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THE WASHINGTON SUBURBAN SANITARY COMMISSION

by Arthur P. Brigham

Formal birth of the Washington Suburban Sanitary Commission (WSSC) occurred on May 1, 1918, but the concept of a bi-county water/sewer agency first appeared in 1912 following a strong complaint from the neighboring District of Columbia about the fouling of streams within the Nation's Capital by waste from Montgomery and Prince George's Counties.

The Commission, now considered to be one of America's foremost agencies for the development and operation of water-supply and pollution-control systems, emerged from

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the minds of public health officials and that era's version of "civic activists." In a 1949 address to the Municipal Forum of New York, T. Howard Duckett - prominent attorney, banker, and business/civic leader, who is generally recognized as WSSC's "founding father" - offered an ideal introduction to this history. This is what he had to say almost three decades ago, as a person who could look with pride on the progress of a Commission that was conceived by his imaginative mind in a period of community need:

"The 'Genesis' of the Washington Suburban Sanitary District was a meeting called by Mr. Asa Phillips, then Sanitary Engineer of the District of Columbia, with several citizens from each of the counties of Maryland adjoining the District of Columbia for the purpose of discussing the pollution of streams originating in Maryland but flowing through the Nation's Capital. The District of Columbia had already spent a considerable sum in the creation of parks in the valleys of Rock Creek and the Anacostia River, both of which flowed through the small, scattered existing Maryland communities in what is now the (Washington Suburban) Sanitary District.

"The pollution of these streams was a matter of grave concern to the District of Columbia - not only in the problem of health, but also in the availability of the parks in these stream valleys for the use of the general public.

"These gentlemen reported the need of a study of this situation to the General Assembly in 1912 and succeeded in getting through a joint resolution authorizing the Governor (of Maryland) to appoint a study commission. This unpaid commission of three residents from each county reported to the General Assembly in 1916. The legislature disregarded a great many recommendations of the report, but out of this session came an act officially creating another commission, appropriating \$10,000 for further study, and authorizing the State Board of Health to contribute its advice and services 'to the extent available.'

"The State commission made an elaborate and exhaustive report to the General Assembly of 1918. ... The report was a result of a thorough sounding of public opinion and recognized the obvious necessity (for the establishment of an agency to develop and operate water and pollution-control facilities in Maryland's growing communities around the District of Columbia perimeter).

"Engineering features of the report contained an analysis of the existing sanitary conditions in the suburban Maryland area, a complete plan for the correction of these conditions, and a proposed plan covering anticipated construction - both water and sewer - through the year 1940. This report was the work of the late Robert B. Morse, at the time Sanitary Engineer of the Maryland Board of Health and later, for many years, Chief Engineer of the Sanitary District (WSSC), and his assistant Mr. Harry Hall (who also served as the WSSC's Chief Engineer). ... To these gentlemen and their associates goes the credit for the solid engineering foundation laid in the early days of the WSSC's operations.

"The Legislature of 1918 passed the law (drafted by Mr. Duckett and establishing the WSSC) with practically no amendments and, on May 1, 1918, the Washington Suburban Sanitary Commission officially functioned ..."

In 1966, two years before his death, Mr. Duckett recalled that it was more difficult to gain support for the WSSC bill from his native Prince George's County than from Montgomery County. He gave full credit to E. Brooke Lee, venerable Montgomery County politician who, in 1918, had just returned from distinguished World War I service as a commander of a combat company with the 29th Infantry Division in Europe and was a rapidly rising star in the General Assembly.

"He (Lee) really worked on seeing the bill through," Mr. Duckett recalled. "Over the years, Brooke Lee always supported the things that were good for his County and he had his (Montgomery) delegation pretty well briefed on the importance of this legislation." A few years later, Mr. Duckett and Colonel Lee were to be a team again in the formation of the Maryland-National Capital Park and Planning Commission, the WSSC's sister bi-county agency.

One reason Montgomery County legislators were so strong in support of the formation of the WSSC probably was the fact that many of the problems to be solved by the new agency were in that County. For instance, State Health Department officials had noted in one pre-WSSC report that "the Silver Spring people are now building a hotel. After the hotel is completed, the Silver Spring people will be compelled to build a public sewer, because their sewage and drainage pollute the drinking water of Takoma Park." From the Chevy Chase area, many complaints were received by State and County health officials because sewage outlets were being discharged into small streams which had very low natural flows and often dwindled to no flow at all in the dry summer months.

