PHILADELPHIA WATER DEPARTMENT

ANNUAL REPORT

1962

Limpid Stream: The beautiful Schuylkill River supplies one-half of Philadelphia's water. A City-State-Federal clean-up program has steadily improved it in the past decade.

JAMES H. J. TATE
Mayor

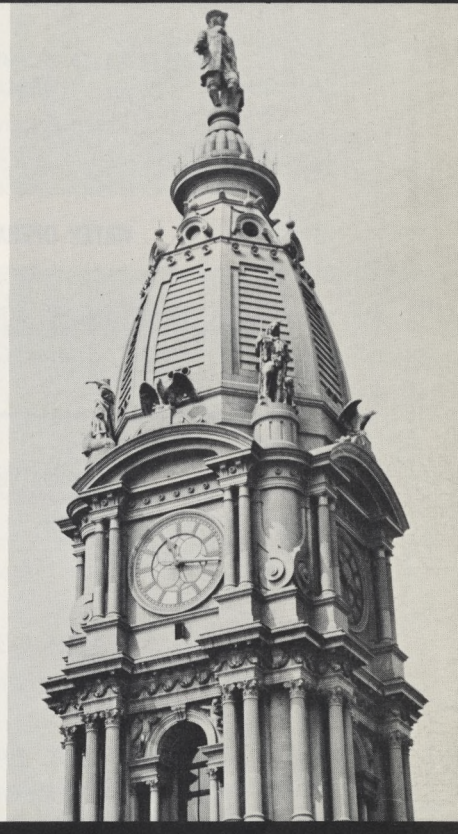
DONALD C. WAGNER
Managing Director 1962

FRED T. CORLETO
Managing Director 1963

SAMUEL S. BAXTER
Commissioner & Chief Engineer

City of Philadelphia

WATER DEPARTMENT ANNUAL REPORT 1962



Among other things it discusses:

The WATER DEPARTMENT

SAMUEL S. BAXTER
Commissioner and Chief Engineer

GERALD E. ARNOLD
Deputy Commissioner
Water Operations

B. BARNEY PALMER
Administrative Services Director

**** MAX BAROFSKY**
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

***FRANK L. CRAIG
Mechanical Engineering

WILLIAM SNYDER
Automotive Maintenance

ADMINISTRATIVE SERVICES

THOMAS B. MULLINEAUX
Chief, Utility Accounting

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

EDWARD D. BASTIAN
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

* Sub Chiefs: John Dillener, Delaware Filters; Robert J. Waters, Schuylkill Filters; Walter C. Ringer, Quality Control.

** Retired June 29, 1962. Succeeded on October 3, 1962 by Edward D. Bastian.

*** Retired March 6, 1962.

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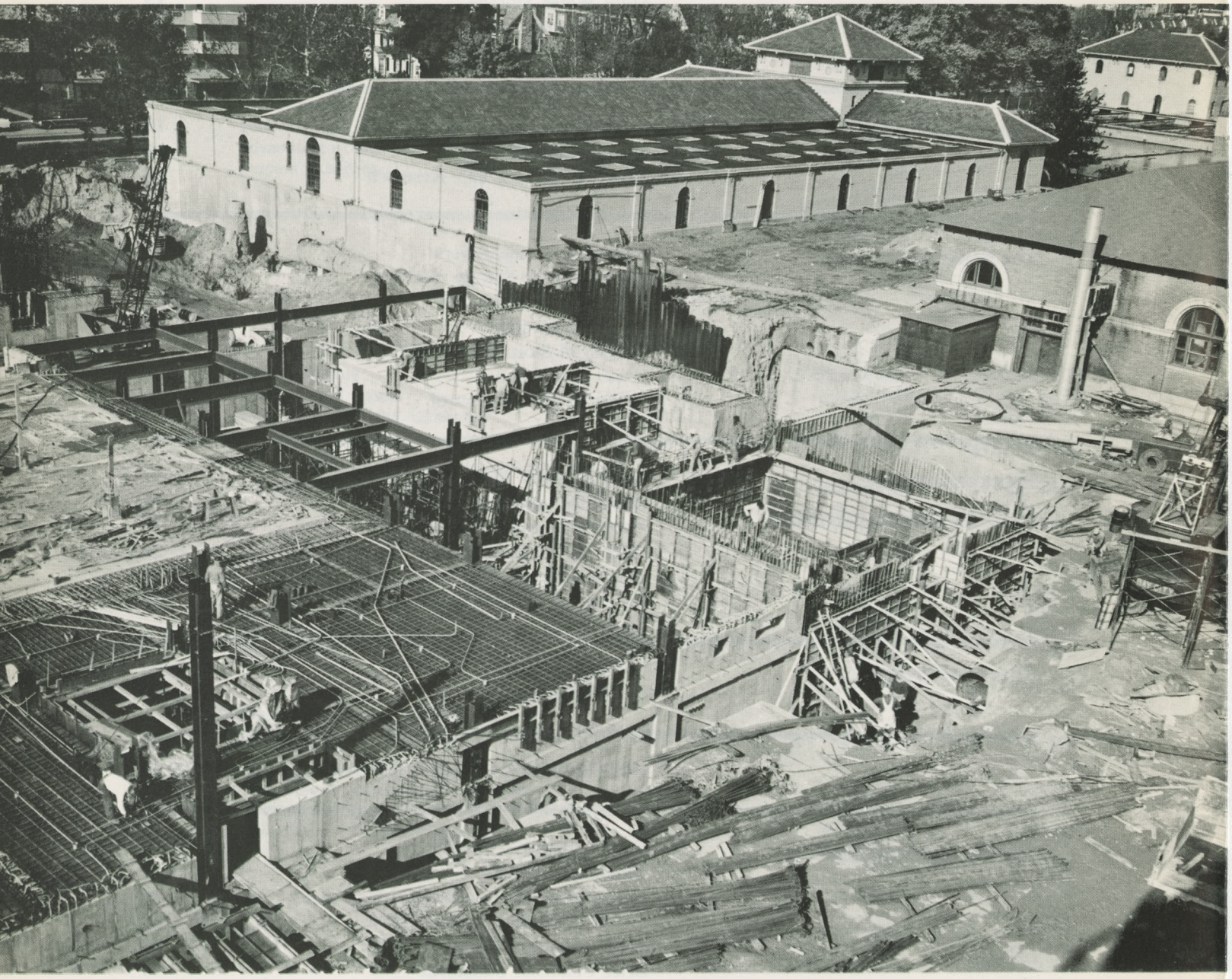
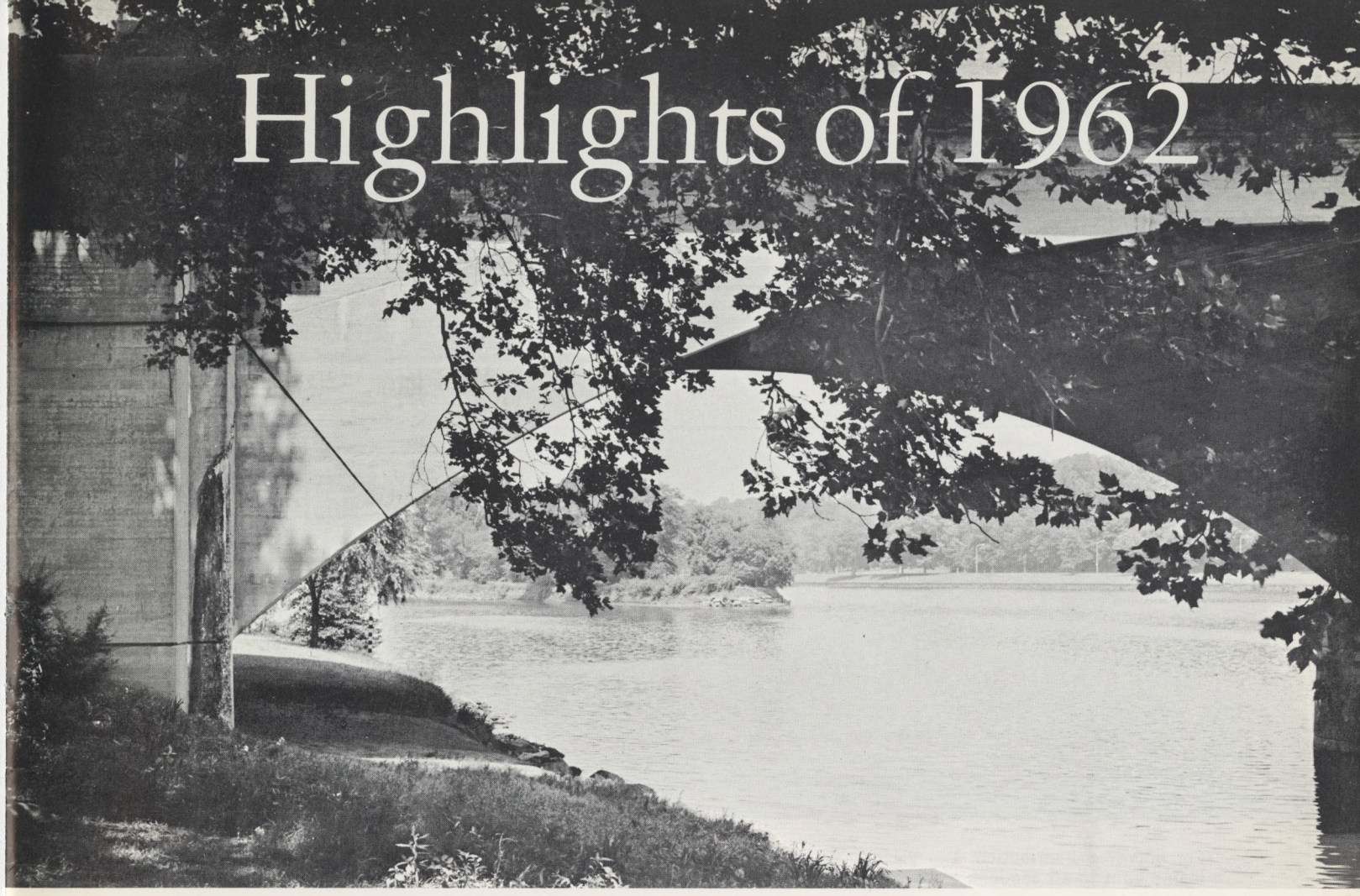
For Better Water: In the shadow of the old 1907 water works, Philadelphia's third semi-automatic water treatment plant began to grow from its foundations at Belmont. The new $10.4 million plant will provide high quality water for West Philadelphians.



Highlights of 1962



Philadelphia's water consumers had much to be pleased about in 1962. The City's water had reached a high standard of purity, and it flowed at better pressures and in fuller abundance than ever before. From it had vanished the obnoxious tastes and odors that once proclaimed polluted rivers and inadequate treatment.

The better water was not the result of a new water source. The Delaware and Schuylkill Rivers continued to supply all the City's water, as they had done for 161 years.

The change resulted rather from a decade of steady improvements in the water and sewerage systems—improvements intended to correct a basic lack of modern treatment, pumping, and pipeline facilities. In a relatively few years Philadelphians had built two new water plants, a dozen improved water pumping stations, a microwave network for water distribution control, a modern sewage disposal system with three sewage treatment plants, sewage pumping stations, and hundreds of miles of new water mains and sewers. Many outworn plants and other facilities had been replaced.

Thanks to this great expansion of Philadelphia's facilities—coupled with pollution control measures by communities and industries throughout the Delaware River Basin—the Delaware and Schuylkill Rivers were much cleaner, and Philadelphia was able to convert the improved river water into a fine quality product at its efficient, newly built water plants.

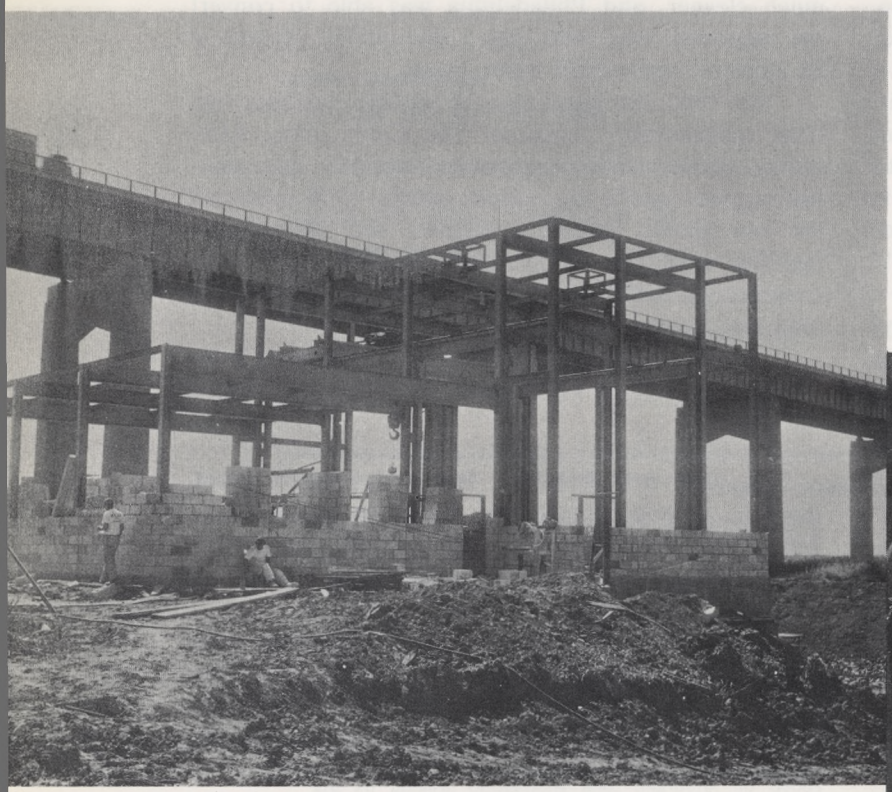
By 1962 the basic lack of modern facilities had been substantially overcome. The City's initial $410 million modernization program (1946-66) was nearing its goals, and it was evident that by 1966 nearly all the new plants, pumping stations, and other larger facilities would be in operation. Beyond 1966 lay a continuing program for replacement or improvement of old water mains and sewers.

As the Water Department pushed toward its goals in 1962, the tempo of construction increased. During the year—

1. The new Belmont Water Treatment Plant, third in a series of modern "semi-automatic" water works, rose rapidly from newly poured foundations in West Philadelphia, to meet a 1964 target date,

2. Closing of two 60-year old Roxborough water plants resulted in better service for residents of Roxborough, Manayunk, and Chestnut Hill, when the modern, 1960-completed Queen Lane Plant took over their service area,

For Improved Distribution: Two gigantic concrete mains at the new Belmont Water Plant were only part of the 49 miles of mains built in all sections of the city in 1962. Philadelphia now has more than 3,100 miles of mains.



For Flood Control: Among the City's big flood control projects was this $1 million storm water pumping station at Mingo Creek. The station will serve fast growing Eastwick.

For Cleaner Rivers: Big interceptor sewers to divert sewage away from the rivers to sewage treatment plants were further extended. A branch sewer (below) enters a huge interceptor under construction on the west bank of the Schuylkill River.

3. Pumping station improvements — such as completion of the new West Oak Lane Station, placement of the last new pump at the Lardner's Point Station, and the linking of three more stations to remote microwave control — facilitated the distribution of water city wide,

4. Expansion of storage capacity for filtered water resulted from completion of a new elevated tank in Fox Chase, while a start was made on construction of more underground reservoirs,

5. The water main network grew by nearly 37 miles, and 25 miles of old mains were cleaned and cement-lined, thus improving water pressures in many parts of the city,

6. Expansion of the Northeast Sewage Treatment Works got under way, with various preliminary work being performed on the $5.3 million project . . . designed to meet the growing needs of North and Northeast Philadelphia,

7. Clean-up of the lower Schuylkill River neared completion, as additional links were built in interceptor sewers along both banks of the river,

8. Storm flood relief advanced, with replacement of part of the Mill Creek Sewer in West Philadelphia, the practical completion of the huge Wakeling Street Relief Sewer in the Northeast, and the rapid construction of the new Mingo Creek Pumping Station near Eastwick,

9. The sewer system expanded as more than 24 miles of new sewers were built and 10 miles of old sewers were reconstructed,

10. Delaware River research was intensified, as the Water Department joined with Federal and State agencies to make a special study of the river, and the department set up a sixth river-monitoring station to record changing stream conditions.

With the increasing tempo of water and sewerage construction, the value of field work rose in 1962 to one of the highest levels attained in a decade. More than $25 million of construction was performed, compared with $16 million in 1961 and $18.8 million in 1960. Big projects, such as the new Belmont Plant and the Wakeling Street Relief Sewer, accelerated both water and sewer building activity.

Actual expenditures on capital projects totaled more that $25.8 million, while total "net capital activity" for the year—the book value of projects started, underway, or completed—amounted to nearly $54.7 million. At the end of the year the Water Department had $28.8 million of encumbrances on its books.

Lending some impetus to this increased capital activity was the prospect of some Federal Government funds under the Federal Accelerated Public Works Program. The main impetus, however, sprang from the continuing need for early modernization of the water and sewerage systems.

As part of this modernization, Philadelphia continued to set a new trend for the American water works industry: It automated or began the automating of several more facilities, thus extending automatic or semi-automatic controls to most of its water plants, pumping stations, and river research projects. Moving the Water Department toward eventual full automation, these improvements are bringing speed, efficiency and reliability to the water system.

Reinforcing the latter aims is the steady improvement of management methods. To the many business-like advances of previous years, the department added several more in 1962. Many employees underwent technical and other training, accounting procedures were further reorganized, special customer "services" were extended to a greater number of persons, and new safety procedures produced the best safety record to date.

To keep the progress of the water and sewer systems going, water customers paid a somewhat higher bill in 1962. Water and sewer rates rose by a combined average of 16.6% on January 1, as a result of climbing debt service costs and the need to complete the modernization program. The increase in rates was the first since 1958, and is designed to keep the department self-supporting for four years.

The new rates, coupled with stricter collection of delinquent water and sewer bills, produced a combined income of $40.16 million for the Water and Sewer Funds, or $4.1 million more than the year before. At the same time combined obligations rose about $1.1 million to $37.1 million.

Though water customers were paying a somewhat higher bill, they were getting more for their money than ever before. A constant supply of quality water flowed to homes and industries; shipping and recreation flourished on cleaner rivers; and a well managed water-sewer utility provided sound service. These benefits were no small return on the public's investment.

Recreational Rebirth: With stream clean-up, Philadelphians have found new delights on the Delaware and Schuylkill Rivers. Sightseeing boats are among the many pleasure craft that now dot these streams.

The Water System

SIGNS OF PROGRESS

The effects of Philadelphia water system progress were becoming increasingly evident in 1962.

In one short decade the city's rated "water treatment" capacity had climbed from 400 million gallons daily to 480 million, while its peak treatment capacity, almost non-existent before, was now 650 mgd. In the same decade, pumping capacity* rose from 1,287 million gallons daily to 1,389 million.

The new "push button" treatment plants at Torresdale and Queen Lane—great complexes of electronic and pneumatic controls—were turning out better water with fewer personnel than at any time in the city's history, and a third such plant (with increased capacity) was being built at Belmont. These rapid sand plants had nearly replaced the five half-century old, slow sand water works.

For Philadelphians these changes meant that the plant breakdowns and inadequate capacities of the past were now largely a memory, and there would be an abundance of water on sweltering summer days. The many improved pumping stations—operating under central microwave control—and the hundreds of miles of new or improved water mains gave further assurance of this.

Behind this progress were years of planning and construction. More than $100 million had been invested in the water system since 1946—most of this in the last 10 years—and millions of dollars more would be required to complete the modernization program.

The amount of this construction increased in 1962, as $4.55 million** of work was done on water plants and pumping stations, compared with less than $1 million the year before. Water main construction, valued at more than $4 million,** was somewhat under the $5 million level attained in 1961, but mileage built was greater.

The value of outstanding contracts at the end of the year was (at $19.5 million)*** only $400,000 greater than at the year's start, but the turnover of contracts was sizable. Contracts totaling nearly $9.3 million*** were awarded, and $6.6 million of projects (many of them begun in earlier years) were completed. Of the 89 contracts carried over on December 31, work was still to start on 29.

A NEW "PUSH-BUTTON" PLANT

Visible symbols of water system progress were the rising bricks and beams of the new Belmont Water Treatment Plant. As the year wore on, thronging cranes and trucks settled into a steady bustle of activity, and the new $10.4 million plant began to take shape.

Construction advanced swiftly. Two large settling, and four slow mixing, basins were completed on the south side of the old plant; their concrete walls and foundations were poured, and steel clarifier arms and mixing paddles went into place. A short distance away, the concrete foundations of the chemical building took form, and its steel framework began to climb upward. Foundation work on the southern wing of the filter building was in progress.

By the end of 1962, nearly $3 million of construction had been performed on the new plant.

