

MONTGOMERY COUNTY, MARYLAND
TEN-YEAR COMPREHENSIVE WATER SUPPLY AND SEWERAGE SYSTEMS PLAN

CHAPTER 4: SEWERAGE SYSTEMS

APPROVED 2003 - 2012 PLAN

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**MONTGOMERY COUNTY COMPREHENSIVE WATER SUPPLY AND SEWERAGE SYSTEMS PLAN
APPROVED 2003 - 2012 PLAN**

CHAPTER 4: SEWERAGE SYSTEMS

I. INTRODUCTION

This Chapter describes the county's existing and planned community and private, individual sewerage systems. It incorporates components and related discussions of major programs, policies, and issues concerning sewerage systems serving the residents and businesses in Montgomery County. It also projects sewerage collection/conveyance and treatment systems needs.

A. Sewer Service Area Categories -- As discussed in Chapter 1, this Plan classifies all areas of the county into one of five category designations for sewer service areas. The categories range from areas served by community systems (S-1) to areas where improvements to or construction of new community systems will be planned in the future (S-3, S-4, and S-5) to areas where there is no planned community service (S-6). (In practice, Montgomery County does not use category S-2, which designates areas where community sewerage system projects are in the final planning stages.) Figure 4-F1 shows a generalized distribution of sewer service area categories throughout the county. For additional detailed information on sewer service area categories, please refer to Chapter 1.

B. Sanitary Districts -- A sewer service area can be defined by a sewage system operating authority, and/or by a geographic or structural separation of a group of related treatment and transmission facilities. The county is divided into three publically-operated and largely separate sanitary service areas or districts: the Washington Suburban Sanitary District (WSSD), the largest system, serving most of the county; and two smaller municipal districts operated by the City of Rockville and the Town of Poolesville. (See Figure 3-F2.) Each district is served by its own sewage collection and transmission systems. Sewage from the WSSD is treated at several local plants operated by WSSC and at one regional facility, the Blue Plains Wastewater Treatment Plant (WWTP), located in the District of Columbia. Flows from Rockville eventually enter the WSSD system for transmission to and treatment at the Blue Plains WWTP. Poolesville's treatment plant, for the most part, serves only the town itself. Information for the districts serving Rockville and Poolesville has been provided primarily by those municipalities and is incorporated into this Plan consistent with State law.

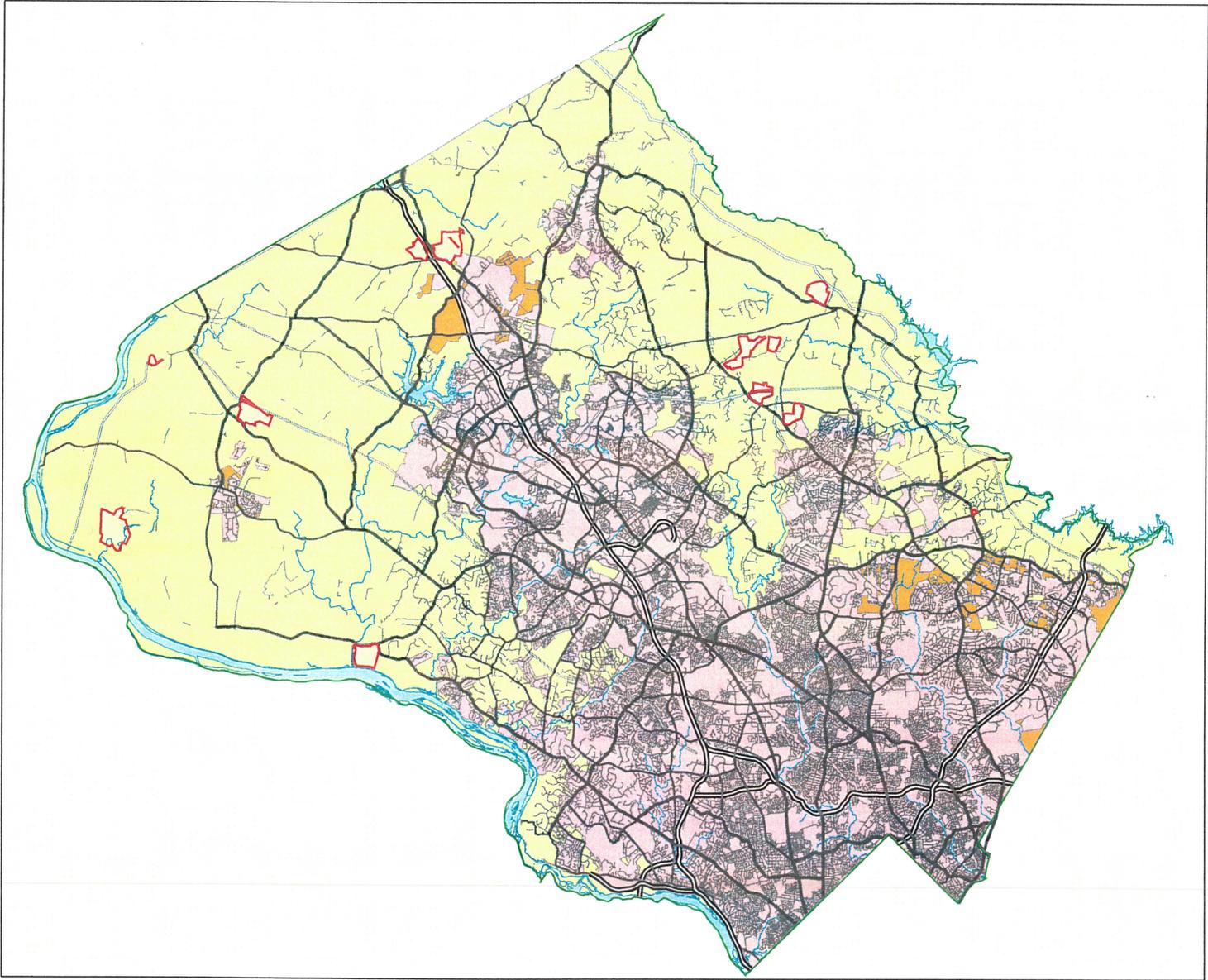
Some properties within each sanitary district are served by individual, on-site systems, rather than community systems. The vast majority of these individual systems are within the WSSD. Information on individual, on-site systems follows at the end of the chapter.

