		
Bonds Payable	$102,876,319	$101,678,232
Sinking Fund Assets	(2,662,690)	(2,299,522)
Bond Authorizations Unissued	12,300,000	11,260,000
	$112,513,629	$110,638,710
Excess of Utility Plant and Fund Accounts over Long Term Bond Commitments	147,916,312	140,864,469
	$260,429,941	**$251,503,179**
Current Liabilities		
Accounts Payable	$ 586,665	$ 450,385
Payroll Accrued	159,184	139,079
Overpayment of Revenue	99,456	122,617
Advances from Other Municipal Funds	95,707	821
	$ 941,012	**$ 712,902**
Surplus and Surplus Reserves		
Reserves for Commitments	1,041,661	970,726
Surplus:		
Invested in Materials and Supplies	$ 1,518,666	$ 1,366,612
Estimated Collectible Receivables	3,505,579	3,238,517
Available for Appropriation	3,717,309	3,200,528
	$ 8,741,554	$ 7,805,657
Total Surplus and Surplus Reserves	$ 9,783,215	$ 8,776,383
	$ 10,724,227	**$ 9,489,285**
	$271,154,168	**$260,992,464**

brief financial statement – water system

Statement of Income and Surplus

	For the Year Ending December 31 1963	1962
Operating Revenues:		
Metered Sales	$18,848,483	$18,486,190
Municipal and Other Metered Sales	745,764	561,944
Public Fire Protection	1,065,785	775,266
Other Operating Revenue	518,602	631,586
Total Operating Revenue	**$21,178,634**	**$20,454,986**
Operating Revenue Deductions:		
Operating Expenses, other than Maintenance	$ 7,418,041	$ 7,548,382
Maintenance	3,383,616	3,366,077
Total Operating Expenses	$10,801,657	$10,914,459
Charges in Lieu of Depreciation	5,944,026	5,264,485
Total Operating Revenue Deductions	**$16,745,683**	**$16,178,944**
Operating Income	4,432,950	4,276,042
Other Income	272,147	205,670
Gross Income	**$ 4,705,097**	**$ 4,481,712**
Income Deductions:		
Interest on Long Term Debt	$ 3,246,501	$ 3,130,450
Net Income or (Loss)	**$ 1,458,596**	**$ 1,351,262**
Surplus and Surplus Reserves at the Beginning of the Year	$ 8,776,384	$ 7,552,512
Other Adjustments to Surplus (Net)	(451,765)	(127,391)
Total Surplus and Surplus Reserves at the End of the Year	**$ 9,783,215**	**$ 8,776,383**

NOTES TO FINANCIAL STATEMENTS

1. Charges in Lieu of Depreciation. The City Charter provides that the rates and charges for supplying water and services shall yield at least an amount equal to operating expenses and debt service charges on any debt incurred or about to be incurred for water supply purposes.
2. Utility Plant in Service. Real property was valued herein at actual cost or engineering estimates where actual cost was not ascertainable. Equipment was valued at cost or replacement value.
3. Unexpended Construction Authorizations. This represents unexpended authorizations to complete projects in progress and projects not commenced, as well as unused financing, reimbursements, grants-in-aid, etc.
4. Bonds Payable. The bonds of the City of Philadelphia are all general obligations and, therefore, no bonds are issued by the water system per se. Similarly, a consolidated sinking fund is maintained for the retirement of such bonds. The amounts herein shown represent an apportionment of bonded indebtedness based on bonds issued for water system improvements.
5. Bond Authorizations Unissued. Commitments for capital projects authorized in the City's Capital Budget are made against available sources of financing, which include bond authorizations approved by the electorate or City Council and declared self-supporting by a Court of Common Pleas, and Water Fund operating pay-as-you-go appropriations. This item represents the amount of unissued bonds authorized for water system capital improvements.
6. Reserve for Commitments. Represents contractual obligations of the Fund for the future deliveries of services.
7. NOTE: The Statements are on the accrual basis as distinguished from the city budgetary basis of accounting.