In this same period, the District of Columbia's Asa Phillips was so perturbed about the pollution of the Little Falls Branch leading from Montgomery County into Washington that he gave the problem special attention in his annual report to the District of Columbia Commissioners and to the Congress of the United States. At that time (1912), State health authorities identified no less than ten "serious pollutions" from individual residences, including numbers of houses served by pipeline systems emptying directly into Little Falls Branch. The Town of Somerset sewer consisted of a 12-inch pipe "emptying directly on the north bank of the Little Falls Branch ... conveys the sewage - toilet and bathroom - from 40 houses."

Three men served as "charter" WSSC Commissioners: William T. S. Curtis of Montgomery County, Emory H. Bogley of Montgomery County, and Mr. Duckett of Prince George's County. Mr. Curtis, who was appointed by the Governor, served as the WSSC's first chairman. Mr. Bogley and Mr. Duckett were appointed by the Board of County Commissioners in their respective counties. Their first official meeting was convened on May 15, 1918.

The trio started from "scratch" - no money, no office, no staff, no equipment - just a job to do in implementing the legislation that had created the WSSC. They were faced with large problems because the agency had been formed out of recognition of a need for repair of inadequate water systems and a threat of sewage pollution in Maryland streams that flowed into the District of Columbia. The WSSC was "under the gun" to get things done from the day of its first meeting at the State Health Department branch office in Hyattsville, which the official minutes say went like this:

"Mr. Curtis was nominated and duly elected chairman. ... Mr. Bogley moved that Mr. Arthur Williams of Kensington be tendered the position of Secretary and Treasurer for the time being at \$50 per month. ... Carried. Moved by Mr. Duckett that the principal engineering office of the Commission be located in Hyattsville, Maryland, and the branch office at 611 F Street, N.W., Washington, D.C. (Mr. Duckett's law office was located there.) ... Carried. Mr. Bogley moved that Mr. Duckett be authorized to rent Rooms 5 and 6, 611 F Street, N.W., from May the first at \$18 per month for branch office purposes. ... Carried.

"Mr. Bogley moved that Robert B. Morse be appointed Chief Engineer of the Commission to serve at the pleasure of the Commission, at a salary to be agreed upon later. ... Carried. Mr. Curtis moved that a telephone be installed with an extension in the Washington office. ... Carried. Adjourned."

Thereafter, the three men met with regularity every Monday, Wednesday, and Friday at 3 P.M. in the Washington office, since all of them had business offices in the District of Columbia and transportation to suburban meeting places was neither speedy nor comfortable in 1918 and 1919. As the Commission's first year proceeded - now with office, phone ("with extension") and staff (Mr. Morse and Mr. Williams) - things began to happen at the WSSC. The minutes of Commission meetings report:

June 11 - Maryland Public Service Commission "tentatively approved the issuance of \$50,000 worth of (WSSC) bonds"

June 13 - Mr. Morse was asked to make a "preliminary survey" of five possible projects to be undertaken by the WSSC ... to explore the possibilities of water supply to Silver Spring from Takoma and taking over the Takoma system ... to study the combining of the water supply of Chevy Chase, Edgemoor, Friendship Heights, and Bradley Hills ... and to give consideration to a Little Falls Sewer Project including "the territory lying east of the Brookeville Road and near the D.C. boundary."

July 10 - Bids were received for the \$50,000 bond issue. ... The bonds were sold, followed immediately by authorization granted to Chief Engineer Morse to "purchase \$190.15 worth of supplies and instruments" and also buy "a new Ford with detachable rims." (At this point money and equipment had been added to the operation.)

By February 1919, the Commission had established a schedule of rates, assessments, and, importantly in those days, ad valorem tax levies to give its system development program and fledgling operations revenue support. Interestingly, the WSSC's rate structure was patterned after a structure developed by Elizabeth, New Jersey, where a financial plan had been worked out to support a sewerage system being built for five towns which emptied their sewage into the Elizabeth River.

"I went up there to see how they worked it," Mr. Duckett remembered years later, "and I talked to many officials up there. We practically adopted their plan of having a front foot benefit charge to cover a part of the costs and a land tax to cover another part of the costs, with the house connection to be installed at the cost of the property owner." The first WSSC revenue-producing levy was certified to the County Governments in March 1919 at 1 1/2 cents per \$100 of assessed property value.

Armed with one of the soundest financial structures ever created for a water and sewer agency and some of Maryland's most capable engineers (mostly, according to Mr. Duckett, "bright young Johns Hopkins University men from the State Health Department"), the Commission set about the task of cleaning up the problems originally cited by Mr. Phillips and developing what was to become one of the nation's largest and most progressive suburban systems for the management and protection of water resources.