C. Wastewater Treatment Service Areas -- Based on function, there are two components to a wastewater disposal system: collection/conveyance facilities and treatment facilities. A wastewater treatment service area is a geographic region comprised of a section of one or several sewer basins, where both collection/conveyance and treatment are provided. Presently six community wastewater treatment service areas provide service within Montgomery County: Blue Plains, Seneca, Damascus, Hyattstown, and Mill Bottom within the WSSD, and Poolesville, largely separate from the WSSD, as shown in Table 4-T1. The Rockville Sanitary District (RSD) is located within the Blue Plains service area. Figure 4-F3 shows the areas served by each of these six wastewater treatment plants.

D. Watersheds and Sewersheds: The county is bounded by two rivers: the Potomac to the southwest and the Patuxent to the northeast. Most of the county's streams flow into the Potomac River, either through local tributaries, such as Watts Branch, Rock Creek, Cabin John Creek, and Great Seneca Creek, or through watersheds that drain to two major tributaries outside the county: the Anacostia and Monocacy Rivers. The southeastern part of the county, south of Olney and east of Georgia Avenue, slopes toward the Anacostia River, and includes the Sligo Creek, Northwest Branch, Paint Branch, and Little Paint Branch watersheds. Portions of the northwest part of the county slope toward the Monocacy River, and include the Little Monocacy River, Bennett Creek, and Little Bennett Creek watersheds. The northeastern part of the county, along the border with Howard County, slopes toward the Patuxent River.

To take advantage of gravity to the greatest extent possible, sewage collection and conveyance systems generally follow streams and waterways within various drainage basins. Because of this, the sewer basins (or sewersheds) in this chapter are often referred to by the name of their related watershed (e.g., Watts Branch,

