The Story of Baltimore's Water Supply

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How it Began

An adequate supply of pure, wholesome water has always been a most important factor in the life of mankind. Primitive man obtained water for his needs by dipping crude vessels into streams, lakes, and pot-holes. Later, wells were dug and the water was distributed in goatskins, gourds and earthen containers.

Methods of collecting and distributing progressed with the development of machinery to pump the water and pipes to distribute it. The present efficient systems are the result of many improvements over the years.

Baltimore City was created by an act of the Maryland General Assembly in the year 1797. Prior to that time the community was governed by special commissioners who in 1787 were entrusted with the enforcement of a law setting a forth a means of extinguishing fires.

The law required each householder to provide two leather buckets for the sole purpose of fire fighting and authorized the commissioners to sink wells and erect pumps at the request and expense of property owners to provide water for fire fighting.

One of the laws of the first City Council transferred the supervision of this means of the control to the newly

created City Commissioners and provided the sum of $1,000 for maintenance and repair of the wells and pumps. Eventually these wells became an important source of domestic water for the inhabitants. An annual appropriation for their maintenance was continued until the last of the wells was filled in about 1915.

The City's first effort toward the development of ia community water system resulted from a report of a City Council committee submitted in January of 1798. This committee recommended the laying of pipes by the city for the distribution of water from Carroll Run.

Work was stopped in June 1799 by property owners who disapproved the laying of pipes across or near their properties. The City petitioned the General Assembly of Maryland for authority to introduce water into the community and in December 1800, this power was granted.

Private company Formed

subsequent efforts by the Mayor and city Council to construct a water system for the use of the City's inhabitants met with failures and at the February 1804 session of the council a resolution was passed authorizing the Mayor "to give public notice that proposals well be received at his office, until the first day of June next for introducing a copious and permanent supply of water into the city pf Baltimore or and part thereof by any individual or company."

In consequence of such public notice that the city government was unable to cope with the situation, a meeting of citizens was called on April 20, 1804. As a result of this meeting a stock company was formed for the purpose of supplying the residents with water. This company named the Baltimore Water Company, constructed a waterworks on Jones Falls and installed a distribution system of wooden pipes in May 1807, water started to flow through this system.

By 1810, the wells and pumps originally constructed for fire purposes undoubtedly were used as sources of domestic water by a large segment of the population. In this year the city government proceeded to develop other public sources of water through the purchase and preservation of certain springs. In all, four springs of good flow were chosen.

The names and locations of these springs or fountains were as follows: The Northern Fountain near Calvert and Camden Streets (1810); the Western Fountain at Charles and Saratoga Streets (1810); the Eastern fountain at Eden and Pratt Streets (1819); the Center Fountain in Market Place south of Baltimore Street (1821). Water for the Center Fountain was supplied for many years by the Baltimore Water Company from a spring located at St. Paul Street north of Centre Street. The spring houses and fountains had great architectural merit and were considered among the sights to be seen during a visit to Baltimore.

City Buys Company

The Baltimore water Company was incorporated on December 24, 1808. It continued to function until the fall of 1854 when the company was purchased by the City of Baltimore for the sum of $1,350,000 and the Water Department was organized under a Water Board appointed by the Mayor.

Due to the growth of the city, the water system purchased from the Baltimore Water Company was inadequate for the water demands of the community. Between 1858 and 1862 the Water Department constructed the new Jones Falls supply consisting of a dam at Lake Roland originally called Swan Lake, the necessary transmission mains and conduits to the Hampden and Mt. Royal reservoirs..

The Jones falls supply was improved later by the construction of Druid Lake, Western Pumping Station, and Western High Service Reservoir, all in Druid Hill Park.

Many of the old wells and pumps had been abandoned and filled in by 1865 because of the failure of supply, contamination, etc. Resolutions were passed by the City Council and approved by the Mayor during the 1865 and 1866 sessions, authorizing the Water Board to install fire ffighting fountains at the markets and certain other ocations near the docks.

In 1867 fifteen fountains were installed at the designated sites. That this source of water became increasingly important is shown by an inventory taken in 1915 which listed 263 fountains in service. The last ones were removed in 1945.

First Pumping Station

During a prolonged drought in the fall of 1860, when the City was threatened with a water famine, it became apparent that the Jones Falls supply would not suffice for the future. After the investigation it was decided that the Gunpowder Falls should be developed as a source of supply, and in 1873 a temporary pumping station was constructed. Water was pumped, when needed during the years 1874 to 1881, inclusive, from Gunpowder Falls through a pipeline to Roland Run, a tributary of Jones Falls.