Third of the new semi-automatic water plants to be created by the city, Belmont will serve the area west of the Schuylkill River. It will have a rated capacity of 78 million gallons of water daily, but it will be able to meet peak demand at a rate of 108 mgd. Thus by 1965 the city's total rated treatment capacity will climb to 486 mgd. and its peak capacity to 678 mgd.

Replacing an older plant of more limited capacity,

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*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.

the new plant will provide higher quality water, treated with more scientific precision. Its one acre of new and rebuilt "rapid sand" filter beds will take over the functions now performed by 13 acres of old "slow sand" filter beds and a half-acre of obsolescent rapid sand beds.

Included in the new plant will be a five-story chemical building for pretreatment of water; six chambers for rapid mixing and eight chambers for slow mixing of water with chemicals; four settling basins holding a combined 14,360,000 gallons of water; a one-story filter building housing 12 rebuilt and 14 new rapid sand filter beds; a 72-ft. high steel tank holding 150,000 gallons of water for washing of filter beds; and a renovated administration building, with new storage and conference rooms. Some open reservoirs and underground storage basins will be retained from the old plant.

More than half of the new plant will be in service early in 1964, and then construction will start on the northern wing of the filter building and the two northern settling basins. Toward the close of 1964 the entire plant should be completed.

Though not part of the main plant reconstruction, the $137,000 conversion of the former ozone building into laboratories and offices for the Water Quality and Research Section was almost done. The building awaited only some interior decoration and delivery of equipment.

TREATMENT PLANTS: OPERATING CHANGES

Because of the modernization program, some operating changes were made in the water treatment plants in 1962.

1. Most significant of these changes was the closing of the two small Roxborough Plants, which serviced a sizable portion of Northwest Philadelphia. No longer needed, these slow sand water works surrendered their service area to the new Queen Lane Plant.

The Lower Roxborough Water Works, dating from 1902, closed its doors on January 5, 1962, while 1903-built Upper Roxborough ceased operation May 28. Their filter beds and a 147-million gallon raw water reservoir were drained.

Unsuited to the needs of a modern city, the two water works were becoming rapidly obsolete and their capacity was too limited to meet future community growth. Subject to prolonged maintenance tie-ups, the eight filter beds of Upper Roxborough were limited to 22 million gallons daily, and the five beds of the lower plant had a combined capacity of 10 mgd only. Actual output of the two plants averaged 23 mgd.

To replace this small output, an enlarged Queen Lane Plant sped its water through a new Henry Avenue express main to underground storage basins at the two old water works, and from these basins the water was distributed to Roxborough, Manayunk, and Chestnut Hill. At the same time, part of Queen Lane's service area was taken over by long supply lines extending across North Philadelphia from the Torresdale Plant on the Delaware.

Some savings on personnel resulted from the Roxborough closings. Forty-three positions were eliminated during 1961 at the two plants, and the final 17 positions early in 1962. Most employees were transferred to vacant jobs elsewhere.

2. Construction of the new Belmont Plant required changes in operating procedures at the old plant. Most noticeable was the curtailment of plant capacity. This resulted from the demolition of four slow sand filter beds, which were to be the site of new sedimentation basins, and the taking out of service of two other beds, which were leaking badly enough to interfere with construction. Belmont water was supplemented by Queen Lane water, pumped into West Philadelphia by the East Park Booster Station.

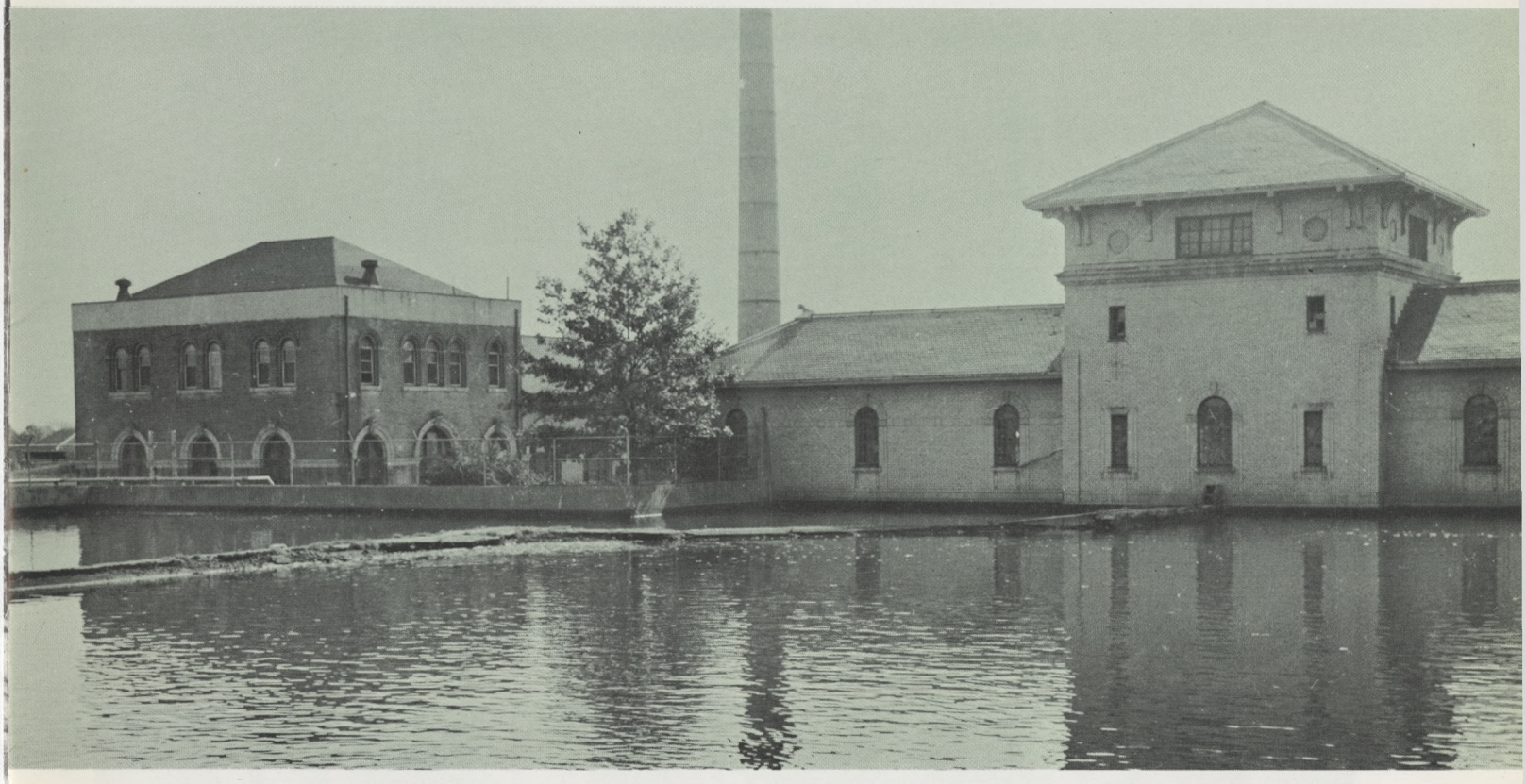
3. Operating costs were a little higher at the Queen Lane and Torresdale plants. This was partly due to increased maintenance—a normal development in new plants after several years of operation—and to the need for greater use of chemicals. The chemical costs rose slightly at all plants, because summertime drought and upstream dredging had altered river conditions. The chemical costs of the newer plants, when measured against output, remained, however, well below those of the older plants which they replaced. Electric power costs fell slightly.

There were few physical changes at Torresdale and Queen Lane. At the former, two influent conduits were waterproofed and the four settling basins cleaned. At Queen Lane some minor operating equipment was installed in the pre-treatment basins, and a filtered water storage basin (out of service for three months) was connected to the suction chamber of the high service pumping station.

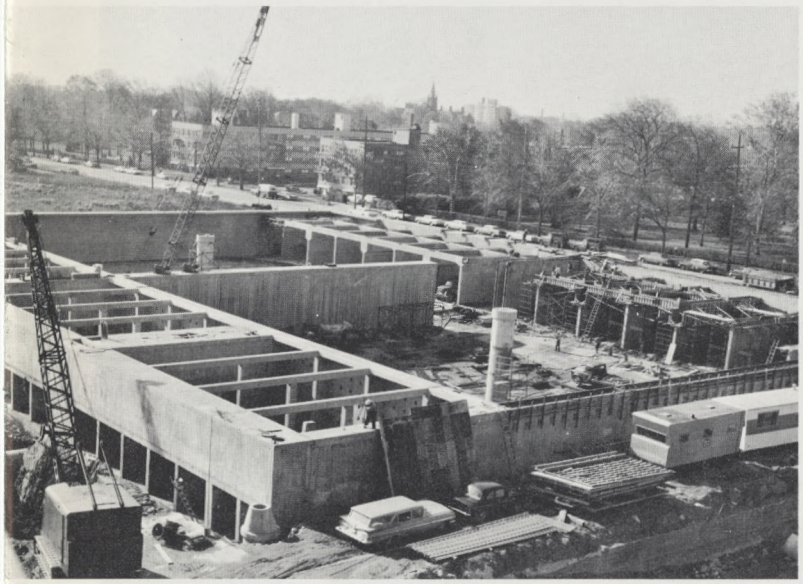
PUMPING STATION IMPROVEMENTS

The benefits of modernization were strikingly apparent in the city's water pumping stations. New and more compact pumps, physically smaller stations, electric power instead of steam, and a network of sophisticated microwave controls, had ushered in a better era for the department and its consumers.

BELMONT: A New Water Plant Grows

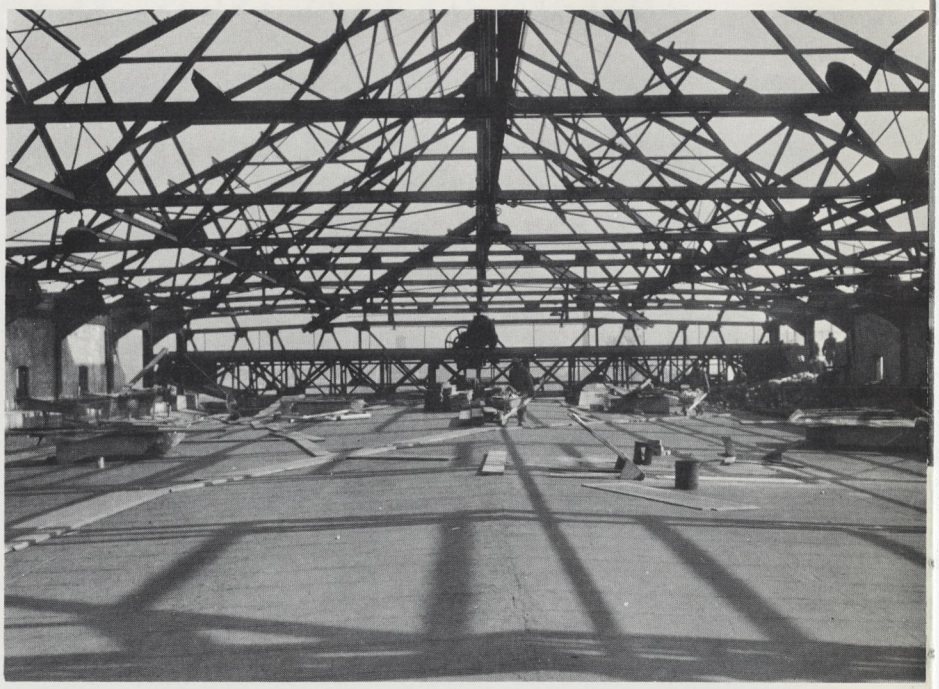


A Passing Era: The Belmont Water Plant, which is the last of Philadelphia's turn-of-the-century water works, will be completely replaced with a new "push-button" plant by late 1964. The changes will transform the sedimentation basins and buildings above, as well as make many additions to the plant.



Symbol of Future Service: The concrete shells of two huge sedimentation basins took shape at the southern end of the plant. These plus two more basins, to be built later, will hold a combined 14.3 million gallons of river water.

New Plant: A crane swings a steel beam into place for the rising pre-treatment building. Modern chemical-feeding devices in the new building will greatly improve the efficiency of water treatment.



Lardner's Point: The City's largest filtered water pumping station was undergoing its final face lifting as part of a $3.4 million modernization dating back many years. Cranes removed the old roof of the station's single remaining building, and extensive renovations were made.

Improved Pumping for Fires: The $466,000 modernization of the Fairhill High Pressure Pumping Station was nearly finished. Six new electric pumps increased pumping capacity. Gone were the old, inefficient gas pumps.

For Philadelphians generally the greater efficiency and reliability of pumping meant a more constant water supply. For the department there were long term savings on space, power, and personnel.

Pumping station personnel was down to 134 in 1962, a drop of 78 in ten years. Electric power costs, which averaged $12.35 per million gallons, were well below the $13.79 of the pre-modernization period, but were 44 cents higher than in 1961. The rise over 1961 was occasioned by daily operation of the East Park Booster Station (because of Belmont Plant construction) and greater demand on the high pressure system pumps.

More filtered water—about 64% of treatment plant output—was pumped or repumped during the year, although the four intake stations pumped slightly less raw water from the rivers than in 1961. Raw water pumped averaged 342.5 million gallons daily, while treatment plant output amounted to 334.3 mgd.

By the end of 1962, the $12 million pumping station improvement program, which was started in the late 1940's had gone far. The city had 13 new or substantially modernized stations; one station was being reconstructed, and another was scheduled for modernization.

Construction in 1962 was at approximately the same level as the preceding year. About $643,000 of work was done under $2.3 million of contracts.

Lardner's Point: Typical of the trend toward savings on space, power, and personnel is the $3.4 million modernization of the Lardner's Point Filtered Water Pumping Station. This modernization, which began in the 1940's entered its final phase in 1962.

The station's three-story high steam pumps, and related equipment, erected in 1904, had required three 75-ft. high buildings. With the removal of the steam pumps, one of these buildings was razed in 1961, and a second (the center engine house) in 1962. Pumping operations were concentrated in the remaining building—the north engine house—where extensive renovation began in August.

The north engine house contracts, totaling $324,000, called for a new, precast concrete roof 34 feet lower than the old roof, limestone coping, new roof ventilators and drains, cleaning and pointing, aluminum doors and windows, plastering and painting, and two new steam boilers for heating. They also included a new sluice gate chamber on the site of the center engine house.

By the end of the year nearly all this work was moving forward, and, except for landscaping, the renovation was expected to be finished by September, 1963. About $173,000 of work was done under old and new contracts in 1962.

During the year, installation of the last two electric pumps was completed in the north engine house. With six pumps now in place, the station's capacity jumped from 160 million gallons daily to 210 mgd.—a capacity close to that of a dozen steam pumps in 1904. More efficient, more easily maintained, and consuming less power, the new electric pumps are not subject to the frequent breakdowns of the old steam pumps. They require fewer personnel for maintenance and operation.

West Oak Lane: With the opening of the West Oak Lane Pumping Station in April, the final link was forged in a chain of new facilities to bring Torresdale Plant water into the Northwest. A series of new water mains across North Philadelphia was finished the year before.

The $352,000 West Oak Lane Station is unmanned and is operated by microwave from the department's Load Control Center. With three single stage, centrifugal pumps, it has a daily capacity of 27 million gallons of water. Filtered air control keeps electrical equipment clean and removes heat; aluminum insulation keeps noise from escaping the building; sensing devices alert the Load Control Center to pump and valve operation, water pressures, and temperature.

Queen Lane: The $570,000 reconstruction of the Queen Lane Filtered Water Pumping Station had nearly reached the half-way mark on December 31.

Pouring of concrete foundations for three new pumps was completed; three old pumps with related piping were removed; the south well was reworked, a surge relief system built, and new street piping largely laid. Started also was the underpinning of the north wall, preliminary to the lowering of the pump floor. About $268,000 of work was done.

These changes were part of a plan to raise the station's pumping capacity from 65 million gallons daily to 77.5 mgd, as well as to improve general pumping efficiency. The old electric pumps will be replaced with six new pumps, set 16 feet lower to provide greater pumping suction.

Located in one wing of the Queen Lane Plant's filter building, the station pumps about 28% of that plant's output. During the year, two new pumps operated in a temporary housing outside the station—providing service for the area newly acquired from the Roxborough Plants.

High Pressure Stations: Modernization of the high pressure pumping system, which protects the business areas of the central and north central city from fire, was virtually complete.

Six new electric pumps were finally in place at the Fairhill Station, as part of the $466,000 reconstruction of that station. Three of these pumps had gone into service the year before. Together the six pumps raised

the station's capacity from 12,350 gallons per minute to 15,000 gpm.

Not only did the new pumps perform more efficiently than the old gas pumps—the last of which were removed in 1962—but their compactness freed large amounts of space for a new Materials Testing Laboratory. Work on the new laboratory, under $313,000 of separate contracts, began late in the year.

Fairhill and its modernized sister station at Race Street pumped 27.5 million gallons of water for multiple alarm fires in 1962, besides nearly 62 million gallons for stand-by purposes.

Other Stations: With the closing of the two Roxborough water plants, two old pumping stations also discontinued operations. These were the Shawmont Station, which supplied the plants with water from the Schuylkill River, and the Roxborough Booster Station, which lifted the Shawmont supply the final distance to the plants. Shawmont was built in 1865-69 and modified over the years, while Roxborough Booster dated from 1928.

EXPANSION OF MICROWAVE CONTROL

Tightly linked to pumping station improvement was the expansion of the microwave "intelligence" system, which monitors water distribution.

This system — technically "load control" — includes automatic reporting devices at 120 points in the distribution network. Data on water pressure, flow and elevation is flashed continuously to a Load Control Center via telemeter and microwave signal. The center in turn controls a number of water pumping stations and some large distribution valves by remote signal.

In 1962 three additional pumping stations were brought under control of the center. These included West Oak Lane (newly built) and two existing stations, Belmont and Queen Lane Raw Water. Subtracting one old station (Roxborough Booster) which was closed down, there were eight stations under microwave control at the end of the year. Plans were being made for automating still other stations.

Solid state equipment (transistors) was used for the first time to link the Belmont and Queen Lane Stations to the Load Control Center. It is planned to convert all the center's 3,000 tubes to solid state equipment eventually.

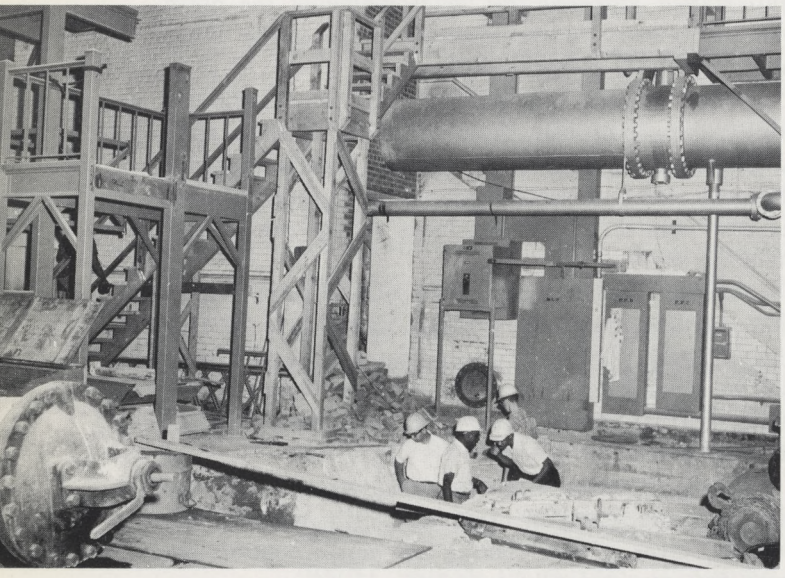
Automating of the Belmont and Queen Lane Stations resulted in abolition of 12 departmental positions.

WATER MAIN GROWTH

The department continued to extend and replace its water mains.

More than 49 miles of new mains were built, and 12 miles of old mains were abandoned, in 1962—thus expanding the water main network to 3,108 miles. This high rate of growth, varying only by a few miles each year, has been maintained for a decade.

The steady expansion of mains results partly from



Queen Lane: Reconstruction moved forward at the Queen Lane High Service Pumping Station, which pumps water to portions of Northwest Philadelphia. The work, about half complete, will raise station capacity to 77.5 million gallons of water daily.

A New Pumping Station: The new West Oak Lane Station, which opened in April, is operated by microwave from the Water Department's microwave control center. With pumping capacity of 27 million gallons daily, it pumps Torresdale Plant water into the Northwest.