WATER FUND – ANALYSIS OF BUDGETARY OPERATIONS AND COMPARISON WITH ACCRUAL BASIS STATEMENTS

	Revised Budget Estimate(1)	Actual Receipts	Receipts Compared with Estimates	% of Estimate Realized	Accrual Basis Income(2)
INCOME (by major source)					
Water Sales					
Collections on Current Billings (with penalties)	$17,332,000	$16,834,070	$(497,930)	97.1%	$18,848,483
Collections on Past Billings (with penalties and interest)	2,235,000	2,034,941	(200,059)	91.0	382,166(2)
Total Water Sales	**$19,567,000**	**$18,869,011**	**$(697,989)**	**96.4%**	**$19,230,649**
Meter Installations (Water Fund share—60%)	169,000	171,455	2,455	101.5	147,388
Miscellaneous Income	277,000	285,448	8,448	103.0	321,492
Interest Earnings	133,000	178,570	45,570	133.5	175,920
Payments from Other City Funds:					
General Fund:					
Water Sales to City Agencies	644,000	745,764(3)	101,764	115.8	745,764(3)
Fire Protection Services	1,025,000	1,065,785(3)	40,785	104.0	1,065,785(3)
Sewer Fund:					
Joint Fund Expenses	858,000	811,089	(46,911)	94.5	811,089(4)
TOTAL INCOME	**$22,673,000**	**$22,127,122**	**$(545,878)**	**97.6%**	**$22,498,087**

OUTGO (by major Object of Expenditure)

	Final Obligations: Final Appropriations	Amount	% of Total	Lapses: Amount	%	Accrual Basis Expenses
Operations						
Water Operations:						
Salaries and Wages	$ 5,615,000	$ 5,426,317	24.9%	$188,683	3.4%	$ 5,253,268
Purchase of Services by Contract	2,346,000	2,334,827	10.7	11,173	0.5	1,943,682
Materials and Supplies	3,179,000	3,146,201	14.4	32,799	1.0	2,627,296
Equipment	228,000	227,706	1.0	294	0.1	888,280
Miscellaneous	1,000	179	—	821	82.1	143
Payments to General Fund:						
Financial services; reading meters, billing, etc.	927,353	858,991	3.9	68,362	7.4	858,991(3)
Other services rendered	686,647	766,712	3.5	(80,065)	—	766,712
Contribution to Bond Fund	60,000	60,000	0.3	0	.0	60,000
Total Water Operations	**$13,043,000**	**$12,820,933**	**58.7%**	**$222,067**	**1.7%**	**$12,398,372**
Employees' Welfare Plan Payments	178,000	152,143	0.7	25,857	14.5	152,143
Claims and Awards	90,000	82,916	0.4	7,084	7.9	98,747
Employees' Pension Fund Payments	427,000	452,900	2.1	(25,900)	—	452,900(3)
Refunds	50,000	15,650	0.7	34,350	68.7	— (5)
Provision for Estimated Uncollectible Receivables	—	—	—	—	—	(364,918)(6)
Total Operations	**$13,788,000**	**$13,524,542**	**3.9%**	**$263,458**	**1.9%**	**$12,737,244**
Capital Payments						
Debt Service:						
Amortization of Principal	$ 4,556,000	$ 4,555,746	20.9%	$ 254	0.1%	$ 4,555,746
Interest	3,302,000	3,246,501	14.9	55,499	1.7	3,246,501
Capital Budget Financing	500,000	500,000	1.6	0	.0	500,000
Total Capital Payments	**$ 8,358,000**	**$ 8,302,247**	**37.4%**	**$ 55,753**	**0.7%**	**$ 8,302,247**
TOTAL OUTGO	**$22,146,000**	**$21,826,789**	**100.0%**	**$319,211**	**1.4%**	**$21,039,491**

SUMMARY COMPARISON OF 1963 BUDGETARY OPERATIONS (Revised Original and Actual Budgets)