Figure 4-F1: Montgomery County Sewer Service Areas



MAP LEGEND

Major Roads

- County Roads
- State Roads and Highways
- US & Interstate Highways

Major Streams - Rivers - Lakes - Reservoirs

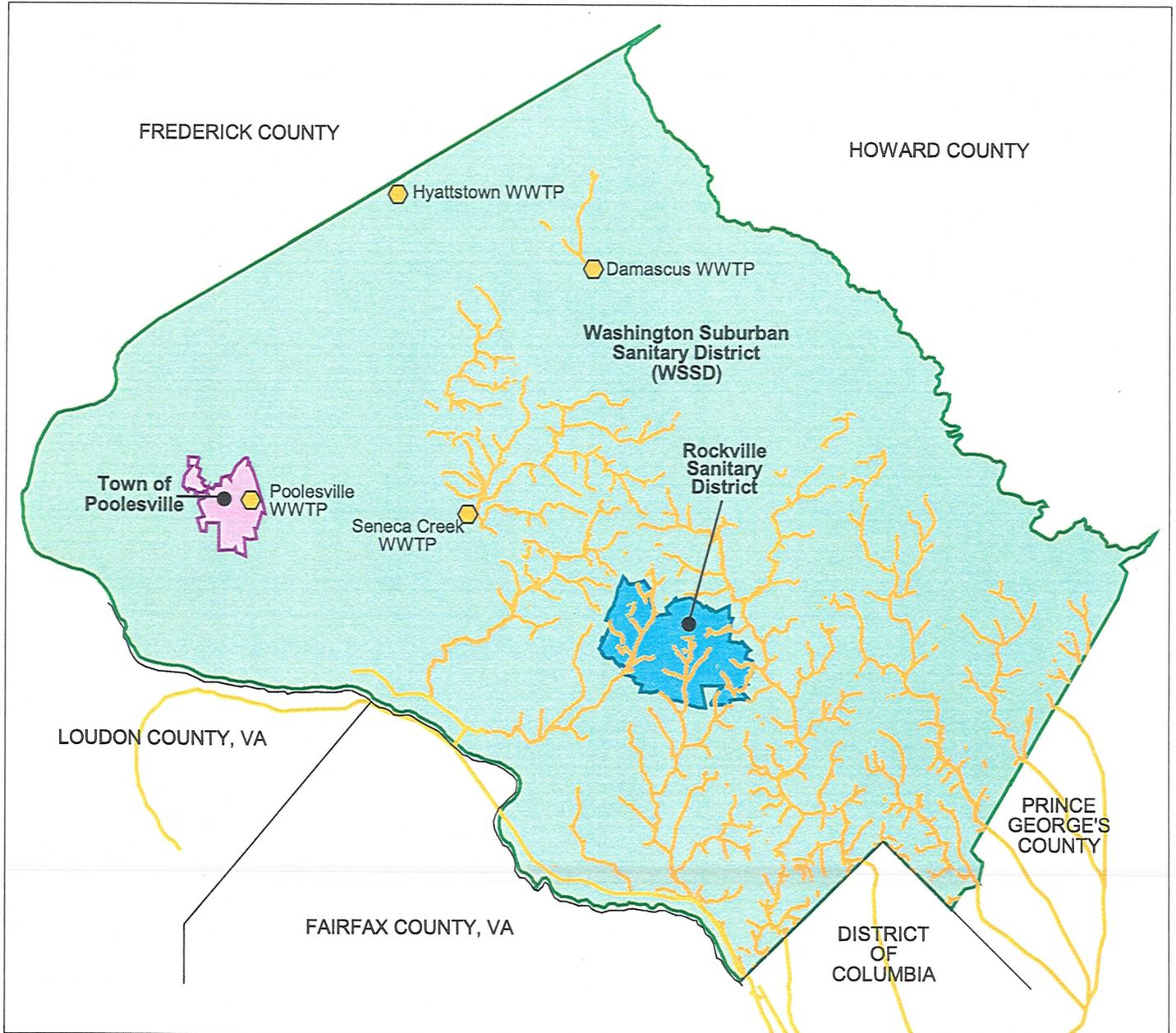
General Sewer Service Areas

- Approved Community Sewer Service Areas (S-1 & S-3)
- Proposed Community Sewer Service Areas (S-4 & S-5)
- Private, On-Site Sewer Service Areas (S-6)
- Approved for Multi-Use Sewerage Systems (S-6)

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Figure 4-F2: Community Sewerage Systems