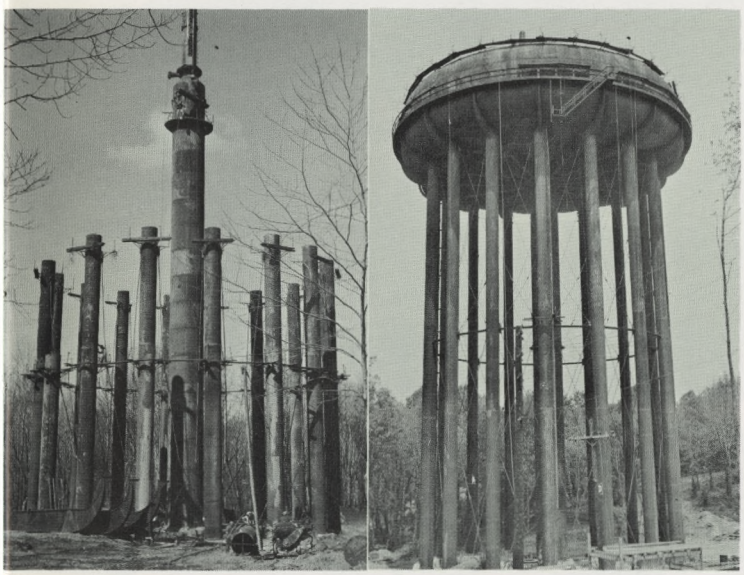
the growth of new neighborhoods, industries, and water uses. It results partly too from the growing age of the water main network, much of which must be replaced or improved to meet the multiplying needs of the community.

To meet these needs, Philadelphia has invested $46 million in mains since 1964, and plans to invest another $28 million through 1968.

New mains were constructed in all parts of the city in 1962, but special attention was given to areas of fast development or redevelopment. Thus a number of mains were built in historic Society Hill and redeveloping Eastwick; still others were laid to service the new Liberty Bell Race Track, as well as housing and industrial developments of the Northeast.

Improvement of water pressures and supply was an important aim in some sections of the city. In the Northeast, for example, one of the city's longest arterial mains was nearing completion. This line, built in segments over a period of years, will stretch from the Torresdale Filtered Water Pumping station (near the Delaware River) to the Somerton tanks. The 3-ft. line is intended to carry a readier supply to the tanks and reinforce water pressures in much of the Northeast.

Segments of this arterial main completed in 1962 included: Academy Road between Willits and Red Lion Roads ($452,000); Bustleton Avenue between Verree and Tomlinson Roads ($121,000); and Red Lion Road from Decatur Road to the Roosevelt Boulevard ($300,000). Another segment in Red Lion Road from Roosevelt Boulevard to Bustleton Avenue ($335,000) was 80% finished. About 13,000 feet were laid during the year under these contracts.



Ready for Service: Capable of holding 1.5 million gallons of filtered water, the new Fox Chase tank helps to meet peak demand of water customers and provides an emergency supply for fires.

Pressures were reinforced in center city with the completion of a large main in Walnut Street between Front and Broad Streets at a cost of $487,000.

As a further step to improve water pressures, as well as to reduce water discoloration, the department cleans and cement-lines many old mains each year. In 1962 it reconditioned 25 miles of such mains, most of them ranging from two to five feet in diameter. About $533,000 of work was performed under cleaning contracts totaling $1.57 million.

With hundreds of miles of cast iron mains in its system — many of them from 50 to 125 years old — the Water Department will have to continue its cleaning and lining program for many years.

MORE WATER STORAGE

Water supply and pressures will be strengthened in future years by still another element in departmental planning. This is the plan for a sizable increase in facilities for the storage of filtered water.

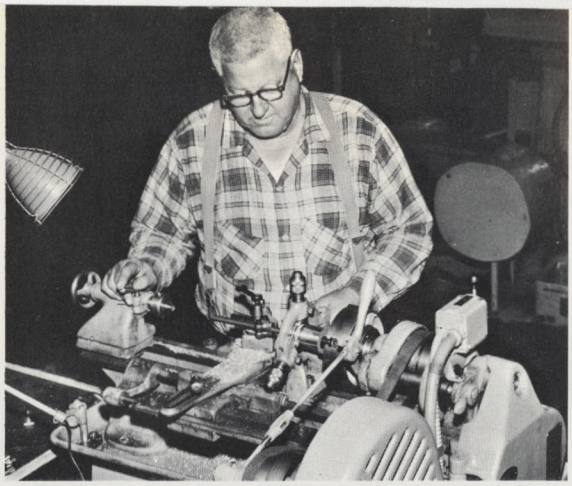
The importance of reserve water supplies in various areas of the city to care for fires, water main breaks, sudden drops in pressure, or other emergencies, is so great that the city will invest $20 million for this purpose in the period 1963-68.

This plan began to move forward late in 1962, when construction started on a 50-million gallon underground basin at the Torresdale Water Treatment Plant. The $1,890,000 basin is being created from 21 slow sand, filter beds that are no longer in use. The complicated job involves removal of 90,000 cubic yards of sand and gravel, tearing out of worn piping, demolition of the brick gatehouse, laying of 2,100 feet of steel pipe, and installation of some of the biggest pipe (10 ft. 11 in. reinforced concrete) ever used in the city. Water flow and elevation in the new basin will be regulated electronically from the filter building of the Torresdale Plant.

Plans call for conversion of more abandoned slow sand beds at Torresdale and other plants in the next few years, providing another 194 million gallons of underground storage capacity. Underground storage, it is believed, will protect the water against nuclear fallout and other forms of contamination, prevent growth of algae, and reduce chemical costs.

Built as part of an earlier program, a new elevated steel tank went into service in Fox Chase during the autumn. With a capacity of 1.5 million gallons, the tank will help to stabilize water pressures in the Northeast and to provide an emergency water supply.

Water Main Repair: The repair of broken water mains was an almost daily occurrence in 1962 as 963 mains snapped. Using a powered cutting tool, maintenance men (photo) prepare to cut away a section of a large main which has cracked.



Self-sufficiency: From the machining of massive impellers to the repair of the smallest hand tool, the Machine Shop was an integral part of departmental maintenance.

WATER SYSTEM MAINTENANCE

Maintenance of the far flung distribution system was largely routine in 1962, but it kept 56 street crews constantly in action. The crews performed tens of thousands of jobs to keep water flowing to consumers and to meet other needs of the public.

Among the many jobs, the crews repaired and flushed mains, installed ferrules, regulated the flow of water, inspected and repaired valves, reconditioned fire hydrants, made fire flow tests, pumped out basements, and serviced multiple alarm fires. The table below shows their activity in part:

	1961	1962
Broken Mains Repaired	963	895
Joints Recaulked or Repaired	241	238
Valves Repaired	2,655	2,537
New Valves Installed	682	1,149
Valves Inspected	23,634	21,772
Hydrants Repaired (Major Jobs)	2,578	2,906
Hydrants Repaired (Minor Jobs)	6,056	11,242
New Hydrants Installed	419	339
Hydrant Inspections	64,277	76,459
Hydrants Painted	10,801	11,424
Ferrules Installed	5,862	5,984
Ferrules Shut Off or Drawn	2,195	1,263

The department continued a stepped-up program of valve repair, replacement and inspection, and the need for this was underlined by a serious water main break at Kensington and Erie Avenues on August 31. The break flooded a series of large underground chambers, where three 60-inch and two 48-inch mains were interconnected. Flooding prevented crews from reaching two large valves in one chamber, and defective valves elsewhere caused much trouble. One 48-inch line had to be closed off a considerable distance away because of an inoperative valve. A water shortage developed in some neighborhoods, and only the increased flexibility of the distribution system, as a result of past modernization, made it possible to reroute water flow satisfactorily through other lines. Hundreds of old valves should be repaired or replaced.

Broken mains as a whole, however, were somewhat fewer in 1962, and, as in past years, they were mostly small, old mains.

Distribution crews made a comprehensive recheck of water pressures at higher elevations throughout the city as the first step in replotting pressure district maps. They also gave an increasing amount of time to the city's water "shut-off" program, designed to compel delinquent consumers to pay their water bills.

Building, plant, and automotive services were also a vital part of departmental maintenance. Although the water system got the lion's share of such services—provided by separate departmental units—the sewerage system was included.

The 922 building maintenance jobs ranged from construction of a wooden walkway for visitors on the roof of the post treatment building at the Torresdale Plant to boiler modifications in the Torresdale filter building. Work was started on a new parking lot at the Distribution Headquarters.

At the department's Logan Street Garage, 304 trucks and passenger cars underwent 19,000 repairs and other services—expedited in part by newly purchased repair equipment. In addition there were 2,000 preventive maintenance checks. About 2,000 repairs were also made on "off-the-road" equipment.

A HALF-MILLION METERS

Overhaul of every water meter in the water system is a goal toward which the Meter Shop has made

swift progress. By 1962 the Meter Shop had reconditioned or replaced more than four-fifths of the 522,000 meters in Philadelphia.

This steady overhaul is part of a 10-year rotation program that will be completed within two years.

Behind the rotation program is the unceasing need to keep the 522,000 meters operating, for it is these meters that produce the revenues to operate the water and sewerage systems.

This need kept other maintenance programs of the Meter Shop at a high level in 1962. Thus—

1. Top priority was given to servicing "problem" meters . . . non-registering, malfunctioning or missing. These problem meters, however, were declining in number, because of the cumulative effect of the rotation program. Non-registering meters, for example, were down to little more that 12,000, compared with the 16,000 of the previous year.

2. Large meters (one inch or more in size) got much attention. Although there are only 17,000 of these, including 2,000 charity accounts, they provide more than one-half of all revenues attributable to *metered* water consumption. For this reason, and because they are more complex, large meters are serviced more frequently than small meters (⅝-inch and ¾-inch). In 1962 meter personnel overhauled 3,572 large meters in the shop, besides 342 more in the field.

3. Small meters accounted for the largest amount of shop work. Of these, nearly 63,000 were repaired in the shop and then replaced, while almost 9,900 were repaired in the field.

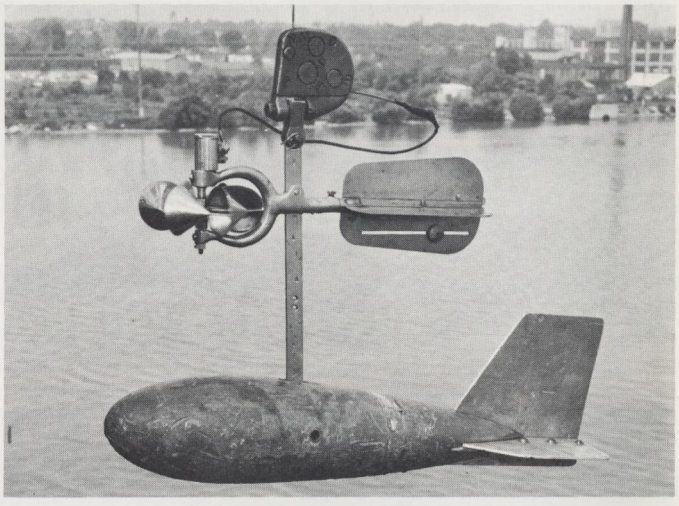
Meters installed "on new services" totaled 5,650 or 40% more than in 1961. These included 436 large meters.

WATER MAINS KEEP PACE WITH URBAN PROGRESS

Arterial Main: A 3-ft. diameter water main moved rapidly along Red Lion Road in the Northeast, bringing the promise of improved water pressures and supply to newly developing neighborhoods. The main forms part of a new arterial line that will carry water from the Torresdale High Service Pumping Station to the Somerton tanks.

Main Relay: A large water main (left) went into place at the Gustine Lake Interchange, now being built by the State. Relay of water and sewer lines by the City is a normal part of State highway projects.

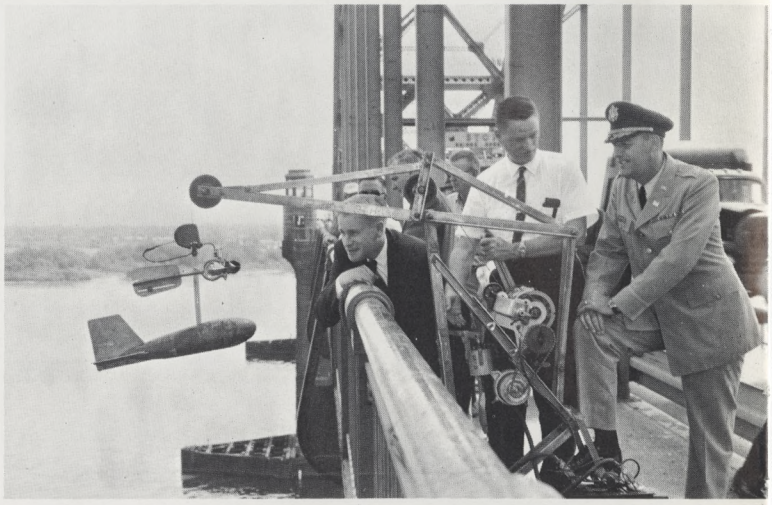
Quiet Moment Afloat: Knowledge of conditions in the Delaware River has been growing, thanks to the unsung daily efforts of engineers and chemists in the public employ. Painstaking water sampling has paid big dividends.



Checking the Stream: Engineers note data (left) at one of three new stations set up on shore to record the changing level of the river, while the current meter (right) hovers before taking a plunge into the stream.

GETTING TO KNOW A RIVER

The vital importance of the Delaware River was underlined in August when four public agencies made an intensive 36-hour study of that stream. Working in shifts at the Tacony-Palmyra Bridge, 50 engineers, chemists and geologists took a variety of samples and measurements, as a prelude to a broader study still going on. One purpose was to determine how much water there is in the Delaware . . . another, how fresh and salt water move. Participating: Philadelphia Water Department, U. S. Geological Survey, U. S. Army Engineers, New Jersey Division of Water Supply and Policy.



Cooperative Effort: Expert personnel crowd the walkways of the Tacony-Palmyra Bridge with an array of sophisticated sampling and measuring equipment, while floating colleagues check mid-stream spots.

Water Quality and Research

QUALITY WATER FOR CONSUMERS

Philadelphians were getting plenty of water in 1962, even though they were using somewhat less. Equally important, they were drinking better water than ever before.

The decline of consumption—about 15 million gallons daily in four years—was of little significance in itself. Back of the somewhat lower consumption figures were a slight population decline, occasional industrial inactivity, and better prevention of waste from underground leaks. Other factors—new neighborhoods, urban redevelopment, and fresh industrial areas—are expected to raise consumption in future years.

Quite significant, however, was the higher quality of the 327.8 million gallons of water which Philadelphians used (on the average) daily in 1962. Consumers were getting water that was, on the whole, purer, freer of tastes and odors, and less subject to discoloration. Modern plants, improved filtration, better chemical treatment, and more carefully controlled distribution had gradually produced a beneficial cumulative effect. The city's water was now one of the finest treated products offered by any water utility.

Philadelphia water had been one of the nation's purest for several years. The average coliform organism count in 1962 was only 5% of that permitted under the drinking water standards of the U. S. Public Health Service for interstate carriers.

Tastes and odors issuing from the treatment plants during the year were at times chlorinous or chlorinous-musty but these did not carry far into the distribution system. In fact, tastes and odors in water mains were so transient as not to be detectible when investigated, and rarely did they reach the customer's tap. Most of the tastes and odors which did reach the customer were found to result from conditions internal to his own property, such as new or corroded piping, new water coolers, cross-connections with hot water heating systems, or (in some commercial establishments) carbonation leaks.

Complaints of water discoloration—usually caused by the dislodging of particles from corroded mains—had fallen drastically by 1962. This was particularly true of multiple complaints from the same neighborhoods. Since water discoloration has been the Water Department's chief remaining quality problem in recent years, special efforts have been made to eliminate it. These have included cleaning, cement-lining, and flushing of water mains, as well as the dosage of plant effluents with metaphosphates and lime which coat the inside walls of mains as the water flows through. Elimination of deadends in the distribution system and the alteration of flow patterns have also helped.

To ensure fine water, the department continued the intensive testing of water samples collected from all parts of its system. At the water plants, laboratory personnel tested 2,832 samples, while Water Quality Control and Research personnel collected 10,121 samples from 65 points in the water distribution system. These 10,121 samples were more than double the number recommended by the U. S. Public Health Service for cities of two million population.

Treatment methods employed in the water plants did not differ much in 1962 from those used the preceding year. At Torresdale adjustments had to be made late in the year for higher turbidity in the river water, and at all plants some changes in treatment were necessary to eliminate musty odors in the raw water brought about by a prolonged drought.

There were several breakdowns in the chlorine dioxide equipment at the Oak Lane Reservoir, and consequently some algae developed during the summer. A more durable feed line was run to the north basin. East Park Reservoir presented no important problems. Both of these reservoirs hold emergency supplies and help to equalize pressures in the distribution lines during peak water demand.

DROUGHT AND THE RIVERS

Philadelphia and other communities which draw their water from the Delaware and Schuylkill Rivers had reason to be thankful for their river clean-up efforts in past years.

A prolonged drought in 1962 resulted in river conditions that might have affected some communities adversely if the amount of pollution going into the streams had been greater. Because of the drought, the dissolved oxygen content of the Delaware River fell so low that 200,000 fish were suffocated, while obnoxious tastes and odors increased. In May and June dissolved oxygen declined to a range of zero to four parts per million in some sections of the river, compared with six to nine parts the year before.

The lowered flow in the Delaware could not adequately dilute sewage effluents and industrial wastes, and the organic pollution was high enough in proportion to the quantity of water to absorb much of the oxygen.

In the Schuylkill the drought produced low velocities, and the resultant low turbidities allowed microorganisms to accumulate, but that stream was much less affected by the drought than was the Delaware.

As the rains returned, the condition of the streams rapidly improved, and in fact total precipitation for the year was 42.63 inches—1.5 inches above the norm value for the period 1921-50. Unfortunately much of the rainfall occurred after, rather than before, the drought.

Coliform organisms—one measure of pollution—were about the same as the year before at the Torresdale intake on the Delaware and the Belmont intake on the Schuylkill, but at Queen Lane's Schuylkill intake there was an increase. On the whole, however, coliform organisms were many fewer in both rivers than they had been several years ago. This was the direct result of the extensive stream clean-up and sewage treatment programs of Delaware River Basin communities.

Despite the drought, Schuylkill River water did not reach such extremes of hardness as it had the year before. The range was 5.2 and 14.7 grains per gallon, with an annual average of 8.7 grains. The soft Delaware water showed an average hardness of 5.4 grains only, with a narrow range of fluctuation from 4 to 6.3 grains.

Other river conditions did not change significantly, and both radio-activity and strontium 90 in river water were so infinitesimal as to be many times below the safe consumption limit.

BETTER WATER THROUGH RESEARCH

If Philadelphia's raw and finished water supplies have steadily improved, this is partly because of extensive departmental research. The improvement of water quality is a constant Water Department study.

Engaged in this study are chemists, engineers, and other expert personnel attached to water and sewage plant laboratories, as well as to several specialized units.

Some of the most advanced research in the country has been along the Delaware River, where the Water Department and the U. S. Geological Survey have jointly set up automatic stations to monitor stream conditions 24 hours daily. A sixth such station was established in December, 1962, to record dissolved oxygen, salinity, and temperature at the Delaware Memorial Bridge near Wilmington.

The two agencies continued their mid-stream studies in 1962, using portable electronic instruments, and they continued to experiment with a digital recorder which would take readings directly off the automatic instruments at the fixed stations. Tapes punched out by future digital recorders, it was hoped, would be usable on computers, thus providing a more comprehensive picture of stream conditions.

In cooperation with Johns Hopkins University, the two agencies also concluded a study of the role of photosynthesis in restoring the Delaware River. The study results proved to be of much interest in scientific circles, here and abroad.

One of the most unusual studies on any tidal estuary, however, occurred in August when the Water Department and several other public agencies launched an intensive 36-hour study of Delaware River conditions at the Tacony-Palmyra Bridge. One purpose of the study was to gather data that would help to determine eventually the volume of water in the tidal part of the river at different seasons and hours. The answer, it was felt, would be vital to future plans for protection and distribution of the river water by Delaware Basin communities.