In the following year, 1875, construction of the permanent supply was begun, the entire program of improvements being completed in 1881. The system constructed as that time consisted of a stone dam across Gunopowder Falls, a large reservoir known as Lake Montebello, a tunnel concnecting the two structures, and the necessary distribution mains and conduits. A few years later, this system was augmented by the construction of Eastern Pumping /Station, Lake Ashburton, Arlington Standpipe and Roland Standpipe.

In 1912, as a result of a study completed two years earlier, the City began work on the Gunpowder supply improvements, these consisted of a new dam on the Gunpowder Falls about 2500 feet upstream from the original dam, a purification plant, and conduits. The new dam, with a crest elevation of 188 feet above mean low tide, was built of such size and strength that it could be increased to a height of 240 feet above mean low tide at a later date when conditions might demand such change.

Montebello Filtration Plant was constructed on the east side of Hillen Road, north of 33rd Street. All of these improvements were completed and placed in service i 1915, at which time use of the Jones Falls supply was discontinued.

Territory Annexed

Through the annexation in 1918 of nearly 50 square miles of the territory surrounding Baltimore City and the purchase of many private water companies which operated in the accessed areas and beyond, the need for water increased rapidly. The crest of the Loch ?Raven Dam was raised to elevation 240.

A second filtration plant was constructed at Montebello and, following completion of the new plant in 1928, the pumping system was improved. Eastern Pumping Station, which raised water into Gilford Reservoir, was replaced by Hillen Pumping Station; Mt. Royal Pumping station was replaced by Vernon Pumping Station for raising water to Lake Ashburton; the Guilford and Ashburton pumping stations were build; and three small pumping station supplying outlying sections of the distribution system were enlarged and modernized. The Prettyboy Dam and Reservoir were build on the Gunpowder Falls. All of these structures were in service by 1936.

The industry activity due to World War I resulted in an increased demand for water, and plans were made to build a dam and reservoir on the North branch of the Patapsco River near Falls Run. A tunnel connecting the reservoir with the Montebello 'filtration Plants, the dam and other structures needed before the river would be impounded were completed during 1854.

In September 1953, construction of a new filtration plant in the vicinity of Lake Ashburton was started. The Ashburton filtration Plant was activated on June 5, 1956.

Growth Anticipated

Heretofore, the waterworks for Baltimore City and adjacent areas were developed in part to answer to requirements brought about through increases in population and business activity inthe area supplied. In January 1952 with considerable work on the Patapsco River Project planned or completed the City decided to anticipate the growth of its water demands, and a Board of Advisory Engineers was appointed to determine population and water consumption for the area probably to be supplied in the year 2000 and beyond.

The Board reported on December 15, 1953 and recommended the development of a pumped water supply from the Susquehanna river at Conowingo with an ultimate capacity of 230 million gallons per day. Engineering studies for this project were started in 1955 and construction was initiated in 1958.

Construction of two pumping stations, and intake on the river and connecting tunnels and pipelines between the Susquehanna River and the Montebello filtration Plants continued until January, 1966 The system of supply was activated on January 17, 1966.

Water Engineer Appointed

In 1925, through an ordinance approved on July 17, the City of Baltimore brought under one head the engineering, construction and maintenance departments of the municipal government, eliminated various boards and commissions, under which some of the departments operated, and consolidated the departments having like functions.

By this action, the administration of the municipally owned water supply was shifted from the Water Board, its regulatory powers passing to the Board of Estimates, the chief executive board of the City.

The Water Department was renamed the Bureau of Water Supply and the title of its executive officer remained the same. Water engineer; but he became responsible to the director of Public works for the functions of the bureau. The Water Engineer remained an appointee of the Mayor, subject to ?city Council approval.

Department Reorganized

Under the reorganization of the Department of Public Works which became effective on March 15, 1968, the Bureau of Water Supply became non-existent, and its various functions assigned to three new bureaus. /they were the Bureau of Engineering, the Bureau of Utility Operations, and the Bureau of Consumer Service.

A later reorganization of the Department of Public works became effective in /December 1979. The impetus for this reorganization was the desire to group all functions related to water and waste water into one bureau. The new bureau became known as the Bureau of Water and Waste Water, it is made up of six divisions, /water Engineering, Waste Water Engineering, Water Facilities, Waste Water Facilities, Water and Waste Water Maintenance and Metered Accounts.