MAP LEGEND

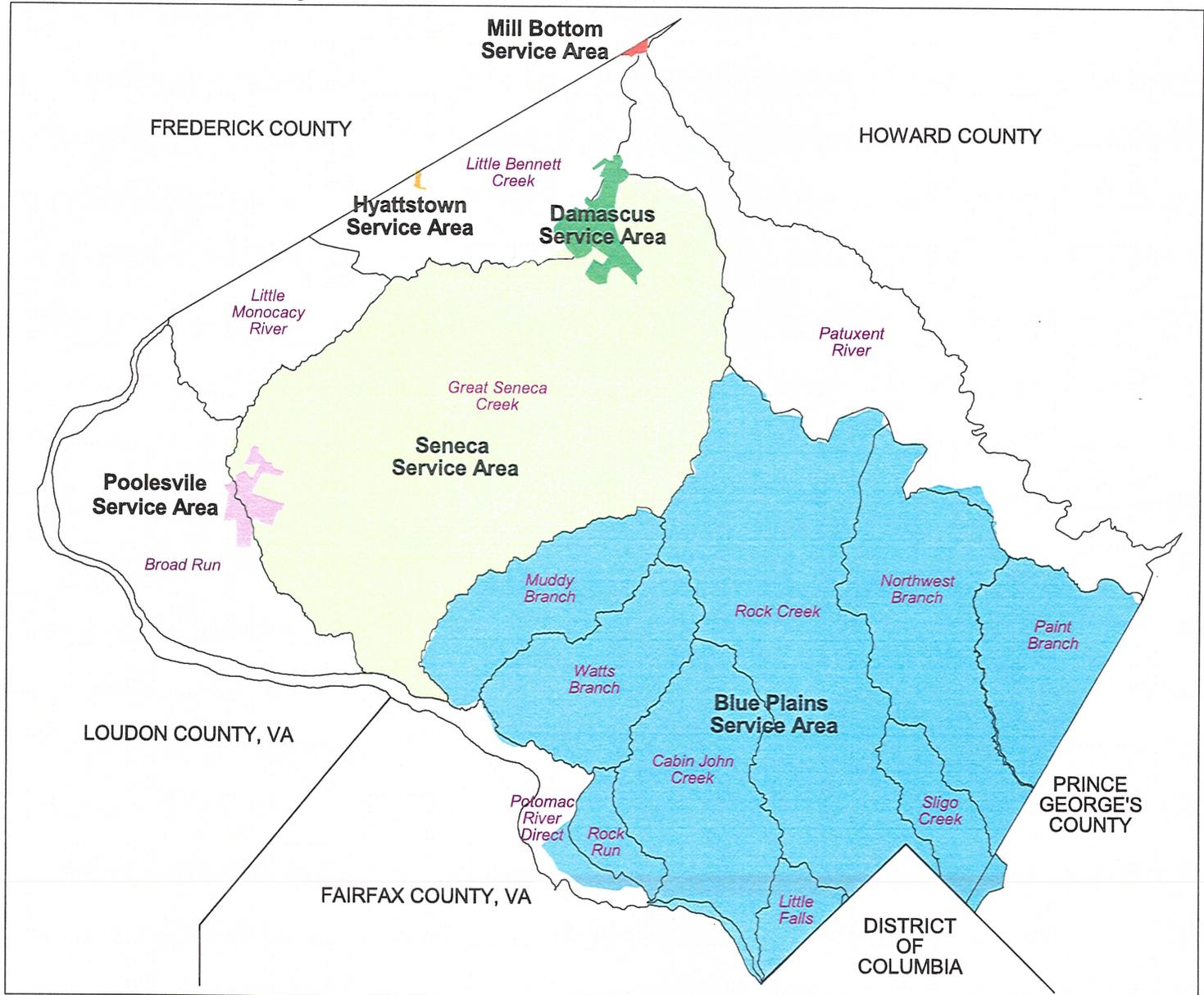
-  Wastewater Treatment Plants (WWTPs)
 -  10"- and Greater-Diameter Sewer Mains *
 -  Rockville Sanitary District
 -  Town of Poolesville
 -  Washington Suburban Sanitary District
- 10"- and Greater-Diameter Sewer Mains *



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Figure 4-F3: Community Wastewater Treatment Service Areas



MAP LEGEND

Wastewater Treatment Service Areas

-  Blue Plains Service Area
-  Seneca Service Area
-  Damascus Sewer Service Area
-  Poolesville Sewer Service Area
-  Hyattstown Service Area
-  Mill Bottom Service Area
-  Major Sewersheds



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Watershed Management Division
 4/1/03 -- GIS Project File: o:\wwteam\cwspl\2002update\chapt4\F3=WWTP_serv-area.apr

Seneca Creek, etc.). Through major trunk lines and pumping facilities the sewage flows from individual sewersheds are collected, combined, and conveyed for their eventual treatment at a wastewater treatment plant. The major drainage basins in the county are shown in Figure 4-F4.