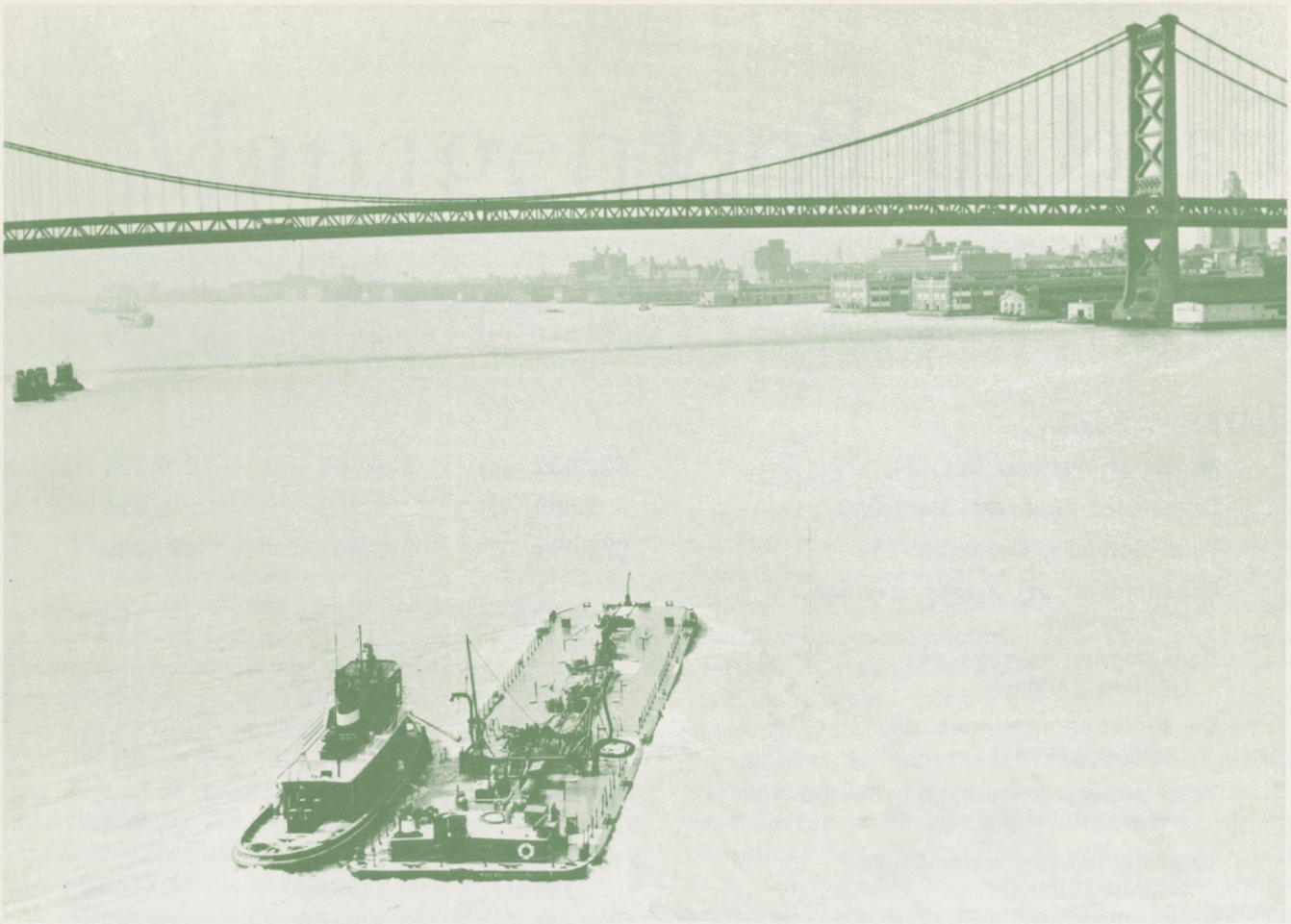
As part of the study, water velocity and other measurements were taken from high tide to low tide and back to high tide. It was planned to relate the velocity measurements to a physical profile of the river, while three new gauging stations on the Philadelphia bank would record river elevations for many months. Eventually the recordings and measurements would be fed into a computer.

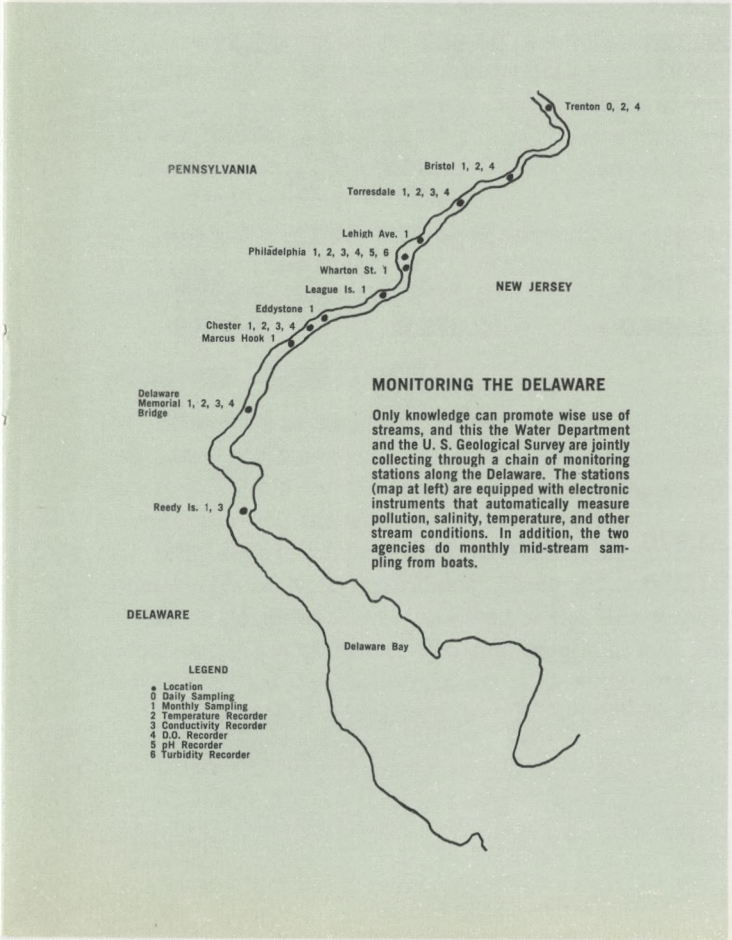
Participating in this study were the U. S. Geological Survey, the U. S. Army Corps of Engineers, and the New Jersey Division of Water Supply and Policy.

As a follow-up, the U. S. Public Health Service began its own study of the Delaware, aided by the Water Department and the States of Pennsylvania and New Jersey. The USPHS study will continue until 1965.

Not all the important studies of 1962 were on the rivers. There was much experimentation in the treatment plant laboratories to improve the finished water delivered to consumers. Much of this study involved

Servant of Civilization: The historic Delaware River supplies water for scores of communities and makes possible the largest fresh water port in the world. Though the river is cleaner today than a decade ago, its wise use remains a challenge for the growing population of the Delaware Basin.





MONITORING THE DELAWARE

Only knowledge can promote wise use of streams, and this the Water Department and the U. S. Geological Survey are jointly collecting through a chain of monitoring stations along the Delaware. The stations (map at left) are equipped with electronic instruments that automatically measure pollution, salinity, temperature, and other stream conditions. In addition, the two agencies do monthly mid-stream sampling from boats.

chemicals not normally used in the plants. Laboratory comparisons were made, for example, of several coagulants—ferric chloride, Nalco 14, and ferrous chloride—to promote settling of clays and other impurities in water. There were also studies of permanganate as a possible chemical for removal of tastes and odors. Detergent removal, a future rather than a present problem, also came under study.

Departmental research was strengthened with the reorganization of the Water Quality Control and Research Section. This unit was first formed in 1959 to keep an eye on the city's water after it leaves the plants and to "brainstorm" new paths to water improvement.

As part of the unit reorganization, approximately 25 chemists, laboratory technicians, and microbiologists were transferred from water plant laboratories to the research unit. Some personnel were left in plant laboratories to handle routine problems of water analysis for the plants, but the bulk of technical personnel were now under one chief, responsible for non-routine research.

The change would enable technical personnel to keep in better touch with water quality advances, both locally and nationally, and to acquire broader experience. At the same time, plant employees formerly assigned to take field samples for the Water Quality unit, would now be part of that unit, simplifying supervision.

Facts in Brief

	1962	1961	1952
POPULATION	2,002,512 (a)	2,002,512 (a)	2,111,200 (b)
WATER SYSTEM:			
Meters in System: Dec. 31	522,632 (c)	520,786 (c)	315,316 (c)
Unmetered Accounts: Dec. 31	2,599 (d)	7,265	179,914
Total Services: December 31	525,231	528,051	495,230
Consumption per person, average day (gallons)	163.7	166.3	168.0
Consumption average day (million gallons)	327.8	333.0	356.2
Consumption maximum day (million gallons)	430.5(e)	430.2	482.9
Total annual consumption, filtered water (billion gallons)	119.6	121.6	130.0
Total annual raw water usage (billion gallons)	125.0	126.9	142.8
Pipe lines in filtered water system (miles)	3,108.1	3,071.4	2,764.1
Valves in filtered water system	69,034	67,719	57,634
Fire hydrants in filtered water system	24,325	23,895	22,510
SEWERAGE SYSTEM:			
Sewage treated, average day (million gallons)	347.2	365.7	81.9
Total sewage treated (billion gallons)	126.7	133.5	30.0
Sewers in system (miles)	2,404.0	2,379.6	2,035.0
HIGH PRESSURE FIRE SYSTEM:			
Pipe lines (miles)	63		
Valves	1,870		
Fire Hydrants	1,050		

NOTE: (a) U. S. Census, 1960.
(b) Chamber of Commerce estimate.
(c) Includes special rate accounts. Estimate based on billings.
(d) Reduction is due to removal from billing, January 1, 1962, of ferrule and schedule accounts no longer in use.
(e) June 19, 1962 — temperature 90 degrees.

The Sewerage System

PROTECTION OF THE RIVERS

Very little untreated Philadelphia sewage entered local streams in 1962. The city was treating more than 97% of all its sewage, thus providing a large measure of protection for the Delaware and Schuylkill Rivers.

The modern sewage plants, opened in the 1950's were treating 347.2 million gallons of sewage flow daily —only slightly less than in the 1961 record year when 365.7 mgd reached the plants. Total flow for 1962 was 126.7 billion gallons, and from this 88,000 tons of solids were removed.

Only a decade before, thousands of tons of solids from Philadelphia outfalls had spread yearly havoc in the Delaware and Schuylkill, killing fish, spoiling recreation areas, and making the port less attractive. A decade of sewerage system modernization had reversed this trend, and the rivers were now in much better condition.

Not only did the modernized system prevent Philadelphia sewage from reaching the streams in 1962, but it also intercepted 10 billion gallons of flow from neighboring comunities, under various standing agreements.

At the same time the Water Department pressed forward with its program for diverting the last 3% of untreated sewage to its plants. For this purpose it invested $2.4 million in new sewage disposal projects (mostly intercepting sewers) during the year. This was more than double the rate of spending in 1961.

The sewer network as a whole grew to 2,404 miles in 1962, a net addition of more than 24 miles. Largely responsible for this increase was a sharp jump in the value of sanitary and storm sewer construction, from the .*9.7 million of the previous year to $14.4 million. The latter figure included a small amount of water mains.

During the year, 178 contracts, many of them started in prior years, were brought to completion. Totaling *$16.5 million, they included $14.2 million for sanitary and storm sewers and the balance for sewage disposal. Eighty contracts, amounting to **$16.3 million, were in force on December 31, and about $5 million of work had been done under them.

EXPANDING THE SEWAGE WORKS

Nowhere was the city's success in protecting the rivers more evident in 1962 than at the Northeast Sewage Treatment Works. There a long awaited expansion of plant facilities began.

Designed to handle 125 million gallons of sewage daily, Northeast has been treating an extra 15-30 million gallons daily in recent years. In 1962 it treated 140.3 mgd, providing both primary and secondary treatment.

Preliminary work began on $5.3 million of new facilities, which will raise the plant's capacity to 175 mgd. These facilities will include a new aeration tank (95 ft. x 412 ft. x 17 ft.), capable of holding 3.45 million gallons of sewage; four additional final settling tanks (71 ft. x 242 ft. x 13½ ft.), holding 1.4 million gallons each; related aeration and collecting equipment; new air blowers; and two sludge pumping installations.

By late 1964, it is expected, plant expansion will be complete, and the Northeast Works will be able to handle with greater ease the growing service demands of the northern and northeastern portions of the city.

Despite the increasing load on its facilities, the Northeast Works managed to provide a high level of treatment in 1962—removing 82% of sewage solids and 78% of biochemical oxygen demand (a measure of pollution). This was largely due to a change of treatment

*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.

method the year before, when two separate sewage flows (one mosty domestic, the other partly industrial) were given different treatment. Northeast now operates as a combination bioabsorption and activated aeration works.

Because its sludge lagoons were largely full, the plant sent 35 million gallons of digested sewage sludge to sea during the year.

Lesser physical improvements at Northeast were valued at $267,000 under contracts totaling $432,000. They included: New mechanical equipment, screens and conveyors for three grit channels; chains, sprockets, and flights in the final settling tanks; overhaul of two lift pumps in the raw sewage pumping station; supporting steel structures for piping in two sludge tanks; and demolition of old sedimentation tanks.

Only minor improvements were carried out at the city's two other treatment plants—Southeast and Southwest. At the latter plant about $54,000 of work was done. This included a face lifting for the pumping station —new plastering, painting, pointing, and electrical work —and supports for piping in three digester tanks. At Southeast the grounding of electrical control wires caused pumping station failures and necessitated the letting of a $35,000 contract for repairs. Manual controls were used at the plant for part of the year.

Since Southeast and Southwest provide only primary treatment for sewage, each removed less solids and biochemical oxygen demand than did Northeast. Sewage flow to each of these plants was also considerably less than at the other works.

Thus Southwest treated 107.1 milion gallons of sewage daily, removing 52% of solids and 30% of B. O. D., while Southeast, which handled a daily average of 99.9 million gallons, removed 51% of solids and 49% of B. O. D. Both plants received slightly less sewage than they did the year before, and both operated well within their 136 mgd rated capacities.

GROWTH OF INTERCEPTORS

The clean-up of the Delaware and Schuylkill Rivers has been closely linked to the growth of intercepting sewers, which pick up sewage from branch lines and convey it to the sewage plants for treatment. About 75 miles of such sewers have been built since 1946.

By 1962 the interceptor system was nearly complete and was carrying all but 3% of the city's raw sewage to the plants. Some small pieces of interceptor were still to be completed, chiefly along the lower Schuylkill and in the far Northeast.

Most important of these was a 3.5-mile line on the west side of the Schuylkill. Built in stages, this reinforced concrete duct had been carried three miles from the Southwest Works up to 56th Street by the end of 1962. This portion will go into service early in 1963, and a small remaining segment (reaching to 49th Street) will be constructed soon thereafter.

The new sewer, which has cost $2.9 million thus far, varies in diameter from three to four and one-half feet. Designed to carry 14 million gallons of sewage daily to the Southwest Works, it will put an end to sewage flow into the river from the west bank.

Extension of interceptors along the east side of the Schuylkill also moved forward. Completed in February was a $309,000 sewer in Passyunk Avenue between Vare Avenue and Dover Street. Another sewer, more than a mile long, was begun in 26th Street between Shunk Street and Penrose Avenue. The latter—a $900,000 concrete tube in a tunnel at a depth of 40 feet —was about half finished by August when an explosion interrupted the work, killing four of the contractor's workers. With future completion of this 4-ft. diameter interceptor, no more sewage will reach the Schuylkill River from the east bank and Philadelphia's sewage diversion program will be virtually attained.

Future service for a large housing development in Chestnut Hill near the Philadelphia Country Club was assured by the completion of a 1,500-ft. extension to the Wissahickon high level interceptor. The $51,000 extension runs through part of Fairmount Park, from a point 1,000 feet northwest of Old Hartwell Lane to a point north of Glengarry Road. This interceptor will be extended further into Chestnut Hill to pick up sewage from other homes at a later date.

Intercepting Chambers: Forming part of the intercepting network is an increasing number of intercepting chambers. These complex structures divert sewage to the treatment plants during dry weather, and by-pass heavy flows to the rivers in time of storm. Three more such chambers were completed in 1962—one as part of the Passyunk Avenue interceptor job, a second (including a sewer) in 56th Street east of Eastwick Avenue at a cost of $96,000, and a third as part of new sewers for U. S. Navy housing in South Philadelphia.

SEWER CONSTRUCTION

To meet the demands of new neighborhoods and industries, as well as to rejuvenate older lines, 38.3 miles of sanitary and small storm sewers were built in 1962. Of this mileage, 24.4 miles represented new extensions to the sewer system.

New Housing and Industrial Development: More than 21 miles of sewers, valued at $4.4 million. were laid to service new housing, neighborhood redevelopment, and proposed industrial sites. Much of the new housing and some of the industrial sites were in the Northeast, but redeveloped areas were to be found in many parts

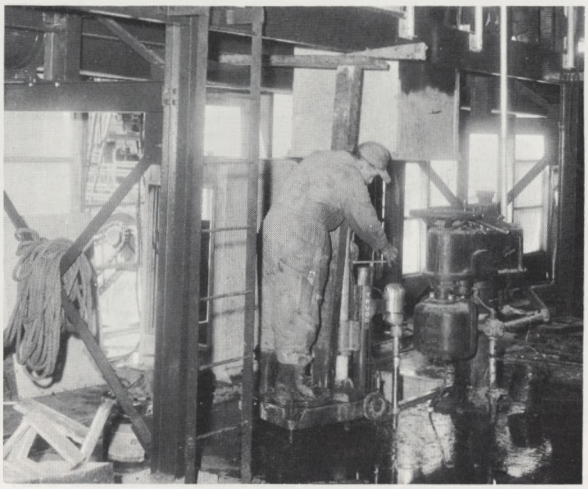
of the city.

In South Philadelphia concrete sewers, ranging up to 7 ft. x 9 ft. in size, were built to meet the needs of a U. S. Navy housing project. The sewers, running along Penrose Avenue from 26th Street to Pattison Avenue and then bending over Pattison to 20th Street, cost $815,000. Another large sewer ($363,000) was built in 20th Street between Pattison and Geary Street, and certain neighboring streets.

Major contracts, totaling more than $1.1 million, to service several thousand new homes in the Northeast included Stratford Drive, as well as portions of Leton, Laramie, Decatur, and Red Lion Roads. The largest of these jobs ($383,000) was in Decatur Road from the south branch of Byberry Creek to Red Lion Road and in Red Lion Road between Decatur and Academy Roads.

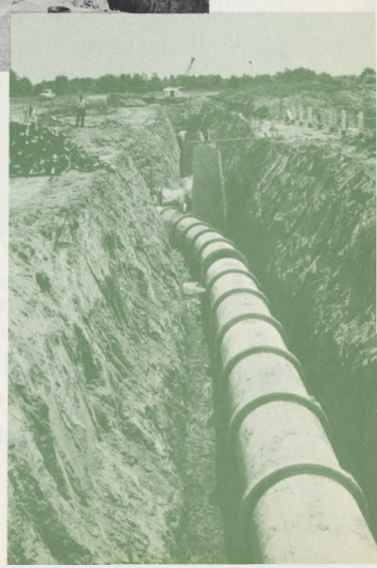
As part of industrial site preparations in the North-

Northeast Works: Some preliminary work began on a $5.3 million expansion of this hard pressed plant. New facilities will raise sewage treatment capacity to 175 million gallons daily.



Plant Improvements: Many minor improvements were made at the three sewage treatment plants. At the Northeast Works these included replacement of mechanical equipment in grit channels, together with screens and conveyors.

Schuylkill Clean-Up: Final clean-up of the lower Schuylkill River was in sight as another link was built in a long intercepting sewer on the west bank. The sewer will carry sewage to the Southwest Sewage Treatment Works.

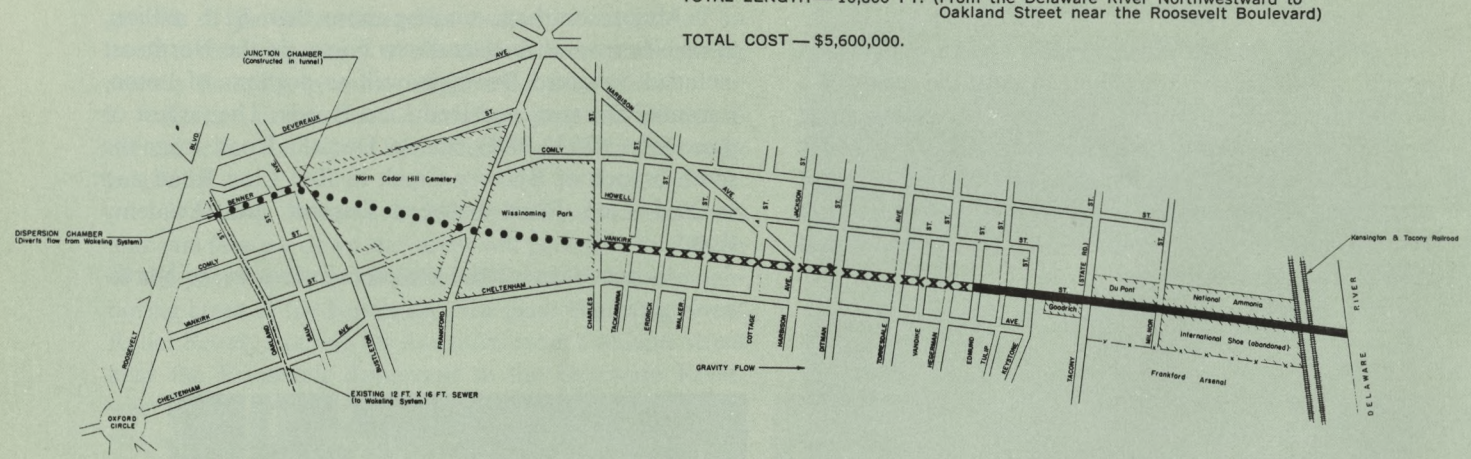


Industrial Development: As part of the City's big program for preparation of new industrial sites, the Water Department laid many new sewers. The 42-inch diameter line below was laid in Drummond Road in the Northeast.