The Commission soon learned that, although the regional tie-in of sewerage facilities with the District of Columbia's system probably would be possible, the District had no real interest in or desire to share its drinking-water supply with Maryland. Thus the stage was set for some early arrangements for sewer disposal/pollution control ties with the Nation's Capital and independent development of water supply capability for Montgomery and Prince George's Counties.

The WSSC immediately began the effort to acquire existing water and sewerage systems within its service area - 95 square miles and 30,000 people, a community with

an assessable base of less than \$20 million at the time the WSSC was getting started. One of the early acquisitions was the Takoma Park water system, which included the bi-county area's only sizable water filtration plant. The Takoma facility drew on Sligo Creek as its source of water for treatment. This plant's output was simply not enough so, to meet basically the needs of Montgomery County, a used filter plant was purchased from the city of Culpeper, Virginia, packed up, transported, and set up on the bank of the Northwest Branch of the Anacostia River, near Burnt Mills, Silver Spring. By 1920, this "second-hand" facility was contributing to the WSSC's daily average drinking-water production of 306,322 gallons for suburban Maryland.



Takoma Park Filtration Plant

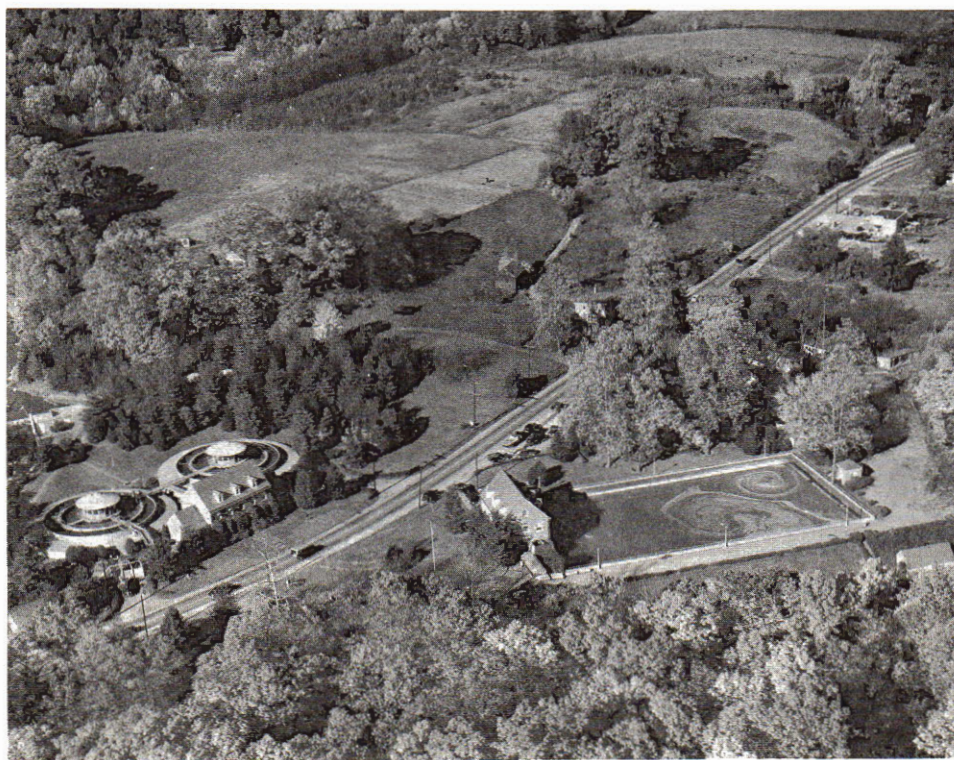
This plant was one of the first units absorbed into the WSSC system after the agency was created in 1918.

Also, in this early period, the Commission began to build new sections of water supply distribution network in growing communities like Silver Spring. Since transportation was difficult, WSSC construction teams often "camped out" on their projects, living in tents at the site or boarding with the owners of nearby homes.

F. Howard Townsend, one of the "bright young engineers from Hopkins" who came to work for the WSSC in 1918 and stayed for 47 years, points out that there was no East-West Highway connecting the Prince George's suburban areas with the scattered Washington-perimeter communities of Takoma-Silver Spring, Bethesda-Chevy Chase, and Kensington-Garrett Park. To get from one place to another, he recalls, "it was necessary to go into Washington, go across town, then come out of town on one of the radial highways."