	Revised Budget(1)	Encumbrance Basis: Actual	Change	Accrual Basis(5)
Surplus, December 31, 1962	**$ 3,217,000**	**$ 3,164,440**	**$ (52,560)**	**$ 8,776,384**
Add or (Subtract): Adjustment of Prior Years' Operations	—	229,993	229,993	(451,765)
Add: 1963 Income	22,673,000	22,127,122	(545,878)	22,498,087
Total 1963 Resources	$25,890,000	$25,521,555	$(368,445)	$30,822,706
Less: 1963 Outgo	22,146,000	21,826,789	319,211	21,039,491
Surplus, December 31, 1963	**$ 3,744,000**	**$ 3,694,766**	**$ (49,234)**	**$ 9,783,215**

NOTES:

(1) Estimates of Water Fund income made by the Mayor in September, 1962 were subsequently revised in part as a result of the later revision of the water rates increasing the minimum allowance for ⅝" meters effective March 1, 1963.

(2) On the accrual basis, income is considered as earned when billed, whereas the budgetary basis considers income as earned when collected. Thus collection of the prior years is not considered as income on the accrual basis statements.

(3) Receipts and obligations reflect adjustments to actual charges in Inter Fund operations.

(4) Payments made by the Sewer Fund to the Water Fund for general management services is not considered as income on the accrual basis, but as a reduction of operating expenses.

(5) Reflects minor surplus adjustment.

(6) The net increase (or decrease) to the estimated uncollectible receivables is considered an expense on the accrual basis.

(7) Surplus on the accrual basis includes the amounts invested in:
Materials and Supplies
Estimated Collectible Receivables

BALANCE SHEET

ASSETS AND OTHER DEBITS

	December 31 1963	1962
Utility Plant		
Utility Plant in Service	$334,341,895	$326,777,711
Construction Work in Progress	4,262,701	1,132,704
Unexpended Construction Authorizations	27,099,731	24,048,366
	$365,704,327	**$351,958,781**
Current Assets		
Cash	$ 6,798,408	$ 5,263,825
Accounts Receivable:		
Customers, for Utility Service	4,803,103	4,807,805
Other	10,420	21,558
Estimated Uncollectible Receivables	(1,308,696)	(1,636,994)
Materials and Supplies, at Standard Cost	130,303	121,209
Advances to Other Municipal Funds	197,364	169,485
Prepaid Expenses	3,362	49
	$ 10,634,264	**$ 8,746,937**
	$376,338,591	**$360,705,718**

LIABILITIES AND OTHER CREDITS

Long Term Debt and Other Credits		
Bonds Payable	$160,026,125	$152,604,642
Sinking Fund Assets	(4,567,688)	(3,836,698)
Bond Authorizations Unissued	24,000,000	26,810,000
	$179,458,437	$175,577,944
Excess of Utility Plant and Fund Accounts over Long Term Bond Commitments	186,245,890	176,380,837
	$365,704,327	**$351,958,781**
Current Liabilities		
Accounts Payable	$ 73,347	$ 114,410
Payroll Accrued	51,050	40,122
Overpayment of Revenues	85,284	103,509
Advances from Other Municipal Funds	32,890	30,957
	$ 242,571	**$ 288,998**
Surplus and Surplus Reserves		
Reserves for Commitments	$ 935,128	$ 654,652
Surplus:		
Invested in Materials and Supplies	130,303	121,209
Invested in Estimated Collectible Receivables	3,504,827	3,192,369
Available for Appropriation	5,821,435	4,489,709
	$ 9,456,565	$ 7,803,287
Total Surplus and Surplus Reserves	$ 10,391,693	$ 8,457,939
	$ 10,634,264	**$ 8,746,937**
	$376,338,591	**$360,705,718**