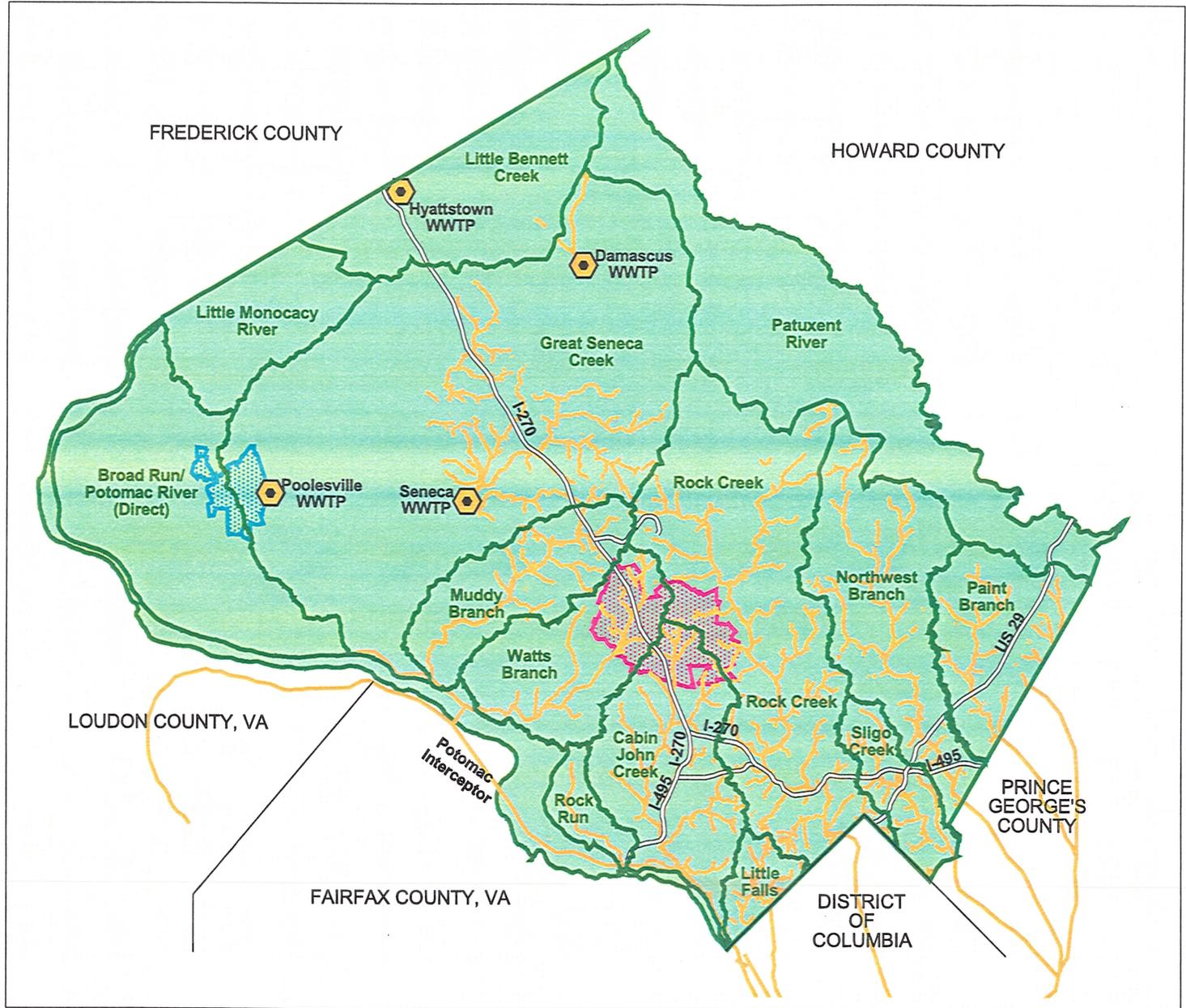
The county is also divided into 27 land use planning areas, each area forming a fairly cohesive district bounded by a major highway or natural border such as a stream valley. These planning areas have been established by legislative action of the County Council. An overlay of the drainage basins and planning areas is shown in Figure 4-F5. All of the county's community sewerage systems, wastewater treatment service areas, sewersheds, and planning areas contained in each community sewerage systems, are listed in Table 4-T1.