Mr. Townsend, who still lives in Silver Spring near the scene of some of the WSSC's early water-main construction along Sligo Avenue and other "old" Silver Spring streets, some years ago recalled an unexpected visit to the WSSC field crew's tent at Sligo Avenue by a residential neighbor, Mrs. Mary Deffinbaugh, a Silver Spring civic leader and historian who lived to be more than 100 years old. A group of water-main construction workmen and engineers were in the tent playing cards on their lunch hour, and "Miss Mary" gave them a lecture and chased them back to the job. Later on Mrs. Deffinbaugh tried to recruit the men to sing in the choir in the new little Episcopal Chapel (now the Church of the Ascension) she had helped to establish on Sligo Avenue.

The Commission's first major water-supply plant development took place on the same Burnt Mills site where the Culpeper plant had been relocated. Constructed in the 1930's, the facility featured an original steel, concentric circle design by Mr. Morse. It drew its water from Northwest Branch, helped along by reserve storage held behind the "new" Burnt Mills Dam.



Robert B. Morse Filtration Plant

This facility, an original design created by the WSSC's first Chief Engineer, and the attendant Burnt Mills Dam were located at Northwest Branch at U.S. Route 29, Silver Spring.

In what was probably the forerunner of by-product recreational facilities developed by the WSSC at its yet-to-be-built Patuxent River Water Supply Reservoirs, Chief Engineer Morse, a New Englander who enjoyed ice skating, designed the open water

processing basin at the Burnt Mills Filter Plant in the size and shape of a regulation hockey rink. During some cold winters, old timers at the WSSC remember being invited, along with neighborhood residents, to participate in a lively game of ice hockey after work with "Chief" Morse as the star participant.

Unfortunately, silt production, primarily from agricultural lands upstream in the Northwest Branch, was so heavy that, within a few years, the reservoir lost its capacity for storage, and the WSSC turned to the Patuxent River for supplementary supply by the construction of a cross-county pipeline fed by a pumping station at Mink Hollow near Ashton in mideastern Montgomery County. Water was pumped over the ridge from the Patuxent source into the Northwest Branch and was allowed to flow downstream to the Burnt Mills Filtration Plant.

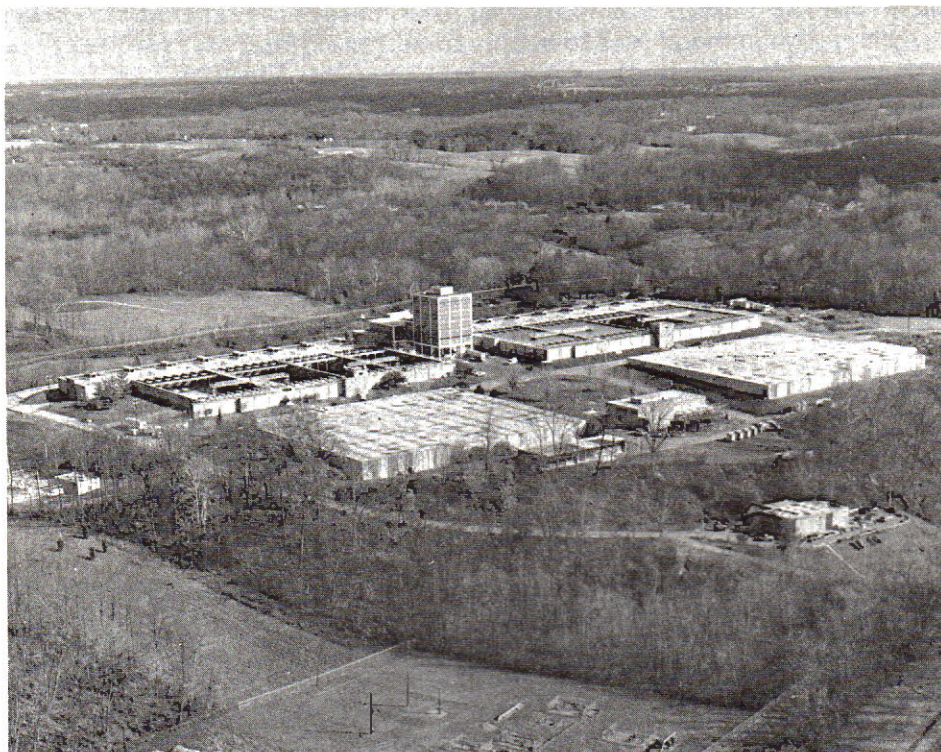
As population continued to grow in the late 1930's, more water was needed. The WSSC built its Brighton Dam-Triadelphia Reservoir facilities on the Patuxent River. This 800-acre lake, with a capacity of about 7 billion gallons, was used to maintain a consistent flow of water to the Mink Hollow Station for pumping to Northwest Branch. Brighton Dam was completed in 1943.