The Water Engineering division studies all proposed improvements and prepares plans to various new additions to the water system.

The supply Section manages the watersheds to protect the high quality of the raw water.

The Treatment Section purifies the raw water.

The Pumping Section operates the pumping stations and is responsible for determining and recording water usage in all areas of the distribution system.

The Quality Section operates two laboratories which run numerous chemical and microbiological tests to water samples to assure that the water that is delivered to consujmers is safe to drink and pleasing in taste, odor, and appearance.

The Water and Waste Water Maintenance Division handles all small construction, such as the installation of auxiliary water mains. The division also locates and repairs leaking pipes, broken water mains, and services defective water meters.

The Metered Accounts division accepts applications for various water services. It is resonsible for readig water meters and preparing bills for water and waste water service accounts.

The waste water functions performed by this bureau are not discussed in this booklet.

\Where We Get Water

The water supplied by the Department of Public works to residents of Baltiroe city and adjacent territory is obtained from three sources, the Gunpowder Falls, The North Branch of the Patasco river, and the Susquehanna River. They are clsssified as surface supplies.

Gunpowder Falls and Patapsco River
e Gunpowder Falls development has a watershed above Loch Raven dam of 303 square miles. Two dams located on this stream, one at Loch Raven and the other further upstream near the mouth of Prettyboy Creek, impound water and store it in the reservoirs formed by them. These reservoirs have a combined capacity of 43 billion gallons, most of which can be delivered by gravity to the Montebello filtration Plant through a 10 ft. Diameter tunnel.

Prettyboy dam and Reservoir:

Pretyboy dam is a concrete gravity dam located on the Gunpowder Falls about three miles southwest of Parkton. The crest of the dam is 520 feet above sea level. A reinforced concrete arch bridge, with a roadway 20 feet wide and a footway on each side crosses this dam.

Othe data is as follows:

Spillway length ---------- 274 feet
Total length ---------- 845 feet
Height of crest above stream bed ----------130 feet
Capacity of reservoir ---------- 20,000,000,000 gallons
Flooded areas at crest elevation ---------- 1,500 acres
Length of shore line at crest ---------- 46 miles
Area of land owned ---------- 7,280 acres

Water overflowed crest for the first time - September 23, 1933

Loch Raven dam and Reservoir:

Loch Raven Dam is a concrete gravity dam located on the main stream of the Gunpowder Falls below the mouths of all the large tributaries. The dam was raised to its present elevation, 240 feet above sea level, in 1923, by adding 52 feet to the structure erected in 1914.

Other data is as follows:

Spillway length ---------- 288 feet
Total length ---------- 650 feet
Height of crest above stream bed ---------- 82 feet
Capacity of reservoir ---------- 23,000,000,000 gallons
Length of shore line at crest elevation ----- 50 miles
Area of land owned ---------- 8,000 acres
Flooded acres at crest elevatoin ---------- 2,400 acres
Water overflowed crest for the first time --- May, 1923

Liberty dam and Reservoir:

Liberty Dam also is a concrete gravity dam, It is located on the North Branch of the Patapsco River at a site approximately two miles south of Liberty Road. The crest of the dam is at an elevation of 420 feet above sea level.

Other data is as follows:

Spillway length ---------- 480 feet
Total length ---------- 650 feet
Height of crest above stream bed ---------- 160 feet
Capacity of reservoir ---------- 43,000,000,000 gallons
Flooded area at srest eleation ---------- 3,100 acres
Length of shore line at crest elevation ------ 82 miles
Area of land owned ---------- 9,2000 acres
Water overflowed crest for the first time ---- February 6, 1956

How Water is Impounded:

Under normal operating conditions, water flows by gravity from the Loch Raven Reservoir to the Montebello Filtration Plants through the Gunpowder falls-Montebello tunnel, a concrete lined tunnel, 12 fee in diameter, and approximately seven miles in length, this tunnel was constructed through solid rock.

When the water level of the dam is lowered a few feet below the crest of the dam, the discharge valves at Prettyboy Dam are opened. The water released flows down the bed of the gunpowder Falls into Loch Raven Reservoir, thus maintaining the water level in the latter reservoir at a predetermined elevation.