Community Sewerage Systems	Treatment Plant Service Area	Sewer Basins	Planning Areas	
WASHINGTON SUBURBAN SANITARY DISTRICT	BLUE PLAINS	Muddy Branch Rock Creek Watts Branch Cabin John Creek Rock Run Little Falls Branch Sligo Creek Paint Branch Northwest Branch	Aspen Hill (PA 27) Bethesda-Chevy Chase (PA 35) Cloverly - Norwood (PA 28) Colesville - White Oak (PA 33) Fairland - Beltsville (PA 34) Gaithersburg Vicinity (PA 20) Gaithersburg & Washington Grove (PA 21) Germantown (PA 19) Kemp Hill Four Corners (PA 32) Kensington - Wheaton (PA 31) North Bethesda - Garrett Park (PA 30) Olney (PA 23) Patuxent Watershed Conservation (PA 15) Potomac-Cabin John (PA 29) Rockville (PA 26) Silver Spring (PA 36) Takoma Park (PA 37) Travilah (PA 25) Upper Rock Creek Watershed (PA 22)	
		SENECA	Seneca Creek*	Darnestown (PA 24) Clarksburg (PA 13) Gaithersburg Vicinity (PA 20) Gaithersburg & Washington Grove (PA 21) Germantown (PA 19)
		DAMASCUS	Portions of Seneca Creek, Patuxent, and Monocacy River	Damascus (PA 11)
		HYATTSTOWN	Monocacy River	Bennett & Little Bennett (PA 10)
		POOLESVILLE**	Portions of Seneca Creek	Poolesville (PA 17)
		MILL BOTTOM	Portions of Patuxent River and Bennett Creek	Damascus (PA 11)
		ROCKVILLE SANITARY DISTRICT	BLUE PLAINS	Portions of Cabin John, Watts and Rock Creek
TOWN OF POOLESVILLE	POOLESVILLE	Portions of both Seneca Creek and Potomac River	Poolesville (PA 17)	
<p>* The Seneca Creek WWTP currently offloads and treats flows from the Blue Plains Service Area, but will be separate and independent from the Blue Plains system in 2003.</p> <p>** The Poolesville WWTP serves the communities of Jonesville and Jerusalem in the WSSD.</p>				

II. WASHINGTON SUBURBAN SANITARY DISTRICT

The Washington Suburban Sanitary District (WSSD), established by State law, includes most of Montgomery and Prince George's Counties, encompassing a total area of approximately 1000 square miles. Within Montgomery County, areas excluded from the WSSD include most of the City of Rockville and some surrounding areas, and the Town of Poolesville. Sewer service areas managed by the Washington Suburban

Figure 4-F4: Major Sewerage Basins (Sewersheds)