WAKELING STREET STORMWATER RELIEF CONDUIT

TOTAL LENGTH — 10,600 FT. (From the Delaware River Northwestward to Oakland Street near the Roosevelt Boulevard)

TOTAL COST — $5,600,000.



FIRST STAGE

TYPE: Twin reinforced concrete box sewers built in an open cut.

LENGTH: 2,550 Ft. sewers — 150 Ft. cofferdam.

SIZE: Each sewer 8 Ft. x 12½ Ft.

APPROXIMATE COST: $1,463,000.

STARTED: October, 1959.

COMPLETED: August, 1961.

CONTRACTOR: Joseph Lombardi and Sons.

SECOND STAGE

TYPE: Concrete circular sewer built in a tunnel.

LENGTH: 3,500 Ft.

DIAMETER: 13 Ft. finish inside a 15 Ft. to 16 Ft. bore.

APPROXIMATE COST: $1,750,000.

STARTED: February, 1961.

COMPLETED: September, 1962.

CONTRACTOR: Driscoll Construction Co., Inc.

THIRD STAGE

TYPE: Concrete circular sewer built in a tunnel.

LENGTH: 4,200 Ft., exclusive of chambers.

DIAMETER: 13 Ft. finish inside a 15 Ft. to 16 Ft. bore.

DISPERSION CHAMBER: 11¼ Ft. x 11¼ Ft. box built in an open cut.

APPROXIMATE COST: $2,415,000.

STARTED: October, 1961.

SCHEDULED COMPLETION DATE: Early January, 1963.

CONTRACTOR: Driscoll Construction Co., Inc.

east, the Water Department pushed ahead with work on three contracts, totaling $568,000. These included sewers in Drummond, Darnell, and Norcum Roads. Only the Norcum Road sewers were unfinished at the end of the year.

Relief of Insanitary Conditions: In scattered older sections of the city, 5.4 miles of sewers were constructed at a cost of $1.2 million to service older houses still dependent on cesspools. The largest of these jobs ($475,000) was in Grant Avenue from Frankford Avenue to a point just east of the Roosevelt Boulevard, where both sanitary and storm sewers were laid. In South Philadelphia some sewers were placed in Pattison Avenue between 11th and Broad Streets ($122,000).

Reconstruction of Old Sewers: The great sewer building activity in Philadelphia during the latter half of the 19th century has left an indelible mark on the city's sewer system. More than one-third of Philadelphia's 2404 miles of sewers antedate the year 1900, and many of these are more than 100 years old.

The steady deterioration of these old brick and lime-mortar structures under the hammering of today's traffic presents a mounting challenge. More and more of the old sewers must be replaced.

In 1962 the city replaced 10 miles of old sewers, at a cost of $4.7 million, in many different neighborhoods.

Completed were two large box sewers, extending generally along Oregon Avenue, Front and Porter Streets, from the Delaware River to 10th Street. This $1.9 million line will pick up sewage from many branch sewers and divert it to the huge Delaware Avenue interceptor.

Two reconstruction jobs in the heart of the Germantown business area moved ahead with minimum disturbance to local business. These included the replacement of 85-year old brick sewers in Germantown Avenue between Haines and Tulpehocken Streets ($184,000) and in Lena and Armat Streets ($294,000).

The stone arch work and bricks which long ago covered the old Dock Creek in Philadelphia's most historic section were replaced in 1962 with a new reinforced concrete sewer. Silting of the old sewer and the need to improve flow by changing the grade were among the reasons for reconstruction. The new sewer, partly a box and partly a pipe, runs along Dock Street from Delaware Avenue to Chancellor Street and sends out a spur along Mattis Street. The cost of the job was $381,000.

In center city a start was made on reconstruction of an old sewer in Arch Street between 5th and 10th Streets, under a $400,000 contract.

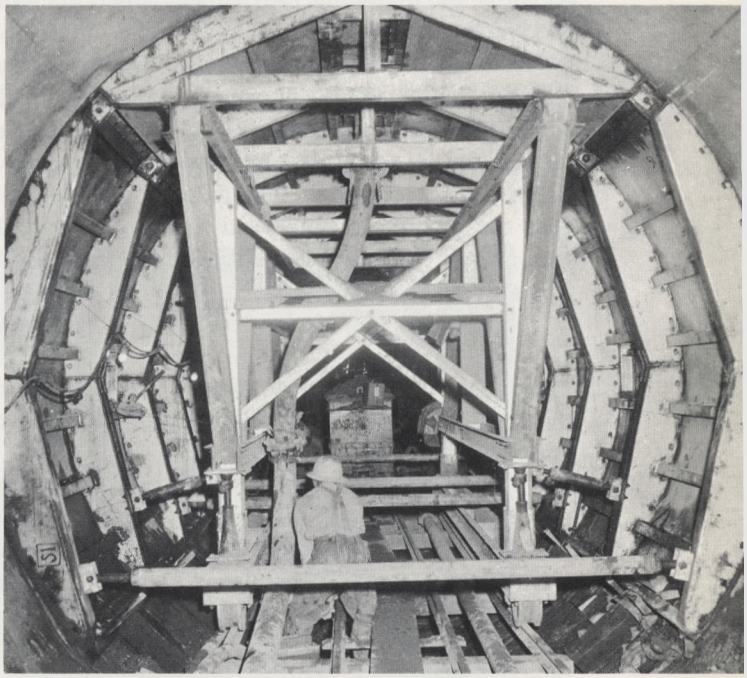
CONTROL OF STORM FLOODING

The $40 million storm flood control program continued to unfold. One big storm sewer was almost finished in the Northeast, part of another was ready in West Philadelphia, and a large storm water pumping station was being built in Eastwick.

The need for these and other storm water facilities has become increasingly pressing, as open areas of the city have filled up with homes and paved streets. The

END OF STORM FLOODING NEARS FOR NORTHEAST RESIDENTS AS GIANT WAKELING STREET RELIEF SEWER ENTERS LAST LAP

Old Sewer: Two-thirds of the storm flow from the old Wakeling Street Sewer (left) will be diverted into the new Relief Sewer, which runs two miles from the Roosevelt Boulevard to the Delaware River.



Concrete Pour: With modern equipment, the 16-ft. diameter tunnel of the new sewer was quickly lined with concrete. Rig about — 50 yards long — permits pumping of concrete mix through hose to the top of the tunnel, from which it spreads down the sides.

Last Lap: A chamber constructed near Roosevelt Boulevard to divert storm flow from the old Wakeling Street Sewer formed the last link in the new Relief Sewer, which was almost complete by the end of the year. The new sewer will relieve storm flooding in Frankford and nearby areas.

Air Lock: Cars enter a compressed air lock, built to protect workmen against water seepage and loose soil. Tunneling was an engineering feat because of difficult soil and rock.

growth of paved surfaces has caused storm run-off to swell, overtaxing many of the older sewers and causing serious flooding in some neighborhoods.

To the sizable flood control projects carried out in earlier years, the Water Department added the following in 1962:

Wakeling Street Relief Sewer: Flooded basements and cars floating down the street will probably be a thing of the past for many residents of Frankford and neighboring areas of the Northeast. The giant Wakeling Street Relief Sewer, running for two miles from Oakland Street near the Roosevelt Boulevard to the Delaware River, was almost finished on December 31, and the sewer was scheduled to go into service early in 1963.

The $5.6 million sewer, which was begun in October, 1959, is designed to carry more than a million gallons of storm water per minute. It will divert two-thirds of the storm flow from the existing, overtaxed Wakeling Street line.

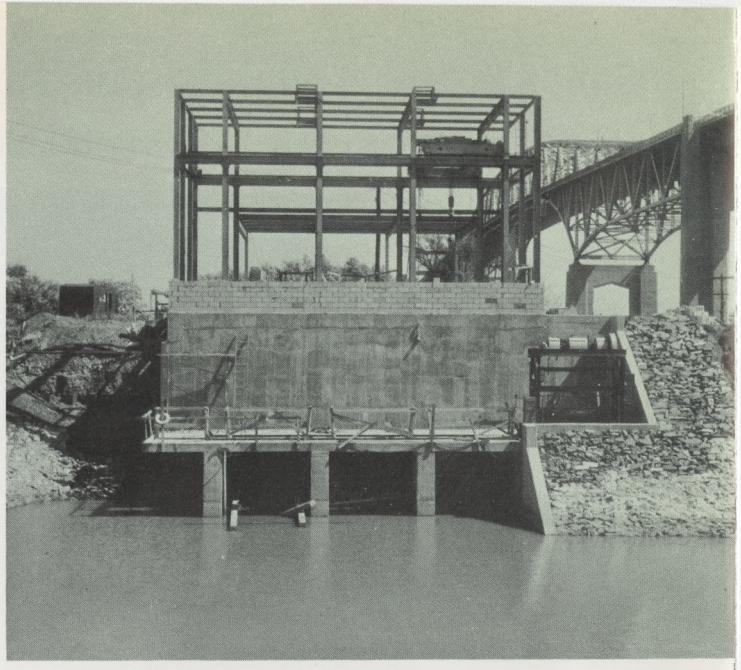
Beginning at Oakland Street, the new sewer runs under Benner Street, plunges 50 feet under North Cedar Hill Cemetery and Wissinoming Park, and then follows Van Kirk Street to the river. For the first 7,700 feet it is a 13-ft. diameter tube built in a 16-ft. diameter tunnel, while for the remaining 2,550 feet it becomes twin box reinforced concrete sewers, 8 ft. x 12½ ft. each, built in an open cut. A 150-ft. cofferdam receives the sewer at the river.

Built under three separate contracts, the new sewer is an important engineering feat, achieved in the face of many challenges of rock and soil. Much of it required extensive blasting and drilling through solid rock at great depths, as well as inch by inch sheathing and shoring in softer soil.

Mill Creek Sewer: Many plans were being made for extensive reconstruction of the five-mile long Mill Creek Sewer, which drains West Philadelphia north of Market Street. This deteriorating sewer, built in the 1880's, has collapsed in several places over the years and has frequently been swollen beyond capacity by heavy rains.

To the portions of the sewer reconstructed in earlier years, the Water Department added another in 1962. The old brick structure was replaced in 46th Street, from Market Street to Haverford Avenue, with a new reinforced concrete box sewer of greater capacity. The new segment, built at a cost of $964,000, is 17 ft. x 18 ft. in size.

Plans for reconstruction of a half-mile long segment from 50th and Brown Streets to 53rd and Poplar Streets were delayed, however, by legal and technical difficulties. Late in the year the City Council approved the demolition of 13 properties, in addition to the 115 originally taken by the city, to provide adequate right-of-way for



Mingo Creek Station: Capable of pumping 235,000 gallons of storm water per minute, this new station near Penrose Avenue Bridge will be completely automatic when finished.

FLOOD CONTROL

In progress for the past decade has been the City's $40 million program for relieving storm flooding. Many big sewers and other facilities have been built as part of this program. Two of them are shown.

Mill Creek Sewer: To relieve storm flooding in West Philadelphia, part of the old Mill Creek Sewer was rebuilt in 46th Street north of Market at a cost of nearly $1 million.

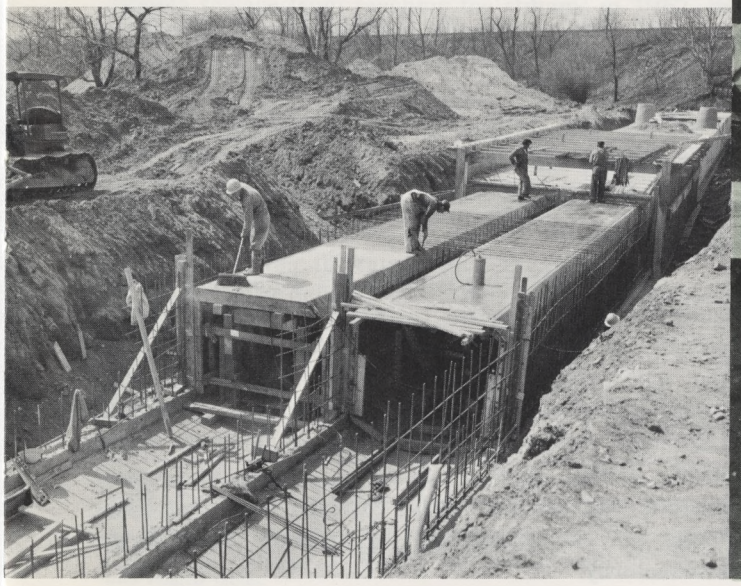
NEW SEWERS FOR MANY PURPOSES

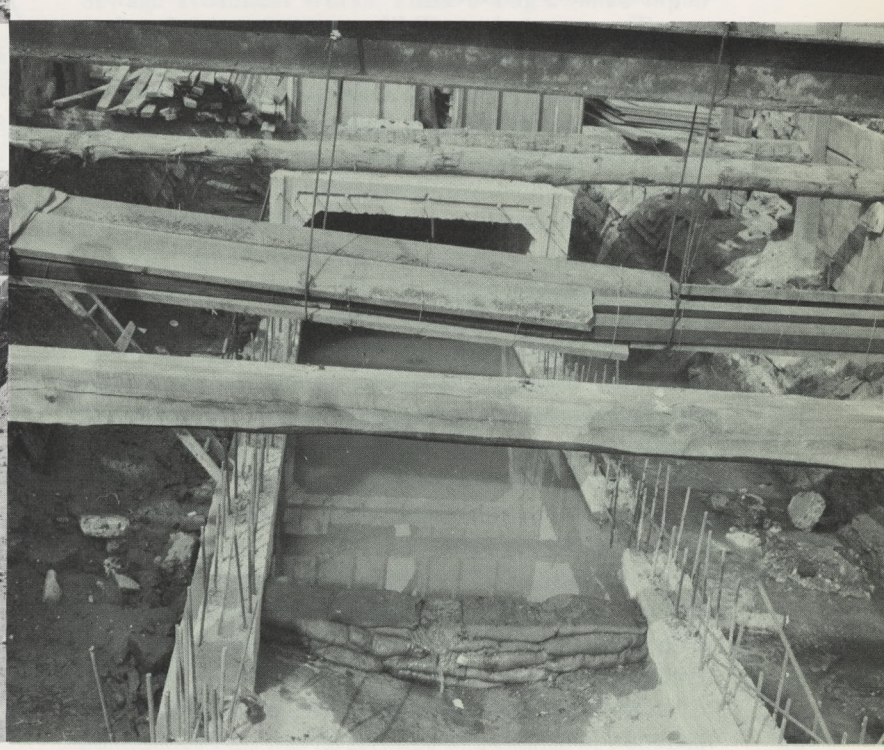
For Sanitation: Sewers were built in some older neighborhoods to replace cesspools or to correct other insanitary conditions. The sewer above was built in Pattison Avenue.

For Replacement: Deterioration of old sewers is a continuing challenge. More than 10 miles of old sewers were replaced in 1962, including an 85-year-old sewer in Lena Street.

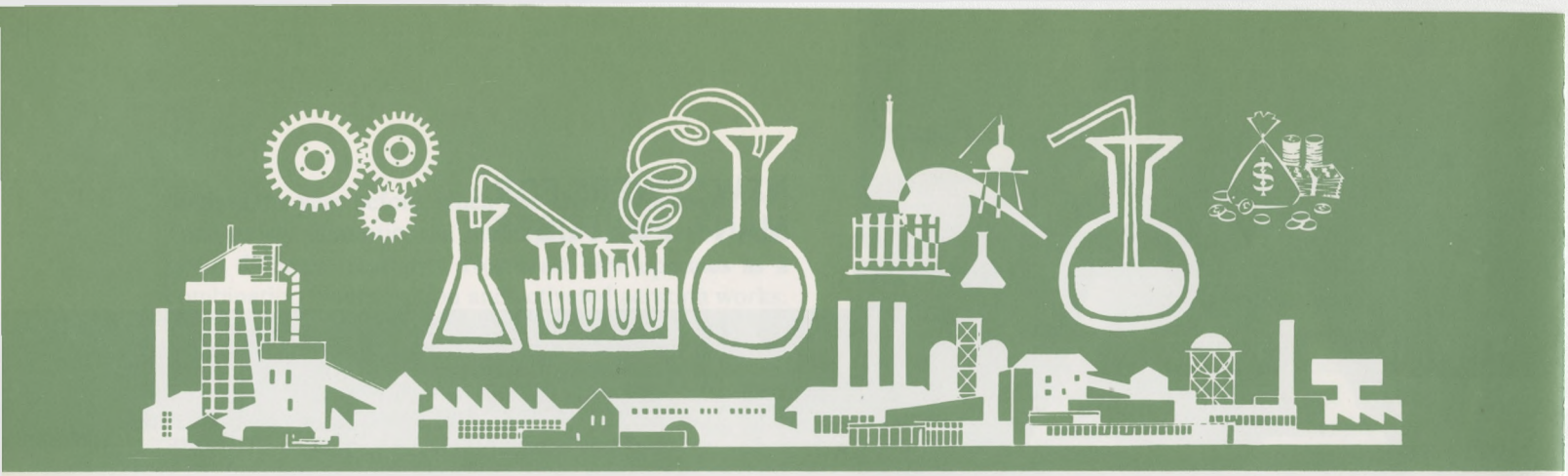
Dock Creek: Replacing an old stone arched sewer built more than 100 years ago, a new concrete box sewer emerged on the site of old Dock Creek.

New Culvert: Forming part of a drainage project to relieve insanitary conditions in the Northeast near Teton Road, a large storm water culvert went into service.





For New Housing: Twin concrete sewers were constructed in South Philadelphia to meet the needs of a U. S. Navy housing project. Sewers for new housing were built in many parts of the city.



the necessary reconstruction. This work was expected to begin in 1963 under a $1.7 million contract, which provides for a reinforced concrete box sewer, varying in size from 10 ft. x 10 ft. to 16 ft. x 18 ft. The new line will be linked to sections of the Mill Creek Sewer rebuilt to the south and east in 1957.

Reconstruction of that part of the sewer which runs from 53rd and Poplar Streets to 55th and Master Streets was also expected to get under way in 1963. Federal aid under the accelerated public works program would be available for this.

New Mingo Creek Station: Rapid progress was made on a new $1 million storm water pumping station to service Eastwick and the International Airport area. The new station, located on the west bank of the Schuylkill River just north of the Penrose Avenue Bridge, was expected to be in operation in 1963.

By December 31 the building was practically complete, and preparations were being made for installation of pumps and equipment.

The new station will lift storm water 10 feet from Mingo Creek into the Schuylkill River. Designed to pump 235,000 gallons of storm water per minute, it replaces an older station of 60,000 gallons capacity. The new station, which will operate automatically without need for personnel, will handle increasing storm flow as Eastwick gets new homes, streets, and industries.

SEWER MAINTENANCE

With so many aging sewers, the Water Department has given increasing attention to maintenance of the sewer network. Ten sewer maintenance crews are constantly on the job, cleaning, flushing, repairing, and inspecting 2,400 miles of sewers, besides literally thousands of inlets, manholes, laterals, small streams, and drainage rights-of-way.

The work of these crews has mounted in the past three years. In 1960 they performed 10,049 jobs, but in 1962 the jobs totaled 12,678; in 1960 they put in 14,486 working days, but two years later, 18,551 working days.

Much of the larger work load has stemmed from increased sewer inspection, intended to anticipate sewer breaks and to promote public safety. Thus in 1962 the crews inspected 33 miles of old sewers which were built between 1877 and 1884, and recommended that 10 miles of these sewers be reconstructed. In addition, the department continued its city-wide inspection of larger sewers, initiated in 1961. About 50 miles of such sewers, four feet or more in diameter, were examined.

During the year, maintenance forces repaired 45 sewer breaks, involving broken lengths up to 50 feet; rodded, cleaned, or flushed 7½ miles of sewers; and inspected and cleared 134 locations along rights-of-way. A portion of Byberry Creek was realigned and widened, as a flood control measure.

INDUSTRIAL WASTE CONTROL

Local industries did more than ever in 1962 to keep harmful industrial wastes from entering the city's sewers and the rivers. The many industries which had already installed waste treatment devices made more consistent use of these facilities to correct conditions in their plants.