If the level in the Loch Raven Reservoir drops too low for gravity flow, water can be pumped from the Loch Raven reservoir ti the Montebello Filtration Plants by a pumping station located at the plants. The station, called the Montebello Raw Water Distribution Center, was constructed in 1958 in conjunction with the Susquehanna Water Supply Project. The station contains three pumps, each having a capacity of 120 million gallons per day, and appurtenant equipment.

Water from Liberty Reservoir flows through a concrete lined tunnel, 10 feet in diameter, to the Ashburton filtration Plant, a distance of approximately 12.5 miles. This tunnel was constructed through solid rock.

At some future time, when pumps are placed in the Ashburton filtration Plant, it will be possible to pump water from Liberty Reservoir whenever the water level falls too low for gravity flow.

The Susquehanna Water supply Project Includes:

1 The Conowingo Intake with an initial capacity of 150 million gallons per day. This structure has an ultimate design capacity of 500 million gallons per day.
2. The Deer Creek Pumping station, where three 50 million gallons per day capacity pumps were initially installed and provision was made for the future installation of two pumpsof the same capacity. The ultimate design capacity of the station is 243 million gallons per day.
3. The connecting tunnel and pipelines, an transmission system 202,096 feet or 38.27 miles ling, were constructed as:

2,370 feet of 144 inch tunnel.
12,100 feet of 106 inch tunnel
150,136 feet of 108 inch pipe
37,490 feet of 96 inch pipe

How Water Is Made Fit To Drink

In order to produce water that will meet accepted standards for public drinking water, the following treatment processes are performed: chlorination, coagulation, sedimentation, filtration, flouridation, and pH adjustment.

Accepted standards, require the finished water to be free of all organisms of a pathogenic mature, in addition, there are limitations on the concentrations which in the finished water of chemical constituents which are considered harmful or otherwise undesirable. In some localities where the raw water has a high mineral content, it is necessary, in addition to the above mentioned processes to soften the water w=as well/

In Baltimore, as another sections of the country, where the mineral content of the raw water is lo low, the basic treatment procedure is as outlined below for th e two Montebello plants and the Ashburton plant.

Chlorinaton.

Chlorine is used for disinfection and is supplied to the water immediately after if passes through a meter which measures and records the rate of flow. Enough chlorine is added to maintain about 10 part per million residual chlorine in the water after it has passed through the filters.

Parts per million expresses a relationship in weight , ie. One pound of chlorine added to one million pounds of water is a dosage of one part per million

Coagulation And Sedimentation

Alum is used as a coagulating agent to collect the mud and suspended material in the raw water. After this coagulant is added to the water as rates varying from 0.3 to 1.5 grains per gallon, the water enters a basin where the alum is throughly mixed with the water. The alum reacts with the alkalinity in the water and forms aluminum hydroxide, which will precipitate as a "floc" (a sticky, gelatinous solid). The floc resembles small sponges.

The formation of a proper floc is of the highest importance in the purification process since without it, neither the settling nor the filtering process would be done properly. At both the Montebello and the Ashburton filtration plants, mechanical means are u sed to assure a good floc, the water being agitated by slowly moving paddles.

After mixing, the water moves into the settling basins. These are large rectangular tanks through which the water flows at a very slow rate. The basins are designed so that sufficient time elapses in the passage of water for the particles of floc with their absorbed materials to settle to the bottom. The settled material is removed manually at Montebello, this operation is mechanical and continuous at Ashburton.

Filtration

The last step in clarifying the water is accomplished by passing it through about 20 inches of sand. As the water

filters through the sand, the remaining particles of suspended matter adher to the grains of sand.

The sand is supported upon a well graded bed of gravel, the top layer of which is only a little coarser than the sand. After passing through the filters, the sparkling clear water inters the filtered water reservoirs, and when it leaves it flows into the water mains in the distribution system.

In filtering, the water is admitted above the sand, passes downward through the samd and gravel, through controllers which regulate the rate of filtration, and then into the filtered water reservoirs. In washing the filters, the direction of flow is reversed and a large volume of water is passed upward through the gravel and sand. /the sand bed is lifted by the water and the trapped material is loosened and carried off through troughs to a waste lagoon.

Fluoridation

fluoridation of the water supply was begun on November 26, 1952. Hydrofluosilicic acid is added to the water in sufficient quantities to maintain a concentration of 1.0 part per million. This chemical is added to inhibit tooth decay.