MAP LEGEND

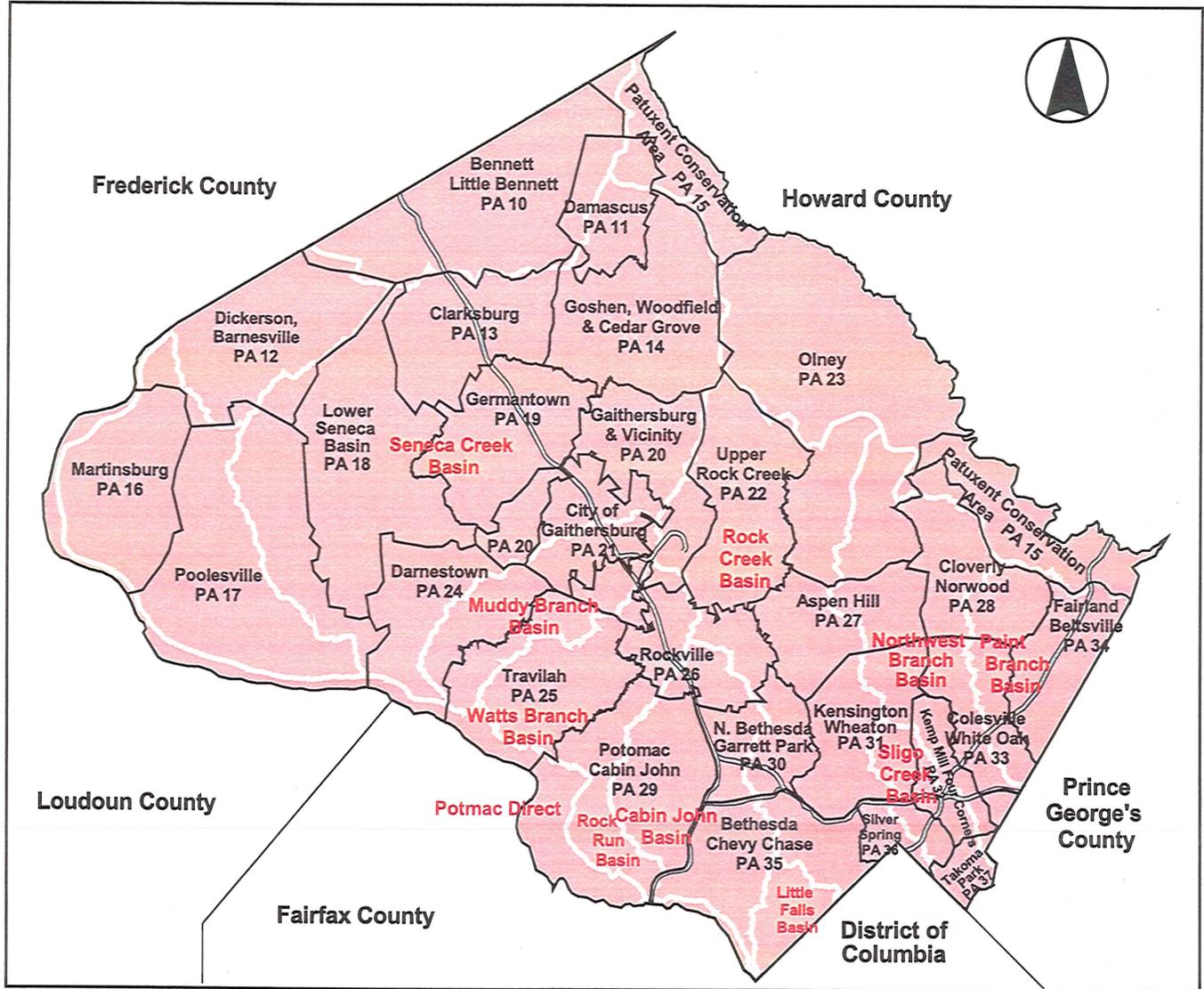
-  10"- and Greater-Diameter Sewer Mains
-  Wastewater Treatment Plants (WWTPs)
-  U.S. & Interstate Highways
-  Rockville Sanitary District (RSD)
-  Town of Poolesville
-  Major Sewersheds



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Figure 4F-5: Major Sewerage Basins and Planning Areas



MAP LEGEND

- Major Sewerage Basins (Sewersheds)
- M-NCPPC Planning Areas

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Sanitary Commission (WSSC) within Montgomery County include the Blue Plains, Seneca, Damascus, and Hyattstown service areas. WSSC also manages a small portion of the WSSD served by the Poolesville WWTP. The City of Rockville, also part of the Blue Plains service area, manages its own collection and conveyance systems, but relies on Blue Plains for treatment. The Town of Poolesville manages its own sewerage system, including collection, conveyance and treatment systems.

Guided by policies specified in this Plan, the provision of community sewer service within Montgomery County generally follows the patterns established by the County's General Plan for development, "On Wedges and Corridors." Community service is established and planned for the central and southern part of the county, following three major transportation corridors of higher density development north from the District of Columbia:

- The U.S. Route 29 (Columbia Pike) corridor to Burtonsville,
- The Georgia Avenue (State Route 97) corridor to Olney, and
- The U.S. Interstate 270/State Route 27 (Ridge Road) corridor to Clarksburg and Damascus.

Elsewhere, primarily in the western and northeastern areas of the county, wastewater disposal service generally depends on individual, on-site systems, which discharge their effluent to the ground.

A. Government Responsibilities -- The responsibilities for planning for and providing water service within the WSSD are multi-jurisdictional and depend on the cooperative efforts of municipal, County, State, Federal, and regional authorities. This is especially true with regard to the Blue Plains WWTP, a wastewater treatment facility shared by several jurisdictions. These agencies include the following:

- Montgomery County Government
 - Department of Environmental Protection (DEP)
 - Department of Permitting Services (DPS)
- Washington Suburban Sanitary Commission (WSSC)
- Maryland - National Capital Park and Planning Commission (M-NCPPC)
- District of Columbia Water and Sewer Authority (WASA)
- Metropolitan Washington Council of Governments (COG)
- State of Maryland
 - Department of the Environment (MDE)
 - Department of Planning (MDP)

These agencies, and their primary responsibilities and programs, are described in detail in Chapter 1, Section I.D.