This improved waste consciousness of industry resulted partly from the economic recession (making it more desirable to save by-products) and partly from the spot checks regularly made by the Water Department's industrial waste personnel.

For many years the department's personnel has provided local industries with technical advice on how to recapture some waste materials and to reduce the effects of other wastes. Most of the industries contacted have installed treatment or intercepting devices, which have helped to protect the city's sewer system and have resulted in economic savings for many of the industries themselves.

Despite lack of personnel, the department's small industrial waste control section stepped up its plant surveys in 1962, covering 140 plants compared with 94 the year before. The plants visited represented such varied manufacturing or processing fields as petroleum, chemicals, dyeing, meats, containers, electrical equipment, metals, foods, machinery, galvanizing, wool, alcohol, rubber and candy. Most of the plants were found to be intercepting or treating their wastes satisfactorily.

Management and Engineering Services

TOWARD BETTER MANAGEMENT

The modernization of water and sewer facilities would have little meaning without a corresponding improvement in management and engineering services. A wide range of modern services, from personnel management to accounting and from laboratory testing to engineering design, is essential to a well knit utility, moving with single and intelligent purpose.

To provide these services, the Water Department has made many changes in organization and procedures in recent years. The trend of these changes has been steadily toward more business-like practice, more management information, and greater planning in depth.

This reorganization, and the studies that go with it, continued in 1962, as the department undertook a comprehensive review of all its management activities. A special unit was set up to study departmental progress and procedures in policy formulation, organizational planning, program preparation and evaluation, cost analysis, staffing, executive development, standards and budget preparation. As the results of this study develop, various improvements will follow.

A number of management improvements—planned in advance of this study—got under way in 1962. They are noted in the pages that follow.

PERSONNEL IMPROVEMENTS

Reversing momentarily a downward trend of several years, personnel rose by 29 to 1,586. The upward turn was caused by the need to fill existing vacancies as well as to staff the water "shut-off" program.

The decline of personnel continued, however, in some phases of water operations. As already noted, 17 additional positions were eliminated at the Roxborough plants and 12 positions at two pumping stations. This decline, caused by modernization and automating of facilities, is part of a long term trend that is expected to continue in future years.

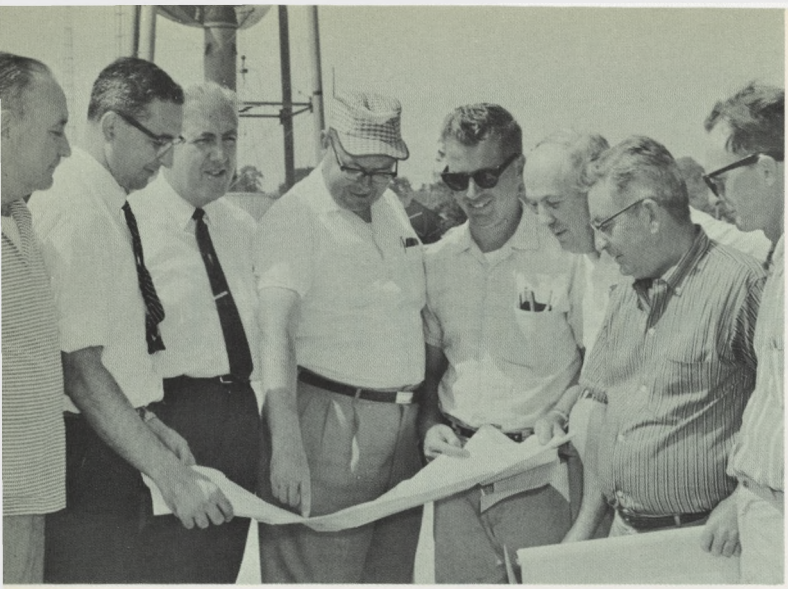
Turnover and Sick Leave: The personnel turnover rate in 1962 was 11.1%, an increase of 1.4% over the previous year. At the same time, sick leave usage increased from an average of eight days per employee to 9.3 days. Though understaffing of the personnel section may have had some influence on the sick leave control program, both the sick leave and turnover rates probably represent a normal oscillation from the lower levels of preceding years.

Despite the normalcy of the turnover rate, the recruitment of engineers was one of the department's more difficult problems. Partly this was due to overly competitive pay scales in private industry . . . partly to a need for more personnel to staff an accelerated public works program with Federal aid. To fill nine engineer and 16 public works inspector vacancies, the Water and City Personnel Departments mapped out an intensive recruitment drive for early 1963.

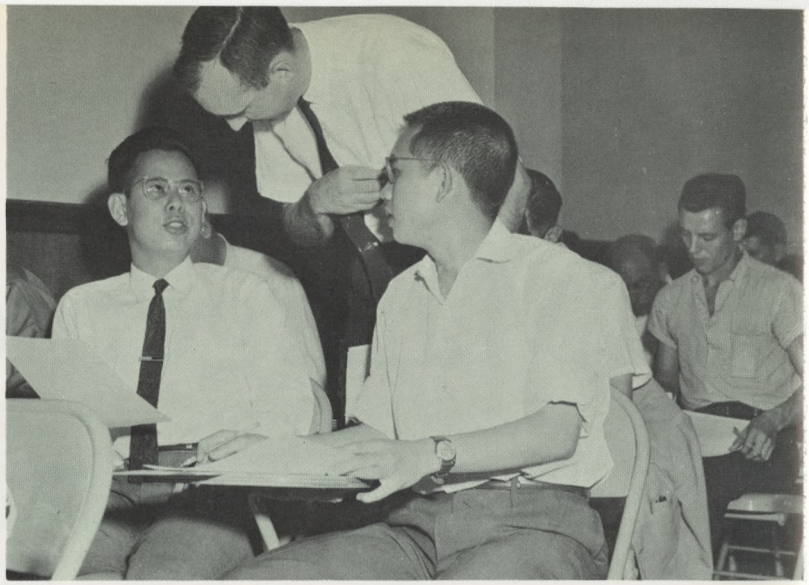
Training: Within the past four years, the Water Department has provided an increasing amount of specialized training for its employees. This training is necessitated by higher service standards, better laboratory control, increasing stream study, and more complex equipment in new plants.

During 1962, 30 employees took local college and high school courses related to their duties. Still other courses were given employees by outside organizations, such as the Engineers' Club, on advanced, technical subjects. Courses ranged from radiological water pollution to applied emission spectroscopy and from electronics theory to meter-and-gauge instrumentation. A basic course for water and sewage plant operators was given by Pennsylvania State University at the Torresdale Water Treatment Plant. In addition, the department conducted various in-service training courses, and continued its orientation classes for new employees. Nearly 300 employees received some form of training or orientation during the year.

Miscellaneous: Other personnel services remained mostly unchanged. The Employees' Recreation Asso-



Checking the Plan: Water Department field engineers kept an eye on more than 400 projects valued at $55 million. This was only one aspect of the department's extensive engineering work.



Training: The department kept its personnel abreast of technical advances. Above, two Vietnamese officials join personnel in a seminar conducted at the Torresdale Water Plant by Penn State University.

ciation provided a varied recreational program for its 900 members, and the departmental house organ broadened its coverage.

Employees contributed $27,653 to the annual United Fund campaign, and one employee—Miss Phyllis Kay Paden—was chosen "Miss United Fund Torch" of Greater Philadelphia by United Fund directors.

ACCOUNTING IMPROVEMENTS

To the many accounting improvements of past years the department added a new summary system for the recording of labor costs and time. The new system made it possible to standardize such records department-wide and to establish individual job cost records as needed.

This improvement was another step in the creation of accounting systems, records, and reports similar to those of the most modern utilities. Thanks to these changes, the department now has a pool of ready information for accounting studies and can make valid cost comparisons with other utilities.

Still another step in 1962 was the completion of the review and updating of 520,000 master meter cards. The two-year project, which involved collation of the meter cards with 520,000 water-sewer billing cards in the Department of Collections, required six million "sorts" on I. B. M. machines. With completion of this job, the Water Department promptly set up a second file—to give it two master meter files, one by address and the other by meter number.

The new meter files are expected to improve contacts between Water and Collections personnel on matters of billing, meter repair, and customer complaints, as well as to provide ready statistical data through quick machine runs.

In 1962 accounting personnel processed nearly $23 million of contracts for public works and $1.5 million for professional services. About 7,500 vouchers were handled, representing a total value of $62 million.

There were continuing studies by the rate section of water consumption patterns and the techniques for determining these.

PERSONNEL CHANGES

The most significant personnel changes in 1962 are listed below:

PROMOTIONS

William H. Shelton, from Civil Engineer III to Civil Engineer IV, 3/19/62.

Salvatore Barbieri, from Mechanical Engineer II to Mechanical Engineer III, 9/3/62.

Edward D. Bastian, from Chief, Sewerage Operations Division to Deputy Commissioner, Sewerage Operations Division, 10/1/62.

Alexander Tararskyj, from Electrical Engineer II to Electrical Engineer III, 12/24/62.

SEPARATIONS

Max Barofsky, Deputy Commissioner, Sewerage Operations Division, Retired—6/29/62.

Francis L. Craig, Mechanical Engineer III, Retired—3/6/62.

Louis Kusner, Electrical Engineer IV, Retired —6/13/62.

William S. Foley, Mechanical Engineer III, Deceased—11/25/62.

NEW APPOINTMENTS

Kenneth E. Pote, Mechanical Engineer III, 8/27/62.

SAFETY: A RECORD YEAR

An intensive safety education program—reaching back several years—paid off in 1962. The department achieved the lowest disabling accident frequency rate in its history.

This frequency rate (which measures the number of disabling injuries in relation to total man hours worked) was down to 14.1—a rate in line with the industry-wide average for water utilities. Starting at a high of 68.4 in 1955, the Water Department had gradually reduced its rate to 22.1 by 1959, but the rate bounded up to 25.9 in 1960 and 27.3 in 1961.

To tighten its safety education program, the department reorganized its safety committee structure early in 1962. By abolishing workmen's committees and placing full responsibility for safety on supervisors, the new arrangement did much to reduce the frequency rate for disabling accidents.

The new structure included: (1) A master committee, composed of key division chiefs with the safety officer as chairman, to pass on safety policy and expenditures, (2) a superintendents' committee, to oversee operational aspects, and (3) supervisors' and foremen's committees, to apply the safety program at the working level.

Not content with reorganization only, the department tightened the remainder of its safety program. Besides continued safety education for employees (weekly meetings with supervisors, contests for safety banners, emphasis on safety equipment, etc.), safety measures included the following:

1. A refresher course for operators of Water Department vehicles was continued at the Police Academy, with eight employees taking the course weekly during the early months of 1962. The course graduates had a somewhat better motor vehicle accident record (as a group) than did operators who did not take the course.

2. Seat belts for 100 vehicles and ladder guards for microwave towers and water tanks were ordered, and installation began in December.

ENGINEERING ACCOMPLISHMENTS

New challenges were presented to department engineers who plan, design, and construct water and sewerage facilities.

The biggest of these challenges was the need to accelerate the final phase of the current modernization program (1946-66).

With the passage of the Federal Public Works Act (P. L. 87-658) in September, 1962, large sums of Federal money became available for accelerated projects. The Water Department moved quickly to obtain grants for 20 projects, and by the end of the year the 20 applications had been filed in Washington. This quick action was made possible by the planning, scheduling, and design units, which worked many extra hours to prepare the projects, previously scheduled for future years, and to integrate them with current programs.

This disciplined response of the department's engineers—carried out in the face of a severe personnel shortage—was partly the product of a decade of wrestling with complex modernization problems. The engineer, whether engaged in planning, design, construction, operations, sanitation, or research, has been the moving element in the great leap forward of Philadelphia's water and sewerage systems.

Although the bulk of this annual report reflects the intense engineering activity during the year, certain aditional features will be noted briefly:

Design: Personnel engaged in design had fallen from 133 to 90 in four years, but the Design Branch managed to prepare plans, specifications, and estimates for $23.3 million of projects which were advertised in 1962. These included 20 miles of sewers, 41 miles of water mains, and four sedimentation tanks at the Northeast Sewage Treatment Works, together with many other improvements at water and sewage plants, pumping stations, and miscellaneous facilities. Because of the personnel shortage, the preparation of $4.5 million of old sewer reconstruction projects had to be let to outside consultants.

Construction: Under the watchful eyes of construction engineers and inspectors, 316 projects, valued at more than $24 million, were completed in the field. Most of the 163-man construction force also oversaw the advancement of 96 other field projects with a contract limit of $30.4 million. Work was done on 67 return plans and 25 preliminary surveys.

Planning: The new water and sewer systems planning unit made long strides during the year. This unit, which brings together the department's planning engineers, was formed late in 1961 to develop a comprehensive, integrated plan for the water distribution and sewer systems.

In 1962 the new planning unit studied the water distribution needs of the entire area west of the Schuylkill River, projecting new water mains, pumping and storage facilities, for the next 25 years. It made similar studies of major sewer systems, such as Mill Creek and

For Safer Climbing: The safety program was tightened as installation of a new safety device began at microwave towers and water tanks. Attaching himself to a sliding piece which rode on a pipe-like rail with fall-breaking notches, the climber could be much safer.

Safety Education: No means was overlooked to impress safety on employees — even to the lettering of the safety unit's car. One result: A great improvement in the safety record.

Reed Street, to determine future replacement and expansion needs.

Materials Testing: Despite greatly outmoded quarters—soon to be replaced—the Materials Testing Laboratory handled more samples and made more tests in 1962 than in a number of years. The laboratory received nearly 3,300 samples and made 33,502 physical and chemical tests.

The small staff of fourteen made these tests not only for the Water Department but also for other City departments, thus ensuring good quality merchandise for the millions of dollars spent by the municipality on a wide variety of products.

The tests covered coal, oil, metals, roofing materials, paints, cement, paper, wood products, ink, food, chemicals, soaps, insecticides, and many other items.

A number of technical but original research papers were prepared by laboratory personnel in an effort to improve testing methods.

SERVICE FOR THE CUSTOMER

Many more water customers turned to the department for special services during the year. One reason for this was an increase in the efficiency of such service.

With reorganization of the Customer Service Section in 1961, all complaints and requests from the public began to flow to one centralized unit. Thus by 1962 the section was receiving more service requests, making more inspections, and initiating more corrective actions than ever before.

With a "round the clock" service desk, manned by trained personnel, Customer Service was able to respond to calls 24 hours daily. In 1962 it received more than 126,000 telephone calls, sent out 11,000 pieces of mail, and got more complimentary letters than in any previous year. More than 74,000 field inspections were made, compared with 66,000 in 1961.

The calls, covering a wide range of subjects from leaking meters to flooded basements and from low water pressure to main breaks, were handled as promptly as possible. Field inspectors were dispatched to trouble spots, or suitable information was obtained for inquirers. When necessary, other departmental units were called into action to pump out basements, repair meters, flush out mains, or otherwise aid householders.

Customer Service personnel also worked closely with the City Department of Collections, obtaining much information for billing purposes. During the winter months, the section's mobile inspectors served as the eyes and ears of the City's weather emergency service.

Service to Boys: Employees took part in many forms of community service. One employee (above) got Scouting's "District Distinguished Service Award" for organizing Boy Scout troops.

Chess Champs: The Department's chess team captured the championship of the Philadelphia Chess Association's Industrial League, winning seven straight matches.

BUSY EMPLOYEES

Water Department employees busied themselves with many extra activities, some of them aimed at helping the community, others intended to improve the pleasantness of work for fellow employees.

Community Service: "Miss United Fund Torch" of 1962 was a young engineering employee of the Water Department. She was in the forefront of the United Fund campaign in Greater Philadelphia.

Newspaper: "The Water Department News," written by employees for employees, made further improvements in content and appearance. It kept employees in touch with one another and with management.

Recreation: A Swimming Club was only one of many recreational activities conducted by the Employees' Recreation Association for its 900 members.

National Recognition: Four thousand persons attended the American Water Works Association's biggest national convention on June 17 - 22 in Philadelphia. Scores of exhibits (above) and Secretary of the Interior Stewart L. Udall (below) were among the attractions. More than this, however, Philadelphia had a chance to show off its modern water system.

Public Information: The Water Department informed the public of its activities in many different ways in 1962. There was a steady stream of articles in daily newspapers and engineering magazines; a miniature newspaper, "Water Notes," was mailed with water bills to several hundred thousand customers; exhibits and free brochures reached the curious; and members of the press were taken on tour of department facilities.

$1 Million Pumping Station For Eastwick

A million dollar storm water pumping station to service the new Eastwick community is nearing completion on the west bank of the Schuylkill River just north of the Penrose Bridge.

Work on the station, begun about a year ago, again is expected to be completed in late fall, and the station in operation by the end of the year, according to the Araco Construction Company, Inc.

Samuel S. Baxter, Water Commissioner, said the new facilities is intended to relieve the existing Mingo Creek Pumping Station.

Sewer Project In Final Stage

Work to Start on Last Interceptor

Water Commissioner Samuel S. Baxter said today that work on the last of the city's interceptor sewers designed to stop the dumping of raw sewage into the Delaware River and the Schuylkill, will start next month.

He said the mile-long sewer, along the east bank of the Schuylkill, will be constructed under 26th st. between ...

Phila. Water Supply Adequate Despite Drought, Baxter Says

Delaware River Water Supply Future Studied

Five public agencies will begin a study Wednesday ... mine if the Delaware ... provide suffi...

Radio Watches Water System

Department Tells of Electronic Network

A microwave network ... stands over the city's pump... stations, reservoirs, ma... water tanks is d...

Water Engineers To Convene Here

The American Water Works Association will open its 82d annual conference at Con... tion Hall here on Sunda... Water Commissi... S. Baxter, chai... arrangeme... more...

Sees No Problems Arising

Philadelphia has more than enough water to ... desir...

A Myth Pffts: Our Water's Fine

By JOSEPH DAUGHEN

Chlorine Cocktails and Schuylkill Punch are all water over the dam now. The experts came, sniffed, tasted and rendered their judgment. The verdict: Philadelphia's water is as good as any in the nation.

This may come as a shock to citizens long reconciled to grumbling ... guzzling ... Laws ... the gul... of our ... ladel...

TASTE TEST of Philadelphia's water is taken by Secretary of the Interior Stewart Udall (right) at Commercial Museum. Water Commissioner Samuel Baxter pours. Said Udall: "It tastes fine."

Daily News Photo by Joey Adams

River Clean-Up Enters Last Phase

Philadelphia's river clean-up program is entering its last phase, Water Commissioner Samuel S. Baxter said recently.

Baxter stated that work will start in a month on the last interceptor sewer to be built on the east bank of the lower Schuylkill River. The new concrete sewer, more than a mile long, will be constructed under 26th st. from a right-of-way in a former portion of Shunk st. to Penrose av.

Pointing out that Philadelphia ... 55 miles of large inter... past 10 years to ... way from the ... treatment ...

me," said Thomas G. Dolan, of Sayreville, N. J. "Of course, Philadelphia is a bigger city than my home town, so there ... problems. I person... that comes out ... there's ...

worth a burned tongue to get thirsty. "Your water's of a high quality, now," he said.

At this point one wag interrupted the informal survey to inquire what was going on. He, too, was asked what he thought of the end ... of our filter plants. ... kish air, he an... know. I've ...

Philadelphia's Third Push-Button Plant has $9-Million Price Ticket

The 54-year-old Belmont plant will be modernized with up-to-date water treatment equipment and automatic and semi-automatic controls

TRUCTION OF PHILADEL... third semi-automatic water ... plant has been initiated. Five ... approximating $9 million, ... awarded for the moderniza... 54-year-old Belmont Plant. ... serves the entire area west ... lkill River. ... will require ... ct will require ... n. The ... filt...

Plant will have new units

The new edifices, covering ... square feet, will inclu... Chemical ... with ... enter... struct... dom... we... ge...

filter beds. It will hold 150,000 gallons. Retained from the old plant will be ... two pres... hold 72 ... building ... ment's ... section. ... has bee... tion; a... which ... sand ...

City to Expand Sewage Plant

Contract Let for Five Giant Tanks

The first phase of the planned enlargement of the Northeast Sewage Treatment Plant to increase its daily capacity from 125 to 175 million gallons daily will be started next month, Water Commissioner Samuel ... a $2,864,442 con... to the ... by the end of 1963.

Mill Creek Sewer Job OKd

Collapsed Section To Be Rebuilt by '64

Reconstruction will be started this spring on a half-mile section of the old Mill Creek sewer, which caved in last July killing three persons.

Water Commissioner Samuel S. Baxter said a contract for $1.7 million project has been awarded to Buckley & Co. ... is expected to be com... by the end of 1963.

City to Replace Old Brick Sewer

An 87-year-old brick sewer under Germantown av. from ... Haines st. to Tulpehocken st. will be replaced by one of reinforced concrete starting Monday.