PH Adjustment

the application of alum to the raw water for coagulation increases the acidity and hence, the corrosiveness of the water. Consequently lime is added to h te filtered water to increase the pH of the finished water to a non-corrosive level of 8.0

Additional Treatment

Copper sulfate is added to destroy algae in the reservoirs when necessary.

Soda ash is introduced into the water at distribution reservoirs when control of the acitity of the water is indicated.

\Purification Plants

Montebello filters comprise two complete plants. The first located on the east side of the 2900 block of Hillen road was put into operation in 1915, and has 32 filter units and a capacity of 128 million c=gallons pe day. The second plant is located on the west side of Hillen Road, directly opposite the first plant, with 28 units and a capacity of 112 million gallons per day. This plant ws placed in service in 1928.

The Ashburton plant was put into service in 1956. Andis located at 3001 Druid Prk Drive. This plant has a capacity of 120 million gallons per day with 20 filter units.

Chlorinator Stations

Water in storage is open reservoirs is subject to contamination. Automatic chlorinator stations are provided at each of the distribution reservoirs to re-chlorinate the water entering these reservoirs in order to keep it as sterile as possible, and also prevent the growth of algae. In addition to this, chlorine is also applied to the water leaving these reservoirs to keep it pure throughout the distribution system. These chlorination stations function automatically, and are inspected and serviced daily.

Laboratory control

Careful supervision is exercised in every step of the treatment process, samples of water being taken at various points throughout the filtration plants every two hours, day and night. Bacteriological tests are made regularly of samples collected from widely separated points of the distribution system, form all the distribution reservoirs and from different points in the impounding reservoirs.

How Water Is Delivered To Your Home

The distribution system which serves an area of approximately 234 square miles, consists of a network of mains

varying in size from three inched to nine feet, in diameter. The majority of these mains are of cast iron, but some of the larger sizes, that is 24 inches and larger in diameter, are of steel or reinforced concrete. More than 3,100 miles of mains were in service in the distribution system at the end of 1979. Mains installed since 1956 are concrete lined.

These mains connect a series of pumping stations, reservoirs, and elevated storage tanks, which supply water to Baltimore city and parts of three adjacent counties; Baltimore, Howard and Anne Arundel. Within this network of mains m five zones of service are maintained to supply adequate water pressure to the consumers. Each zone is designed to meet the limiting ground elevations in a particular area of the distribution system.

Under the present operating system, the Montebello /filtration plants supply to the first Zone by gravity, and to the econd and Third zones by pumping. The Ashburton Filtration plant supplies water to the Second Zone by gravity, and to the Third, Fourth and Fifth zones by pumping.

The First and Second zones contain about half of the land in the distribution system, but consume about 67% of the filtered water supply. Most of the heavy industry within the Baltimore Metropolitan region is located in the First Zone.

The Second Zone supplies water to many commercial and light industrial developments . Both the First and Second zones however, supply wate to large residential developments within their limits.

The Third, Fourth and fifth zones contain the remaining half of the land in the diatribution system, but consume about 33 % of the filtered water supply. The sonsumers in these zones are predominantly residential in nature.

The data and statistics used in the following zone analysis pertain to the yeaer 1979, when the system supplied and average of 255,000,000 gallons of water per day to 1,610,000 consumers, and average of 158 gallons per person per day.

First Zone

The First Zone of service supplies water to almost 70 square miles of land on the southwestern part of Baltimore city and adjacent parts of Baltimore County and Anne Arundel County, Druid Lake, the Curtis Bay Tank, and the Montebello filtered water reservoirs provide more than 300 million gallons of storage capacity in this zone.

About 110 million gallons per day is consumed in the First Zone. Ground elevations wary from sea level to 100 feet above sea level. And the water level in the filtered water reservoirs is 212 feet.

Second Zone

the Second Zone of service supplies water to about 36 square miles of land in the central part of Baltimore City and parts of Baltimore County and Anne Arundel county. Guilford Reservoir and Lake Ashburton provide more than 250 million gallons of storage capacity in this zone and suction for the Third Zone pumping stations. About 56 million gallons a day is consumed inm the Second Zone.

Ground elevations vary from less than 100 to 240 feet, and the high water levels in Guilford Reservoir and Lake Ashburton are 341 feet and 353 feet respectively.

The Colgate Second Zone of service supplies water to about 0.9 square miles of land in Baltimore County and City within the area served by the First Zone. The Colgate Pumping Station takes suction from the first Zone and pumps into the 0.3 million gallon colgate elevated storage tank. This system supplies about 0.6 million gallons a day to the predominantly residential consumers. Ground elevations vary from 90 feet to 160 feet, and the overflow elevation of the Colgate tank is 258 feet.