Statement of Income and Surplus

	For the Year Ending December 31 1963	1962
Operating Revenues:		
Metered Sales	$14,811,208	$14,689,168
Municipal and Other Metered Sales	732,017	651,810
Other Operating Revenues	356,250	369,225
Total Operating Revenues	**$15,899,475**	**$15,710,203**
Operating Revenue Deductions:		
Operating Expenses, Other than Maintenance	$ 3,258,473	$ 3,283,288
Maintenance	1,080,290	1,111,768
Total Operating Expenses	$ 4,338,763	$ 4,395,056
Charges in Lieu of Depreciation	6,616,762	6,212,156
Total Operating Revenue Deductions	**$10,955,525**	**$10,607,212**
Operating Income	4,943,950	5,102,990
Other Income	1,825,333	762,376
Gross Income	**$ 6,769,283**	**$ 5,865,366**
Income Deductions:		
Interest on Long Term Debt	$ 4,490,883	$ 4,586,141
Net Income	**$ 2,278,400**	**$ 1,279,225**
Surplus and Surplus Reserved at the Beginning of the Year	8,457,940	7,348,372
Other Adjustments (Net)	(344,647)	(169,659)
Total Reserves and Surplus Reserves at the End of the Year	**$10,391,693**	**$ 8,457,938**

NOTES TO FINANCIAL STATEMENTS

1. Charges in Lieu of Depreciation. The City Charter provides that the rates and charges for supplying sewer services shall yield at least an amount equal to operating expenses and debt service charges on any debt incurred or about to be incurred for sewer supply purposes.
2. Utility Plant in Service. Real property was valued herein at actual cost or engineering estimates where actual cost was not ascertainable. Equipment was valued at cost or replacement value.
3. Unexpended Construction Authorization. This represents unexpended authorizations to complete projects in projects not commenced as well as unused financing, reimbursements, grants-in-aid, etc.
4. Bonds Payable. The bonds of the City of Philadelphia are all general obligations and, therefore, no bonds are issued by the sewer system per se. Similarly, a consolidated sinking fund is maintained for the retirement of such bonds. The amounts herein shown represent an apportionment or bonded indebtedness based on bonds for sewer system improvements.
5. Bond Authorizations Unissued. Commitments for capital projects authorized in the City's Capital Budget are made against available sources of financing, which include bond authorizations approved by the electorate or City Council and declared self-supporting by a Court of Common Pleas, and Sewer Fund operating pay-as-you-go appropriation. This item represents the amount of unissued bonds authorized for sewer system capital improvements.
6. Reserve for Commitments. Represents contractual obligations of the fund for the future deliveries of services.
7. NOTE: The Statements are on the accrual basis as distinguished from the city budgetary basis of accounting.

SEWER FUND – ANALYSIS OF BUDGETARY OPERATIONS AND COMPARISON WITH ACCRUAL BASIS STATEMENTS

	Revised Budget Estimate(1)	Actual Receipts	Receipts Compared with Estimates	% of Estimate Realized	Accrual Basis Income(2)
INCOME (by major source)					
Sewer Charges:					
Collections on Current Billings (with penalties)	$13,274,000	$13,025,381	$(248,619)	98.1%	$14,811,208
Collections on Past Billings (with penalties and interest)	1,967,000	1,717,441	(249,559)	87.2	325,840(2)
Total Sewer Charges	**$15,241,000**	**$14,742,822**	**$(498,178)**	**96.7%**	**$15,137,048**
Sewer Charges to Other Municipalities	390,000	368,999	(21,001)	94.6	361,633
Meter Installations (Sewer Fund Share—40%)	114,000	90,703	(23,297)	79.6	88,919
Miscellaneous Income	113,000	107,765	(5,235)	95.4	107,017
Interest Earnings	167,000	211,660	44,660	126.7	208,063
Payments from other City Funds:					
General Fund: Sewer Services to City Agencies	308,000	370,384	62,384	120.3	370,384(3)
State Reimbursement for Clean Streams program	600,000	1,451,744	851,744	242.0	1,451,744
TOTAL INCOME	**$16,933,000**	**$17,344,077**	**$411,077**	**102.4%**	**$17,724,808**

OUTGO (by major Object of Expenditure)