Water Commissioner Samuel S. Baxter said replacement of the old sewer under the terms of a $205,000 contract can't be delayed any longer since ... sewer has been an ... source of trouble. ... He said the ... be troll...

Financial Progress

CURRENT FINANCE

The Water Department's financial outlook, which was strong at the close of 1961, grew stronger in 1962. This stemmed from two basic factors:

1. An upward revision of water and sewer rates by a combined average of 16.6% on January 1, 1962, and

2. A stepped-up drive by the Water and Collections Department to collect delinquent water and sewer bills—a drive that included shutting off the water of customers who refused to pay.

The new rates, which greatly increased departmental revenues, were expected to meet all foreseeable operating and debt service charges through 1965. As a result, no further increase in rates would be necessary for at least four years, and the department would be able to continue modernizing the water and sewer systems despite rising costs.

The increasing tempo of actual water shut-offs, amounting to 12,776 in 1962, was a key factor in the growth of revenues. Several thousand customers settled their back bills when asked, while most of those whose water was turned off eventually made settlement. The $6,066,000 realized from back payments more than compensated the Water Department for its $115,067 physical portion of "shut-off" expenses. (The Department of Collections incurred some expenses.) Back payments also more than offset somewhat lower current collections than had been expected.

Water Fund: Water Fund income from all sources totaled $22,883,000—an increase of $2,824,000 over 1961. Most of this increase (about $2,584,000 of it) resulted from water sales, which accounted for 88% of the year's income. Other income rose $240,000.

Despite sharp cutbacks in 1961, Water Fund obligations totaled $21,351,000 in 1962, or $911,000 more than the previous year. Among the larger expenditures, materials and supplies ($3,197,000) were $628,000 higher, debt service ($7,261,000 or 34% of 1962's outgo) was $348,000 more, and payments to the General Fund ($1,702,000) rose $66,000. Notwithstanding this over all increase, 1962 outgo ran $1,531,000 under income, as planned in the department's four-year rate program.

In budgetary terms, total Water Fund income exceeded revised budget estimates by $322,000. Current water sales, totaling $16,792,000, accounted for 96.9% of the revised estimate, while "past due" water sales amounted to 126.8% of the revenue estimate, bringing in $3,270,000. In consequence, total water sales (current and past due) were $155,000 above estimates.

The department's total obligations for the year fell $564,000 short of the available appropriations. Partly accounting for this difference were a $175,000 cut in capital budget financing and a $166,000 addition to surplus from the merger of prior years' encumbrances.

As a result, the Water Fund closed 1962 with a cumulative cash surplus of $3,164,000—an increase of $1,697,000 from the previous year.

Sewer Fund: Total Sewer Fund income—$17,279,000—was $1,277,000 higher than in 1961. Accounting for this change was an increase of $1,548,000 in sewer charges plus $96,000 in other income. The effect of the sewer charge increase was trimmed slightly when the department got only a partial payment of $367,000 in State aid. This was $234,000 less than the State aid estimate.

Sewer Fund outgo totaled $15,765,000 or $150,000 more than the previous year. Debt service, totaling $10,222,000 (or 65% of 1962 outgo) was $284,000 higher, but this was partly offset by a $275,000 reduction in capital budget financing. Other forms of expenditure rose, notably the purchase of services, $133,000; interfund charges to the Water Fund, $113,000; and miscellaneous, $58,000. These increases were only slightly offset by an $83,000 drop in revenue collection costs and $12,000 in equipment.

CAPITAL ACTIVITY – 1962

	Water Works	Sewer Works	Storm Flood Works	Total
Capital contracts encumbered January 1, 1962	$17,165,939	$ 9,554,600	$4,282,258	$31,002,797
Add: Capital work put under way in 1962 (net)	9,266,933	14,396,031	19,157	23,682,121
Total: Net capital activity in 1962	$26,432,872	$23,950,631	$4,301,415	$54,684,918
Less: Capital expenditures in 1962	9,931,683	12,458,496	3,449,759	25,839,938
Capital contracts still encumbered December 31, 1962	$16,501,189	$11,492,135	$ 851,656	$28,844,980

In budgetary terms, sewer income exceeded the revised budgetary estimates by $411,000. Collections of current sewer charges fell $171,000 below the budget estimate, but collections on past billings exceeded the budget estimate by $602,200. As a result, total sewer charges were $431,000 more than the estimate (or 103% of it).

The unreceived $234,000 in State aid (which will be paid in 1963) was more than offset by the $431,000 excess in sewer charges and the $213,000 excess in other revenues over estimates.

A $275,000 cut in capital budget financing helped to keep obligations $543,000 below available appropriations. Partly responsible too was the addition of $80,000 to surplus from the merger of prior years' encumbrances. Sewer Fund outgo in 1962 was $1,513,000 below income, as planned in the four-year rate program.

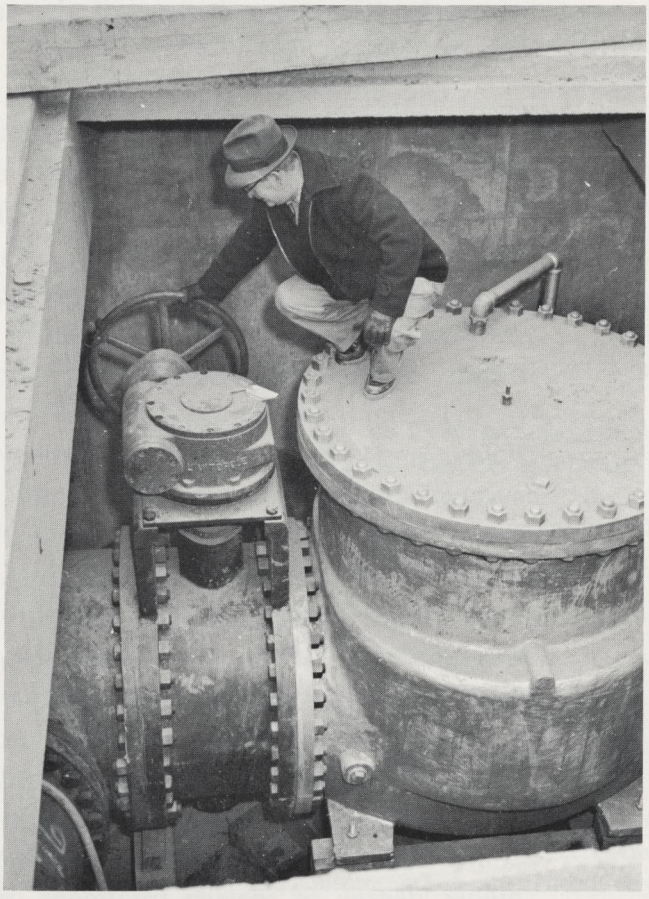
In consequence, the Sewer Fund ended 1962 with a cumulative cash surplus of $4,479,000—an increase of $1,593,000 over the year 1961.

CAPITAL FINANCE

The Water Department's "net capital activity" (all contracts encumbered on its books less recredits on those completed) jumped to $54,685,000. This was nearly $7 million higher than in 1961 and $17 million higher than in 1960. The increase reflected in part the accelerated public works program approved by the Federal Government. Sewer works rose by $6 million and water works by $2 million, while storm flood "activity" dropped $1 million.

To the $31,003,000 of capital projects on its books at the beginning of the year, the department added $23,682,000 of new net capital commitments during the year. These additions, drawn from the 1961 and 1962 capital budgets, included $9,267,000 in water projects, $14,396,000 in sewer projects, and $19,000 in storm flood works. This was $5,400,000 less than was put under way in 1961. The new Belmont Water Treatment Plant and the Wakeling Street Storm Relief Sewer accounted for $12,418,000 of 1962 net capital activity.

The department expended $25,840,000 on capital projects under way, and it ended the year with $28,845,000 in capital projects encumbered on its books.



This giant altitude valve was but a small part of the intricate underground pipework and controls built during the year at the new Belmont Water Treatment Plant.

Conclusion:
A Look Toward the Future

OUR management and personnel are grateful for the approbation which has come to the Water Department because of departmental accomplishments since 1952. We are aware, however, that resting on laurels is a dangerous thing, and that the way to look is ahead and not behind.

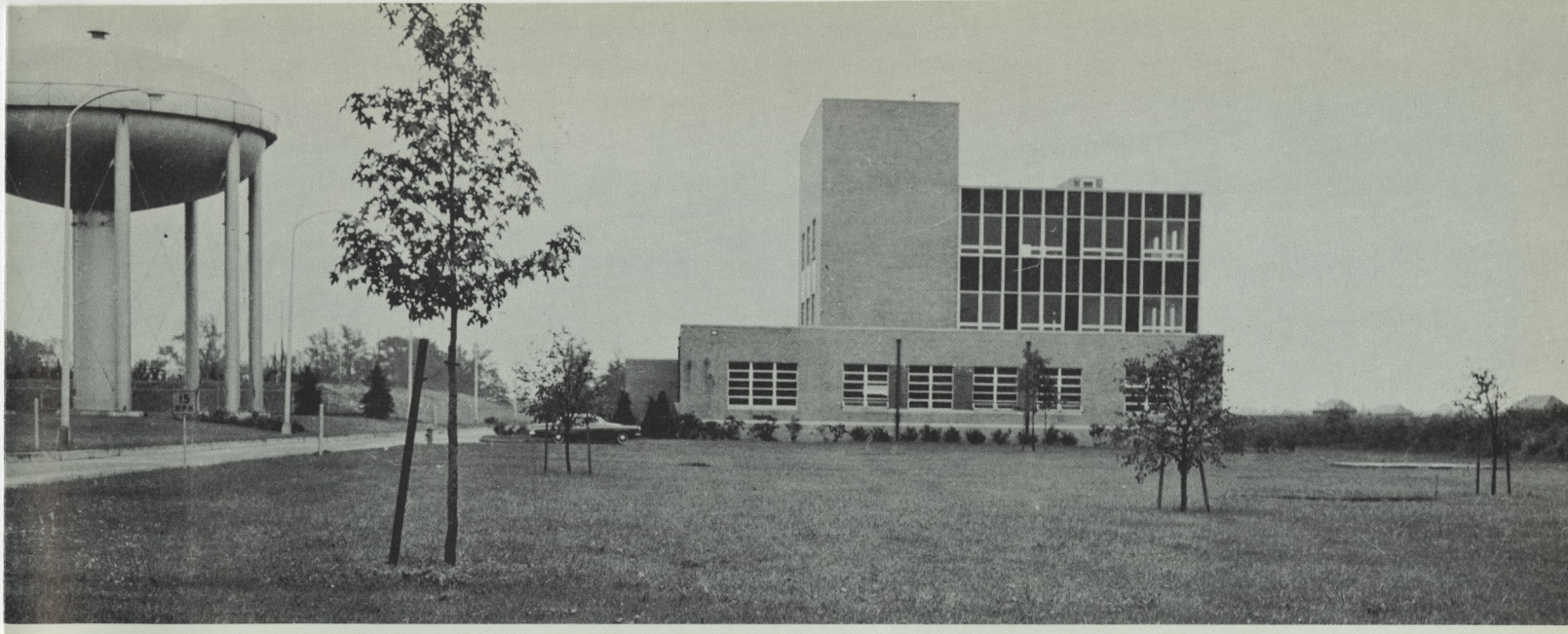
The past 11 years brought forth many projects which in most other cases would have been spread over a longer period. The completion of two new water treatment plants — one of them the largest "push-button" plant in the country — and the start of work on a third, might easily have been a lifetime of work. The same is true of the sewage works and of bold innovations like the microwave "intelligence" system.

The physical work of the years ahead will doubtless have less glamour than automated plants and electronic monitoring networks. Nevertheless the mammoth job of reconstructing old sewers, replacing old water mains, or cleaning and lining pipes, will be vital to the efficiency of the water and sewerage systems. There will be hundreds of miles of such lines to be reconditioned or replaced.

More than to physical modernization, however, we must now look ahead to problems of a different, but equally pressing, kind. These relate to inter-community cooperation, technological progress, and management.

Technology changes in the water and sewage works fields, as in many other fields, and this changing technology, coupled with increasing population, will surely bring new problems for water and sewerage utilities in the Delaware River Basin. These problems will require closer cooperation, not only with neighboring communities, but also with public agencies throughout the basin. Many steps have already been taken in this direction, and the new Delaware River Basin Commission, with its basin-wide responsibilities, is a symbol of the interstate and intercommunity ties that will continue to grow.

As a result of technological progress and more effective controls over distribution of Delaware River Basin waters, the Philadelphia Water Department may have to make further adjustments in future years. Changes in water treatment could come about through new discoveries in the field of public health, or a higher degree of sewage treatment may be required. One result would be that Philadelphia would have to expand some of its capital facilities further. There may also be joint projects with other public agencies.



From the standpoint of the Water Department, however, the dark cloud in the sky ahead is not the complexity of the technological problems, nor the mutual understandings required in intergovernmental cooperation, nor even the problems of finance. These can be solved.

The problem is rather in the field of personnel. Can we attract and hold enough skilled professional people to solve the problems and do the work?

With much of its physical modernization out of the way, the Water Department can give increasing attention to improvements in management, organization, maintenance, and operation — improvements that should result in better service and lower costs. But such improvements mean nothing without qualified personnel.

Due to rapid technological advance, the future will require sanitary and other engineers with far more training and knowledge than are possessed by those working today. It will require men and women in the physical and biological sciences, as well as mathematicians, who will know how to program and use modern computers. It will need persons with fuller training and experience in modern management methods.

Philadelphia has come a long way in recognizing its Water Department as a modern utility, providing essential services for the community. If these services are not to slip backward to where they were a few decades ago, all of the necessary elements of a modern, progressive utility will have to be continued. Since trained and skilled manpower is the root of all progress, the recruitment, training and retention of this manpower will be the most essential of these elements for years to come.

SAMUEL S. BAXTER
Commissioner

USE OF CHEMICALS IN TREATMENT

	Lbs. 1961	Lbs. 1962
ALUM	18,226,729	25,439,197
CHLORINE	8,815,700	9,820,242
LIME	8,655,936	8,990,789
SODIUM HEXAMETAPHOSPHATE	759,877	669,178
FLUORIDE	894,548	830,129
SODIUM CHLORITE	121,042	88,455
CARBON	399,375	982,936
COPPER SULPHATE	105,892	31,648
SULPHUR DIOXIDE	10,092	35,653
EXPERIMENTAL CHEMICALS	170,161	137,968
	38,159,352	47,026,195

Capital Projects 1962

WATER PLANTS AND DISTRIBUTION SYSTEMS

Major Projects Completed During 1962

		Cost
1.	Belmont Raw Water Pumping Station: Installing, connecting, and testing indoor type 13.2 KV, 3 ph. substation, etc.; landscaping.	$103,389
2.	Fox Chase Booster District: 20″ C.I. water supply main to Fox Chase booster tank in Cottman Ave., from Rising Sun Ave. to Hasbrook Ave., etc.	107,698
3.	Lardner's Point Pumping Station: Electric conduit and wiring for pump units in north house; install pumps 5 and 6 piping—north house; furnish all labor and expense necessary to check and calibrate two ammeters and also to check and adjust thermal relays on pumps 5 and 6 to station facilities.	153,928
4.	West Oak Lane Pumping Station: General construction and app. work; furnish and install., etc. indoor unit type 13.2 KV/440 V. 3 ph. substation, etc.	313,635
5.	Distribution System Rehabilitation: 30″ supply main for Food Dist. Center in 7th St. from Packer Ave. to Oregon Ave., etc.	466,000
6.	Distribution System Rehabilitation: Academy Rd. from Red Lion Rd. to Willits Rd.	452,715
7.	Distribution System Rehabilitation: Old Hartwell Lane from Wissahickon Creek to Cherokee St.	198,645
8.	Cleaning and Lining 60″, 48″, 36″, 30″ and 24″ C. I. & steel water mains in various sections of city.	223,871
9.	Distribution System Rehabilitation: Construction of 48″ water main in 13th St., Buttonwood St. to Green St.	203,150
10.	Distribution System Rehabilitation: Washington Lane from Chew Ave. to Crittenden St.	109,501
11.	Cleaning and Lining 12″, 10″, 8″, and 6″ C. I. water mains in various locations in city.	209,211
12.	Cleaning and Lining 20″ and 16″ C. I. water mains in various locations in city.	350,000
13.	Reinforcing Mains: 36″ concrete main in Bustleton Ave. from Verree Rd. to Tomlinson Rd.	120,907

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

			Limit of Contract
1.	W-1101 to -60 W-1296 to -98	Belmont Filter Plant Rehabilitation: General construction; filter equipment; electrical system; heating and ventilating system; plumbing system; elevated steel wash water tank; also alterations, lighting and power, plumbing, heating and ventilating for Quality Control Bldg.	$10,249,800

2.	W-977 W-1027 -29-30 W-1166 to -68	Fairhill Pumping Station: Conversion for Materials Testing Lab., general construction, mechanical construction, electrical, plumbing; steam heat and exhaust system for test. lab & pumping station.	775,500
3.	W-672 W-754 W-1148	Lardner's Point Pumping Station: Rehabilitation of station—installation of a lighting system and ventilating fans, and two new steam boilers; removing heating system from demolished center house.	324,000
4.	W-947 W-949 W-978	Queen Lane Filtered Water Pumping Station: Furnish, install, & test 3 centrifugal pumps, complete with motors, controls, wiring, structures, pumps and piping, power lighting and controls.	570,000
5.	W-131	Fox Chase Booster District: 1.5 MG elevated water storage tank, at former Shelmire Ave. (NES) 1021′ NW of Central Ave. 99% completed	630,000
6.	W-722 W-1187 W-1254 W-1312 1313	Torresdale Filter Plant: Landscaping; general construction in connection with conversion of slow sand filters; electrical system in connection with conversion of slow sand filters; slip ring and brush assemblies for cathodic protection system for underwater steel structures in flocculator and sedimentation basins; furnishing and erecting chain link fence between fish hatchery grounds and filter plant.	2,054,100
7.	W-925-D	Water Main: 36″ main from Queen Lane Plant to Roxborough Filters, section 3 in Henry Ave., to Port Royal Ave., etc. 99% completed	735,000
8.	W-1156-D	Cleaning and lining 48″, 36″, and 24″ C. I. water mains at various locations. 60% completed	270,000
9.	W-1157-D	Cleaning and lining 20″ and 16″ C. I. water mains at various locations. 85% completed	260,000
10.	W-1265-D	Relay of twin 30″ steel water mains in Silverwood St. from Domino Lane to approx. 54′ SE of Paoli Ave. 3% completed	220,000
11.	W-1185-M	36″ main in Red Lion Rd. from Decatur Rd. to the Roosevelt Blvd. 99% completed	320,000
12.	W-1219-M	36″ concrete reinforcing main in Red Lion Road from Roosevelt Blvd. to Bustleton Ave. 80% completed	335,000