The WSSC's first truly regional water supply facility, the Patuxent River Filtration Plant, was developed east of Burtonsville, near Laurel in Prince George's County. This new facility also featured the Morse-filter design, and its first stage opened in 1944. Additional stages were added, as needed, to an ultimate capacity of 65 million gallons a day, reached in the early 1950's. The Patuxent Plant, together with Triadelphia Lake and a downstream raw-water reservoir complex (T. Howard Duckett Dam and Reservoir), completed in 1952, still operate as key elements of the WSSC's regional water-supply system. Duckett Reservoir covers 800 acres and can hold up to 6.4 billion gallons of water.

Over the years, small existing community systems - some run by municipalities like Kensington and Glen Echo and others privately operated by land companies in places like Chevy Chase and Edgemoor - were acquired by the Commission and eventually integrated into the WSSC's regional system. In many cases, water of substandard quality produced from contamination-vulnerable wells fed these systems, presenting a threat to public health and causing pipeline corrosion. So the arrival of the Patuxent River drinking water product through cross-county pipelines built by the WSSC was a welcomed event for these established Montgomery County communities.

The Patuxent Plant was the Commission's principal supply facility during the last half of the 1940's and in the 1950's when rapid post-World War II growth of the suburbs was taking place. The Burnt Mills Filtration Plant served primarily as a backup facility to help meet high water demands in the summer after the full expansion of the Patuxent Plant. However, during the 1950's, the Commission, primarily on the initiative of then-Chief Engineer Harry B. Shaw, pursued studies, design, and construction in the development of what is today the WSSC's principal water-supply facility, the Potomac River Filtration Plant in western Montgomery County. When the first, 30-million-gallons-a-day stage of the Potomac Plant was opened in 1961, the WSSC was in a position to operate a dual-source system, drawing on both the Patuxent and Potomac Rivers.

The Potomac Plant expanded progressively during the 1960's and now has a nominal capacity of 160 million gallons a day with the ability to produce at a 200-million-gallon rate for short operational periods. Studies are currently in progress to integrate further the Potomac and Patuxent River Supply Systems. Since there are no reservoirs on the Potomac River to store water for use in summer peak-use and drought periods, a Bi-County Water Supply Task Force has recommended piping arrangements to maximize the usefulness of the Patuxent reservoirs.



Potomac River Water Filtration Plant

This plant, the largest WSSC facility, is located on River Road, two miles west of Potomac Village.

The Task Force recommendations are presently being considered by the Montgomery and Prince George's County Councils for adoption as major projects in the Ten-Year Water Plans for the suburban Maryland community.

As an indication of the growth of the Commission's water service requirements since 1920, when average water production was a little over 300,000 gallons a day, the WSSC established a one-day distribution record of about 207 million gallons during the summer of 1974. Average daily consumption in suburban Maryland now exceeds 137 million gallons a day. The WSSC distribution network has grown from "Ground Zero" in 1918 to about 3400 miles of mains with nearly 240,000 customer unit connections in 1978.

While the water system was being developed, progress was also being made on the regional integration of the sewerage system. Direct connections, under agreements with the District of Columbia, were made with the Washington system for the Little Falls, Rock Creek, and some other tributary trunk facilities in the 1930's and 1940's as the WSSC was able to complete major connecting lines.

During the 1940's, the WSSC developed a then-major sewage treatment plant at Bladensburg to provide pollution-control service to Maryland's portion of the bi-county Anacostia Basin. Shortly after the end of World War II, negotiations began with the District of Columbia for joint, Maryland-D.C. development of the Blue Plains Water Pollution Control Plant, and, over the years, the WSSC has contributed heavily

toward the development of the Blue Plains facility, which was designated as the central plant for both Washington, D.C., and a large portion of the Maryland suburbs. This arrangement permitted the abandonment of the WSSC's Bladensburg Plant in the early 1950's.

Today, virtually all trunk sewers in Montgomery County - including the major tributaries of the large Rock Creek and Anacostia drainage basins - are connected to the Blue Plains System. The WSSC has paid its proportionate share for capital development and operating costs for the use of these regional facilities. The Commission also has developed more than 3300 miles of sewers in suburban Maryland to collect sewage from customers for conveyance to treatment facilities.