Third Zone

The Third Zone of service is divided into two service areas, the eastern and western. The eastern area supplies water to about 31.5 square miles of land in the northeastern part of Baltimore City and adjacent parts of Baltimore

county.

The principal supply for this service area originates at the Guilford Reservoir and discharges into the 16 million gallon Towson Reservoir, which in turn provides storage for the eastern area and suction for the Towson fourth Zone pumping station.

The supply or this service area is augmented by the Cromwell Pumping Station, which is located over the old unlined Loch Raven water tunnel near Cromwell Bridge Road in Baltimore County and about 4.5 miles north of the Montebello filtration plants.

This tunnel had been put into service in 1881 for the conveyance of gunpowder Falls water from the old Loch Raven Dam to Lake Montebello, but had been placed in reserve in 1940 when the new Gunpowder Falls - Montebello lined tunnel was put into service. For the operation of the Cromwell Pumping station, the old tunnel was closed north of the station.

Filtered water is sent through the tunnel from Montebello by gravity. The pumping station takes suction from a shaft to the tunnel, gives secondary treatment to the water as may be required and discharges into Towson Reservoir and into the northeastern part of the service zone.

Its present capacity is 42 million gallons a day. About 25 million gallons a day is consumed in this service area. Ground elevations vary from less than 240 feet, to 280 feet, and the high water level in the Towson Reservoir is 515 feet.

The Western Third Zone supplies water to about 45 square miles of land in the northwestern part of Baltimore city and adjacent arts of Baltimore County and Howard County.

The supply for this service area originates at Ashburton Pumping station which takes suction from Lake Ashburton and discharges into the 21 million gallon Pikesville Reservoir and the four million gallon Melvin Avenue tank. These reservoirs provide storage for the Western third zone and suction for the Fourth Zone pumping stations.

About 45 million gallons a day is consumed in this service area. Ground elevations wary from less than 240 feet to over 480 feet, and the high water level in the Pikesville Reservoir and Melvin Avenue Tank is 567 feet.

Fourth Zone

The fourth Zone of service is divided into three service area in namely Towson, Pikesville and Catonsville. The Towson Forth Zone supplies water to about 23.5 square miles of land in the vicinity of Towson and Cockeysville in Baltimore County.

The supply for this service originates at the Towson Reservoir, and discharges into the Ware Avenue and the Stratford elevated storage thanks and the Mays chapel Reservoir. Total storage capacity in the zone is 9.3 million gallons. About 13 million gallons a day is consumed in the Towson Fourth Zone. Ground elevations vary from less than 360 feet, and the overflow elevation of the tanks is 600 feet.

The Pikesville Fourth Zone supplies water to about 17 square miles of land in the vicinity of Randallstown, Pikesville and Pleasant Hill in Baltimore county. The supply for this service originates at the Pikesville Pumping Station, which takes suction from the Pikesville ?Reservoir, and discharges into the Randallstown, Pleasant Hill and Deer Park elevated storage tanks.

These tanks have a total capacity of 2.8 million gallons. About four million gallons a day is consumed in this service area. Ground elevations vary from 480 feet to 600 feet, and the overflow elevation of the tanks is 740 feet.

The catonsville Fourth Zone supplies water to about 9 square miles of land in the vicinity of Catonsville, Baltimore County. The supply for this service area originates at the Catonsville Pumping station, which takes suction from the third Zone distribution system, and discharges into the one million Dorchester elevated storage tank. About five million gallons a day is consumed in this service area. Ground elevations vary from 400 feet to 500 feet, and the overflow elevation of the tank is 630 feet.

Fifth Zone

The fifth Zone of service is presently divided into two service areas: Reisterstown and Pot spring and will be expanded to four in the near future. The Reisterstown Fifth Zone of service suplies water to about 5 square miles of land in the vicinity of Pleasant Hill and Reisterstown in Baltimore County. The supply for this service zone originates at the Pleasant Hill tanks and discharges into the 0.3 million gallon Reisterstown and the 1.0 million gallon Chartley elevated storage tanks. About 2.2 million gallons a day is consumed in this service area. Ground elevations vary from 600 feet to 720 feet, and the overflow elevation of the tanks is 850 feet.