SEWAGE TREATMENT WORKS AND SEWERS

Major Projects Completed During 1962

		Cost
1.	Northeast Sewage Treatment Works: Steel doors in machine shop building; new roofing for garage building; removal of existing low voltage marble switchboard installation in transformer bldg. and its replacement; reconditioning of administration bldg.; replace mechanical equipment in grit channels 5, 6 & 7 and replace screens and conveyors; replace chains, sprockets, flights and	$ 462,831

	install new shafts & collars; repair electromatic air filter at blower bldg.; transportation & disposal of digested sludge from Municipal waste treatment processes, recondition locker bldg.; resurface walkways at grit chamber & sludge storage tanks; plumbing —locker bldg.; lighting and heat control wiring—locker bldg.; overhauling no. 4 & 5 lift pumps in the raw sewage pump station.	
2.	Lower Schuylkill East Side Intercepting System: Sewer and chamber in Passyunk Ave., from 130′ W. of Vare Ave. to Dover St.	309,379
3.	Lower Schulykill West Side Intercepting System: Sewer in R/W of 60th St. branch of PB & W.R.R. from 67th St. to R/W of Chester Br. of Reading Co. and in R/W of Chester Br. of Reading Co. from 60th St. Br. of PB & W.R.R. to 56th St.	1,302,000
4.	Sewer: Stratford Dr. from 110′ north of Darlington Rd. to Beth Drive, etc., including grading.	191,013
5.	Sewer: Penrose Ave., Railroad Prop. and City Prop. from 725′ west of 26th St. to Pattison Ave., etc. incl. intercepting chamber.	814,517
6.	Sewer: D/R/W from Welsh Rd. (160′—NW of Wynmill Rd.) NE to Kismet Rd., etc. incl. grading.	153,537
7.	Sewer: Teton Rd. from Vinton Rd. to cul-de-sac 206′ SE to Vinton Rd., etc.	195,989
8.	Sewer: 20th St. from Pattison Ave. to Geary St., Hartranft St. from 20th St. to Broad.	363,347
9.	Sewer: Laramie Rd. from Welsh Rd. to Kismet Rd., etc. incl. grading.	117,277
10.	Sewer: Decatur Rd. from D/R/W (S. Br. Byberry Creek) to Red Lion Rd.; Red Lion Rd. from Decatur Rd. to Academy Rd.	382,614
11.	Sewer: Red Lion Rd., from E. Keswick Rd. to Knights Rd., incl. grading and bridge.	178,060
12.	Sewer: Pattison Ave. from 11th St. to Broad St.	122,462
13.	Sewer: In D/R/W from south branch Byberry Creek intercepting sewer to Drummond Rd., etc., incl. water mains.	194,178
14.	Sewer: In D/R/W from south branch Byberry Creek intercepting sewer; also also water mains in Darnell Rd., etc.	115,221
15.	Reconstruction of Sewer: Oregon Ave. from bulkhead line at Delaware River to Front St., Front St. from Oregon Ave. to Porter St., etc.	1,912,619
16.	Reconstruction of Sewer: Midvale Ave. from Schuylkill River to Ridge Ave., Ridge Ave. from Midvale to Indian Queen Lane and Indian Queen Lane from Ridge Ave. to 18′ NE.	174,610
17.	Reconstruction of Sewer: Germantown Ave. from Haines St. to Tulpehocken St.	183,731
18.	Reconstruction of Sewer: Mill Creek Sewer in 46th St. from 33′ north of Market St. to 120′ NW of Haverford Ave.	964,464
19.	Reconstruction of Sewer: 6th St. from Clearfield St. to Cambria St.	127,568
20.	Reconstruction of Sewer: Corinthian Ave. from Fairmount Ave. to DE 131′ south of Girard Ave.	109,277
21.	Reconstruction of Sewer: 13th St. from Thompson St. to Montgomery Ave.	149,669
22.	Reconstruction of Sewer: Dock St. from Delaware Ave. to Chancellor St., etc.	381,042
23.	Reconstruction of Sewer: Lena St. from Church Lane to Armat St., etc.; water mains in Armat St. from Lena St. to Kenyon.	293,917
24.	Reconstruction of Sewer: Cumberland St. from Bodine St. to 5th St., etc.	230,174
25.	Reconstruction of Sewer: 21st St. from Naudain St. to Federal St.	209,364

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

			Limit of Contract
1.	SD-273-SW	Lower Schuylkill East Side Intercepting System: Intercepting sewer in 26th Street from R/W (formerly Shunk St.) to Penrose Ave. 49% completed	$ 900,000
2.	SD-323-NE SD-324-NE SD-341-NE SD-342-NE SD-345-NE	Northeast Sewage Treatment Works: Additions and modifications for aeration and final settling tanks and all appurtenances; replacement of 7 exist. grit elevators and grit conveyors; furnish and install motor control center, exposed and underground electrical conduit and wiring systems; transportation and disposal in the Atlantic Ocean of digested sludge; demolition of old sedimentation tanks and chimney.	3,621,500
3.	S-3075-A	Belgreen Rd. from Dunks Ferry Rd. to Wyndom Rd., etc. 5% completed	197,000
4.	S-2694-BD	Sewer in Grant Ave. from Frankford Ave. to 221′ east of the Roosevelt Blvd. 99% completed	475,000
5.	S-2710-E	2300 KVA 13.8 KV-550 V. 3 ph. substation, wiring, lighting, heating and ventilation at Mingo Creek Stormwater Pumping Station. 70% completed	200,000
6.	S-2731-E	General construction, mechanical equipment and piping at Mingo Creek Stormwater Pumping Station. 73% completed	765,000
7.	S-3023-I	Norcum Rd. from Comly Rd. to Red Lion Rd., etc. Grading in Red Lion Rd. from Roosevelt Blvd. to Norcum Rd. 15% completed	395,000
8.	S-2956-R	Mill Creek Sewer from 50th St. & Brown St. to 53rd & Poplar St. 1% completed	1,700,000
9.	S-3001-R	Construction of intercepting manhole, tide gate chamber and appurt. sewer across Deleware Ave. on line of Canal St. from Penn St. to Beach St. 2% completed	185,000
10.	S-3039-R	Sewer: Lancaster Ave. (NE Sd) from 48th St. to 50 St. 90% completed	105,000
11.	S-2873-RD	Sewers and water mains in Arch St., 5th to 10th Sts. 88% completed	400,000

STORM FLOOD RELIEF

Major Projects Completed During 1962

		Total Cost
1.	Wakeling St. Relief Sewer in Van Kirk St. from Edmund St. to 20′ NW of Charles St.	$1,686,942

Under Construction at Year's End

			Limit of Contract
1.	S-2842-FD	Wakeling St. Relief Sewer in Wissinoming Park in North Cedar Hill Cemetery and in Benner Street. 92% completed	$2,415,000

Brief Financial Statement/Water System

BALANCE SHEET

ASSETS AND OTHER DEBITS

	December 31 1962	1961
Utility Plant		
Utility Plant in Service	$222,819,353	$216,260,442
Construction Work in Progress	5,313,467	1,621,800
Unexpended Construction Authorizations	23,367,410	26,684,298
	$251,500,230	**$244,566,540**
Current Assets		
Cash	$ 4,716,090	$ 2,977,635
Accounts Receivable:		
Customers, for Utility Service	6,051,181	7,438,861
Other	171,176	167,131
Estimated Uncollectible Receivables	(2,983,839)	(3,333,103)
Materials and Supplies at Standard Cost	1,366,612	1,181,254
Advances to Other Municipal Funds	167,746	274,727
Prepaid Expenses	319	26,325
	$ 9,489,285	**$ 8,732,830**
	$260,989,515	**$253,299,370**

LIABILITIES AND OTHER CREDITS

Long Term Debt and Other Credits		
Bonds Payable	$101,678,232	$ 92,442,789
Sinking Fund Assets	(2,299,522)	(1,953,076)
Bond Authorizations Unissued	11,260,000	18,610,000
	$110,638,710	$109,099,713
Excess of Utility Plant and Fund Accounts over Long Term Bond Commitments	140,861,520	135,466,827
	$251,500,230	**$244,566,540**
Current Liabilities		
Accounts Payable	$ 450,385	$ 526,208
Payroll Accrued	139,079	107,008
Overpayment of Revenue	122,617	144,304
Advances from Other Municipal Funds	821	402,797
	$ 712,902	**$ 1,180,317**
Surplus and Surplus Reserves		
Reserves for Commitments	970,726	687,375
Surplus:		
Invested in Materials and Supplies	$ 1,366,612	$ 1,181,254
Estimated Collectible Receivables	3,238,517	4,272,888
Available for Appropriation	3,200,528	1,410,996
	$ 7,805,657	$ 6,865,138
Total Surplus and Surplus Reserves	$ 8,776,383	$ 7,552,513
	$ 9,489,285	**$ 8,732,830**
	$260,989,515	**$253,299,370**

Brief Financial Statement/Water System

Statement of Income and Surplus

	For the Year Ending December 31	
	1962	1961
Operating Revenues:		
Metered Sales	$18,486,190	$16,178,025
Municipal and Other Metered Sales	561,944	534,214
Public Fire Protection	775,266	782,148
Other Operating Revenue	631,586	1,014,678
Total Operating Revenue	**$20,454,986**	**$18,509,065**
Operating Revenue Deductions:		
Operating Expenses, other than Maintenance	$ 7,548,382	$ 8,155,430
Maintenance	3,366,077	3,094,370
Total Operating Expenses	$10,914,459	$11,249,800
Charges in Lieu of Depreciation	5,264,485	5,058,421
Total Operating Revenue Deductions	**$16,178,944**	**$16,308,221**
Operating Income	4,276,042	2,200,844
Other Income	205,670	176,607
Gross Income	**$ 4,481,712**	**$ 2,377,451**
Income Deductions:		
Interest on Long Term Debt	$ 3,130,450	$ 2,975,082
Net Income or (Loss)	**$ 1,351,262**	**$ (597,631)**
Surplus and Surplus Reserves at the Beginning of the Year	7,552,512	8,680,403
Other Adjustments to Surplus (Net)	(127,391)	(530,259)
Total Surplus and Surplus Reserves at the End of the Year	**$ 8,776,383**	**$ 7,552,513**

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

INCOME: Source	Revised Budget(1) Estimate	Actual Receipts	Receipts Compared with Estimates	% Realized	Accrual Basis Income
Water Sales:					
Collections on Current Billings (with penalties)	$17,327,000(1)	$16,791,538	$(535,462)	96.9%	$18,486,190(2)
Collections on Past Billings (with penalties and interest)	2,579,000(1)	3,269,563	690,563	126.8	445,010
Total Sales of Water	**$19,906,000(1)**	**$20,061,101**	**$155,101**	**100.8%**	**$18,931,200**
Meter Installations (Water Fund—60%)	183,000	166,550	(16,450)	91.0	147,200
Miscellaneous Income	254,000	354,713	100,713	139.7	378,559
Interest Earnings	83,000	139,040	56,040	167.5	140,725
Payments from Other City Funds:					
General Fund:					
Sales of Water to City Agencies	309,000	561,944	252,944	181.9	561,944(3)
Fire Protection Services	1,025,000(1)	775,256	(249,734)	75.6	775,266(3)
Sewer Fund:					
Joint Fund Expenses	801,000	823,899	22,899	102.9	823,899(4)
TOTAL INCOME	**$22,561,000(1)**	**$22,882,513**	**$321,513**	**101.4%**	**$21,758,793**

OUTGO: Object of Expenditure

Operations	Final Appropriation	Actual Obligations Amount	% of Total	Lapses	%	Accrual Basis Expenses
Water Operations:						
Salaries and Wages	$ 5,548,000	$ 5,436,272	25.5%	$111,728	2.1%	$ 5,291,435
Purchase of Services by Contract	2,411,600	2,281,397	10.7	130,203	5.4	2,115,151
Materials and Supplies	3,222,000	3,197,324	15.0	24,676	0.8	2,554,737
Equipment	285,675	276,965	1.3	8,710	3.0	634,316
Licenses and Permits	10,000	100	—	9,900	99.0	100
Payments to General Fund:						
Meter Reading, Billing and Collecting	906.175	883,691	4.1	22,484	2.5	883,691(3)
Other Services Rendered	676,825	818,771	3.8	(141,946)	—	818,771
Contribution to Bond Fund	60,000	60,000	0.3	0	0	60,000
Total Water Operations	**$13,120,275**	**$12,954,520**	**60.7%**	**$165,755**	**1.3%**	**$12,358,201**
Employees' Welfare Plan Payments	$ 178,000	$ 162,672	0.8	$ 15,328	8.6	$ 162,672
Claims and Awards	90,000	13,642	—	76,358	84.8	33,404
Employees' Pension Fund Payments	446,000	441,900	2.1	4,100	0.9	441,900(3)
Refunds	100,000	17,967	—	82,033	82.0	—(5)
Provision for Estimated Uncollectible Receivables	—	—	—	—	—	(349,265)(6)
Total Operations	**$13,934,275**	**$13,590,701**	**63.6%**	**$343,574**	**2.5%**	**$12,646,912**
Debt Service Payments						
Debt Service:						
Amortization of Principal	$ 4,131,000	$ 4,130,169	19.2%	$ 831	—	$ 4,130,169
Interest	3,175,000	3,130,450	14.7	44,550	1.4%	3,130,450
Capital Budget Financing	675,000	500,000	2.3	175,000	25.9	500,000
Total Debt Service Payments	**$ 7,981,000**	**$ 7,760,619**	**36.2%**	**$220,381**	**2.6%**	**$ 7,760,619**
TOTAL OUTGO	**$21,915,275**	**$21,351,320**	**100.0%**	**$563,955**	**2.6%**	**$20,407,531**

SUMMARY COMPARISON OF 1962 BUDGETARY OPERATIONS
(Revised Original and Actual Budgets)

	Encumbrance Basis			
	Revised Budget(1)	Actual	Change	Accrual Basis(5)
Surplus, December 31, 1961	**$ 649,000**	**$ 1,467,303**	**$ 818,303**	**$ 7,552,513**
Add or (Subtract): Adjustment of Prior Years' Operations	—	165,944	165,944	(127,391)
Add: 1962 Income	22,561,000	22,882,513	321,513	21,758,793
Total 1962 Resources	$23,210,000	$24,515,760	$ 1,305,760	$29,183,915
Less: 1962 Outgo	21,915,275	21,351,320	563,955	20,407,531
Surplus, December 31, 1962	**$ 1,294,725**	**$ 3,164,440**	**$ 1,869,715**	**$ 8,776,384**

NOTES:

(1) Estimates of Water Fund income made by the Mayor in September 1961 were subsequently revised in part as a result of the revision in December, 1961 of the water rates actually effective January 1, 1962.

(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

Brief Financial Statement/Sewer System

BALANCE SHEET

ASSETS AND OTHER DEBITS

	December 31 1962	1961
Utility Plant		
Utility Plant in Service	$326,777,711	$313,502,801
Construction Work in Progress	1,132,704	577,660
Unexpended Construction Authorizations	24,048,366	24,845,150
	$351,958,781	**$338,925,611**
Current Assets		
Cash	$ 5,263,825	$ 3,756,357
Accounts Receivable:		
Customers, for Utility Service	4,807,805	5,798,043
Other	21,558	21,748
Estimated Uncollectible Receivables	(1,636,994)	(1,983,709)
Materials and Supplies, at Standard Cost	121,209	113,042
Advances to Other Municipal Funds	169,485	112,120
Prepaid Expenses	49	31,910
	$ 8,746,937	**$ 7,849,511**
	$360,705,718	**$346,775,122**

LIABILITIES AND OTHER CREDITS

Long Term Debt and Other Credits		
Bonds Payable	$152,604,642	$151,731,505
Sinking Fund Assets	(3,836,698)	(4,011,869)
Bond Authorizations Unissued	26,810,000	19,670,000
	$175,577,944	$167,389,636
Excess of Utility Plant and Fund Accounts over Long Term Bond Commitments	176,380,837	171,535,975
	$351,958,781	**$338,925,611**
Current Liabilities		
Accounts Payable	$ 114,410	$ 123,226
Payroll Accrued	40,122	29,997
Overpayment of Revenues	103,509	110,841
Advances from Other Municipal Funds	30,957	237,074
	$ 288,998	**$ 501,138**
Surplus and Surplus Reserves		
Reserves for Commitments	$ 654,652	$ 492,494
Surplus:		
Invested in Materials and Supplies	121,209	113,042
Invested in Estimated Collectible Receivables	3,192,369	3,836,082
Available for Appropriation	4,489,709	2,906,755
	$ 7,803,287	$ 6,855,879
Total Surplus and Surplus Reserves	$ 8,457,939	$ 7,348,373
	$ 8,746,937	**$ 7,849,511**
	$360,705,718	**$346,775,122**

Statement of Income and Surplus

	For the Year Ending December 31 1962	1961
Operating Revenues:		
Metered Sales	$14,689,168	$13,525,044
Municipal and Other Metered Sales	651,810	606,423
Other Operating Revenues	369,225	708,005
Total Operating Revenues	**$15,710,203**	**$14,839,472**
Operating Revenue Deductions:		
Operating Expenses, Other than Maintenance	$ 3,283,288	$ 3,769,266
Maintenance	1,111,768	1,074,448
Total Operating Expenses	$ 4,395,056	$ 4,843,714
Charges in Lieu of Depreciation	6,212,156	6,342,758
Total Operating Revenue Deductions	**$10,607,212**	**$11,186,472**
Operating Income	$ 5,102,990	3,653,000
Other Income	762,376	1,072,228
Gross Income	**$ 5,865,366**	**$ 4,725,228**
Income Deductions:		
Interest on Long Term Debt	$ 4,586,141	$ 4,537,210
Net Income	**$ 1,279,225**	**$ 188,018**
Surplus and Surplus Reserves at the Beginning of the Year	7,348,372	7,538,003
Other Adjustments (Net)	(169,659)	(377,648)
Total Reserves and Surplus Reserves at the End of the Year	**$ 8,457,938**	**$ 7,348,373**

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 of 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 STATMENTS

INCOME: Source	Revised Budget(1) Estimate	Actual Receipts	Receipts Compared with Estimates	% Realized	Accrual Basis Income
Sewer Charges:					
Collections on Current Billings (with penalties)	$13,226,000(1)	$13,055,142	$(170,858)	98.7%	$14,689,168(2)
Collections on Past Billings (with penalties and interest)	2,195,000(1)	2,796,773	601,773	127.4	356,956
Total Sewer Charges	**$15,421,000(1)**	**$15,851,915**	**$430,915**	**102.8%**	**$15,046,124**
Sewer Charges to Other Municipalities	327,000	369,539	42,539	130.1	369,539
Meter Installations (Sewer Fund Share—60%)	110,000	94,765	(15,235)	82.2	93,910
Miscellaneous Income	106,000	144,698	38,698	136.5	143,924
Interest Earnings	112,000	169,087	57,087	151.0	170,571
Service Charges from Other City Funds					
General Fund: Sewer Services to City Agencies	192,000	282,271	90,271	147.0	282,271(3)
State Reimbursement for City's Clean Streams program	600,000	366,240	(233,760)	61.0	366,240
TOTAL INCOME	**$16,868,000(1)**	**$17,278,515**	**$410,515**	**102.4%**	**$16,472,579**

OUTGO: Object of Expenditure

Operations	Final Appropriation	Actual Obligations Amount	% of Total	Lapses	%	Accrual Basis Expenses
Sewer Operations:						
Salaries and Wages	$ 1,575,325	$ 1,533,493	9.7%	$ 41,832	2.7%	$ 1,534,295
Purchase of Services	1,162,385	1,126,316	7.2	36,069	3.1	975,557
Materials and Supplies	166,995	164,728	1.0	2,267	1.4	142,326
Equipment	132,950	131,174	0.8	1,776	1.3	76,748
Licenses and Permits	250	134	—	116	46.4	43
Payments to General Fund:						
Meter Reading, Billing and Collecting	768,825	701,689	4.5	67,136	8.7	701,689(3)
Other Services Rendered	242,175	235,918	1.5	6,257	2.6	235,918(3)
Payments to Water Fund:						
Joint Fund Expenses	801,000	823,899	5.2	(22,899)	—	823,899(3)
Contribution to Bond Fund	40,000	40,000	0.3	0	0	40,000
Total Sewer Operations	**$ 4,889,905**	**$ 4,757,351**	**30.2%**	**$132,554**	**2.7%**	**$ 4,530,475**
Employees' Welfare Plan Payments	69,000	60,288	0.4	8,712	12.6	60,288
Claims and Awards	64,750	32,776	0.2	31,974	49.4	51,555
Employees' Pension Fund Payments	183,000	176,200	1.1	6,800	3.7	176,200
Refunds	83,000	17,227	0.1	65,773	79.2	—
Provision for Estimated Uncollectible Receivables	—	—	—	—	—	(346,714)(4)
Total Operations	**$ 5,289,655**	**$ 5,043,842**	**32.0%**	**$245,813**	**46.4%**	**$ 4,471,804**
Debt Service Payments						
Debt Service:						
Amortization of Principal	$ 5,635,500	$ 5,635,408	35.7%	$ 92	0.1%	$ 5,635,408
Interest	4,608,500	4,586,141	29.1	22,359	0.5	4,586,141
Capital Budget Financing	775,000	500,000	3.2	275,000	35.5	500,000
Total Debt Service Payments	**$11,019,000**	**$10,721,549**	**68.0%**	**$297,451**	**36.1%**	**$10,721,549**
TOTAL OUTGO	**$16,308,655**	**$15,765,391**	**100.0%**	**$543,264**	**3.3%**	**$15,193,353**

SUMMARY COMPARISON OF 1962 BUDGETARY OPERATIONS
(Revised Original and Actual Budgets)

	Encumbrance Basis			
	Revised Budget(1)	Actual	Change	Accrual Basis(5)
Surplus, December 31, 1961	**$ 1,856,000**	**$ 2,885,685**	**$ 1,029,685**	**$ 7,348,373**
Add or (Subtract): Adjustment of Prior Years' Operations	—	80,225	80,225	(169,659)
Add: 1962 Income	16,868,000	17,278,515	410,515	16,472,579
Total 1962 Resources	$18,724,000	$20,244,425	$ 1,520,425	$23,651,293
Less: 1962 Outgo	16,308,655	15,765,391	543,264	15,193,353
Surplus, December 31, 1962	**$ 2,415,345**	**$ 4,479,034**	**$ 2,063,689**	**$ 8,457,940**

NOTES:

(1) Estimates of Sewer Fund income made by the Mayor in September 1961 were subsequently revised in part as a result of the revision in December, 1961 of the sewer rates actually effective January 1, 1962.

(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

Commerce: Shipping in the Port of Philadelphia has grown greatly in recent years. One reason is the greater attractiveness of the Delaware River, resulting from waste control programs of Philadelphia and other river communities.

Published by the Philadelphia Water Department