Although the WSSC had, in its early years, developed some treatment capacity of its own, it was not until the 1960's that major, new outlying plants of a permanent nature began to come on line. These WSSC facilities were located in Prince George's County to handle the needs of that jurisdiction's outlying sections where connection to the Blue Plains System was not considered to be economically or engineeringly feasible.

The WSSC did build a sewage treatment plant in Montgomery County to serve the then-outlying communities of Gaithersburg and Washington Grove. The facility, completed in 1928, continued to operate for more than three decades until the regional sewerage system reached upstream to permit the WSSC development of a pumping and trunk sewer arrangement that tied this fast-growing community to the Blue Plains Plant.

Gaithersburg was originally a business center used primarily by the surrounding farming community. Some of the early operators of the Muddy Branch Plant recall that, although the facility operated normally through most of the months of the year, the sewage reaching the plant for a few weeks each summer changed from its customary gray color to tomato red. The late John M. Jester, WSSC Maintenance and Operations Engineer, described the annual "red tide" at the Muddy Branch Plant a few years ago thusly: "One day the sewage would be its normal color; then, suddenly, it would turn bright red and stay that way for days. The first time it happened, it took us a few days to figure out the cause. There was a cannery in the Gaithersburg area, and, when the tomato harvest occurred, the red-colored waste being produced by the processing facilities gave the sewage a whole new look. So, whenever we brought a new person on board at the WSSC with responsibility for inspecting or monitoring operations at the Muddy Branch Plant, we knew he'd come running to us some time in July to tell us all about the stream of red sewage that had suddenly appeared at the plant."

In 1970, a Federally imposed expansion ceiling of 309 million gallons a day was placed on the regional Blue Plains Plant, and Maryland was directed to develop additional regional capacity in Montgomery and Prince George's Counties. Working with the County Governments, the WSSC proceeded with the design of a regional advanced waste-water treatment facility that would have been located near the Potomac Electric Power Company generating plant at Dickerson and would have had 60-mgd capacity in its first stage. In 1976, this project was stymied by action of the U.S. Environmental Protection Agency.

As a result, Montgomery County is still almost entirely dependent on the Blue Plains Plant for the treatment of its sewage. With the WSSC, the County is seeking an acceptable alternative to the Dickerson AWT plan for meeting the County's projected waste-water disposal requirements. Some interim plants, approved by the County, have been developed to help meet short-term needs and are operated by the WSSC in Montgomery County. But the search for permanent solution to the problem of

currently limited sewage-disposal capacity is still very much a part of "recent history" in Montgomery County.

In its history, the WSSC has taken on responsibility for the promulgation and enforcement of plumbing and gas fitting regulations (licensing and inspection) in suburban Maryland, the provision of Montgomery County refuse collection and disposal services from mid-World War II until the 1960's when the County Government took over this function, and the development and maintenance of storm drainage facilities. Storm drainage functions used to be performed by the WSSC as a bi-county function, but, in the 1960's, Montgomery County took over responsibility for drainage facilities within its boundaries. The WSSC still performs major storm-drainage and flood-control functions in Prince George's County.

In summary, the WSSC, which started with almost no resources six decades ago, has grown with its service area (now 1000 square miles, fourteen times the area of the District of Columbia, and housing a population of more than 1.2 million) into one of America's major purveyors of water-supply and pollution-control services. In recent years, the WSSC, which enjoyed substantial independence during its first five decades of operation, has been functioning under new and complex Federal, State, and local constraints. Much of its autonomy has been lost through powers delegated by the Maryland General Assembly to the governments of Montgomery and Prince George's Counties over the development and approval of each County's Ten-Year Water and Sewer Plans, appointment of the six WSSC Commissioners, and approval of the Commission's annual budget.

The Commission, which has spent all of its 60 busy years planning, building, and operating the systems that provide service to hundreds of thousands of suburban Marylanders today, is moving through a period of evolution. Its function as one of the "lead" agencies in the development of suburban Maryland has changed markedly to the status of a supporting agency for two, large, progressive counties, both of which have expressed the desire to keep a firm rein on those functions (including water-supply and sewerage system development) that affect their in-county planning programs.

And, the WSSC obviously is in a position to provide lots of support. Its systems have been developed to a point where their replacement value, if they had to be built today, probably would exceed one billion dollars. In the WSSC's "lifetime," the assessed real property value (assessable base) of the WSSC service area has grown from the previously mentioned 1918 base of less than \$20 million to a 1977 base of about \$10.5 billion.