The Pot Spring Fifth Zone supplies water to a small area in the vicinity of Timonium in Baltimore County. The supply for this service originates at the Stratford Pumping Station, which takes suction from the Towson Fourth Zone at the Stratford Tank and discharges into the Spring Lake elevated storage tank. This 0.4 million gallon tank has an overflow elevation of 650 feet. About 1.0 million gallons a day is consumed in this service area. ground elevations w=vary from 480 feet to 540 feet.

The new Sparks Fifth Zone will supply water to a small area north of Cockeysville in Baltimore County. The supply for this service will originate at the new Sparks Pumping Station, which will take suction fromt he Towson fourth Zone distribution system and discharge into the oone million gallon Sparks elevated storage tank. Ground elevations vary from less than 480 feet to 525 feet, and the overflow elevation of the tankis 655 feet.

The new Falls Fifth Zone will supply to and area west of Timonium in Baltimore County. The supply for this service originates at the new falls Fifth Pumping Station, which will take suction from the Towson Fourth Zone at Mays chapel Reservoir and discharge into the 0.5 million gallon falls elevated tank. Ground elevations vary from about 480 feet to 660 feet, and overflow elevation of the tank is 755 feet.

How Water Pressure Is Maintained

There are 15 pumping stations in active use, with a toaal capacity of approximately 435 million gallons a day, although the average daily pumping is about 130 million gallons a day. The stations are monitored and can be operated by remote control from the Telemetry Control Center located at the Asburton filtration Plant.

When controlled by automatic operation, the stations are activated by the rise and fall of the water level in the elevated tank or reservoir. As the water level falls, the telemetered control starts a pump and adds more pumps if the level continues to fall. As the water level rises, the telemetered control shuts off the pumps in sequence until the station is completely shut down.

When the stations are to be operated by remote control, the same telemetering system transmits manual commands originating in the telemetry control Center. Through the telemetering system, the pumpage, the pressure and the elevation of the water level in the reservoirs or tanks are transmitted to the control Center for monitoring.

Approximately 600 million gallons of water is stored in filtered water reservoirs, open ground reservoirs and elevated storage tanks. More than 500 million gallons is concentrated in the first and Second zones where the storage reservoirs are filled by gravity from the filtration plants.. During periods when the demand for water exceeds the filter rate, the storage reservoirs feed onto the system to augment the flow from the filtration plants. When the filter rate exceeds the demand, the storage reservoirs refill.

How Consumers Are Charged For Water Service

Water furnished to the consumers is sole on both the metered and un-metered basis. In general,, some residential properties in the central part of the city are un-metered, while dwellings in the outlying districts of the city and those in the adjacent counties are metered.

The Bureau of Water and Waste Water converts more than 4,000 of the un-metered services to metered services every year, and this practice will continue until all such properties are metered. Water used for fire fighting is furnished free of charge.

An un-metered rate is based on the width of the property. A minimum quarterly charge is assessed for for a

metered service, depending on the size of the meter, with an allowance of water to cover this minimum charge. Any additional water above the allowed consumption is charged at the regular scheduled rates. Consumers in Baltimore county also pay a fixed service charge based on the size of the meter.

Water consumers in Howard county are supplied through three master meters. Two of these are located in the vicinity of Elkridge, the other int he vicinity of Ellicott City. In Anne Arundel County, consumers located in the Third Election District and parts of the Fifth election district are supplied by individual water supply services, while other areas in the county are supplied through master meters.

Looking Ahead To The Year 2000

The Baltimore Water Service Area in the year 2000 will probably contain a land area of 700 square miles, more or less. The planning, which resulted in the construction of the Susquehanna River Project, used this area as a basis for estimates of future water demands. The area is Approximately bounded as follows:

(a) On the south: From the Chesapeake Bay at Rivera Beach through Dorsey Waterloo and Columbia, to the forks of the Patapsco River..
(b) On the West: Northward from the forks of the Patapsco River along the boundary of Carroll and Baltimore counties to the Western Maryland Railway.
(c) On the North: along shawan road to sparks.
(d) On the East: along the Gunpowder River to the Chesapeake Bay.

The water distribution system must be enlarged as development of open land in the defined area takes place. New filtration, pumping and storage facilities must be constructed, and new large diameter water mains must be installed. Planning and scheduleing for these waterworks is a complex procedure.

Studies have been made to determine the size of hte water distribution system required to meet the demands in the Baltimore water service Area as they will probably occur in the year 2010