	Final Appropriations	Final Obligations Amount	% of Total	Lapses Amount	%	Accrual Basis Expenses
Operations						
Sewer Operations:						
Salaries and Wages	$ 1,614,000	$ 1,586,834	9.9%	$ 27,166	1.7%	$ 1,588,008
Purchase of Services by Contract	1,331,000	1,247,157	7.8	83,843	6.3	882,460
Materials and Supplies	166,000	156,705	1.0	9,295	5.7	142,135
Equipment	131,750	122,098	.8	9,652	7.3	189,381
Miscellaneous	250	153	—	97	38.8	127
Payments to General Fund:						
Financial services; reading meters, billing, etc.	747,890	658,578	4.1	89,312	11.9	658,578(3)
Other services rendered	193,110	193,510	1.2	(400)	—	193,510(3)
Payments to Water Fund:						
Joint Fund Expenses	858,000	811,089	5.0	46,911	5.5	811,089(3)
Contribution to Bond Fund	40,000	40,000	.2	0	.0	40,000
Total Sewer Operations	**$ 5,082,000**	**$ 4,816,124**	**30.0%**	**$265,876**	**5.3%**	**$ 4,505,288**
Employees' Welfare Plan Payments	69,000	60,625	.3	8,375	12.1	60,625
Claims and Awards	61,000	59,432	.4	1,568	2.6	77,530
Employees' Pension Fund Payments	188,000	213,000	1.3	(25,000)	—	213,000
Refunds	42,000	17,927	.1	24,073	59.7	—
Provision for Estimated Uncollectible Receivables	—	—	—	—	—	(328,298)(4)
Total Operations	**$ 5,442,000**	**$ 5,167,108**	**32.1%**	**$274,892**	**5.1%**	**$ 4,528,145**
Capital Payments						
Debt Service:						
Amortization of Principal	$ 5,927,500	$ 5,927,381	36.9%	$ 119	.1%	$ 5,927,381
Interest	4,507,500	$ 4,487,232	27.9	20,268	.4	4,490,882
Capital Budget Financing	500,000	500,000	3.1	0	.0	500,000
Total Capital Payments	**$10,935,000**	**$10,914,613**	**67.9%**	**$ 20,387**	**.2%**	**$10,918,263**
TOTAL OUTGO	**$16,377,000**	**$16,081,721**	**100.0%**	**$295,279**	**1.8%**	**$15,446,408**

SUMMARY COMPARISON OF 1963 BUDGETARY OPERATIONS
(Revised Original and Actual Budgets)

	Encumbrance Basis			
	Revised Budget(1)	Actual	Change	Accrual Basis(5)
Surplus, December 31, 1962	**$ 4,187,000**	**$ 4,479,034**	**$ 292,034**	**$ 8,457,940**
Add or (Subtract): Adjustment of Prior Years' Operations	—	81,915	81,915	(344,647)
Add: 1963 Income	16,933,000	17,344,077	411,077	17,724,808
Total 1963 Resources	**$21,120,000**	**$21,905,026**	**$ 785,026**	**$25,838,101**
Less: 1963 Outgo	16,377,000	16,081,721	295,279	15,446,408
Surplus, December 31, 1963	**$ 4,743,000**	**$ 5,823,305**	**$1,080,305**	**$10,391,693**

NOTES:
(1) Estimates of Sewer Fund Income made by the Mayor in September, 1962 were subsequently revised in part as a result of the later revision of the sewer rates increasing the minimum allowance for ⅝" meters effective March 1, 1963.
(2) On the accrual basis, income is considered as earned when billed, whereas the budgetary basis considers income as earned when collected. Thus collection of the prior years is not considered as income on the accrual basis statements.
(3) Receipts and obligations reflect adjustments to actual charges in Inter Fund operations.
(4) The net increase (or decrease) to the estimated uncollectible receivables is considered an expense on the accrual basis.
(5) Surplus on the accrual basis includes the amounts invested in:
Materials and Supplies
Estimated Collectible Receivables

Voice of the People: Irate water customers picket a closed fire hydrant on a hot summer day. As happens in the best of water systems, Water Department crews were forced to close hundreds of illegally opened fire hydrants to preserve water pressures. Children were permitted, however, to cool off under many fire hydrants with pressure saving sprinklers attached.

Photo by Courtesy of Sunday Bulletin

Published by the Philadelphia Water Department