B. Programs and Policies -- The following sections provide an overview of the major policies and programs relating to WSSC's role and functions in providing sewer services within Montgomery County's portion of the WSSD.

1. Facility Planning, Project Development and Approval Process -- This information is consolidated in Chapter 1, Section III.A.6.

2. Interjurisdictional Agreements -- The Washington Metropolitan Area has several regional sewerage facilities that support a number of jurisdictions. Two major regional facilities are the Blue Plains WWTP and the Potomac Interceptor (PI) sewer. The use of these facilities has been governed by a series of regional agreements dating to the 1950's. The following is a summary of major Intermunicipal agreements affecting the flow of wastewater and available treatment capacity for Montgomery County.

a. Blue Plains Intermunicipal Agreement (IMA) of 1985 -- The parties to the Blue Plains Intermunicipal Agreement (IMA) of 1985 include the District of Columbia; Fairfax County, Virginia; Montgomery and Prince George's Counties, Maryland; and WSSC. This agreement is the basic accord under which the regional facilities such as the Blue Plains WWTP and the Potomac Interceptor are managed and operated. The IMA:

- Recognizes the expansion of the Blue Plains WWTP from 309 mgd to 370 mgd to meet the projected wastewater treatment and associated biosolids management needs of the signatories through the year 2010.
- Defines the rights, obligations and responsibilities of the signatories regarding the use and management of facilities for wastewater transmission and treatment and for biosolids management.
- Allocates average and peak flows to the major interceptor sewers leading to the Blue Plains WWTP.
- Allocates the Blue Plains WWTP treatment capacity in accordance with projected 2010 needs.
- Arranges for sharing among the signatories capital facility costs in proportion to capacity allocation and for sharing facility operating costs in proportion to actual flow.
- Defines the process of making future planning decisions.
- Provides a mechanism for continuing coordination, cooperation and communication among the signatories.
- Supports a continuing water quality monitoring and evaluation program.

The Blue Plains WWTP was officially rated at 370 MGD in 1997, an increase of 61 MGD from its prior capacity of 309 MGD. The allocated capacities for each jurisdiction, based on the 370 MGD, are identified in Table 4-T2:

Table 4-T2: Blue Plains IMA Capacity Allocations		
IMA Participants	Blue Plains WWTP Capacity Allocations at:	
	309 mgd	370 mgd
WSSC	153.3 mgd	169.6 mgd
District of Columbia	135.0 mgd	148.0 mgd
Fairfax County	16.0 mgd	31.0 mgd
Other Potomac Interceptor Users	4.7 mgd	11.4 mgd
Reserved for Potomac Interceptor Users	--	10.0 mgd*
* Approximately 5.0 mgd reserved for Loudoun County, Virginia.		

Since the IMA's signing in 1985, several significant changes have occurred in the region that the signatories could not foresee at that time. These changes are a result of actions that have affected wastewater and biosolids management policies, administrative structure and organization of participating jurisdictions, and regulatory initiatives and policies. The result is that the IMA is presently out of date in some areas.

The Blue Plains Chief Administrator Officers (BPCAOs) recognized this concern and recommended that the Blue Plains IMA committees (BPRC and BPTC) review the IMA and suggest a format and process through which it could be updated. The IMA committees worked in 2000 to define the key updates and attempted to define a process for updating the IMA. At this time, the IMA committees have proposed attaching an annotation to the IMA which would leave the original IMA language unchanged, but would specify the significant changes and updates to policies and facilities since 1985. The review and approval of the annotation is presently under consideration by the BPCAOs. This annotated agreement is anticipated to serve as the updated IMA until the regional jurisdictions complete an updated regional long-term wastewater management plan. This regional plan, initiated in 2002, is expected to take two years to complete. The process of renegotiating the IMA should begin following the completion of the regional long-term wastewater management plan, and may take two to three years to complete. Accordingly, the IMA signatories currently expect that the region should have a renegotiated IMA to operate from in the 2006-2008 time frame.

b. Bi-County Capacity Agreement -- In the late 1960's, it was realized that the Montgomery County's wastewater treatment needs would not be met indefinitely at the Blue Plains WWTP. In 1970, the lack of allocated treatment capacity for the county at the Blue Plains WWTP resulted in the imposition of a building moratorium in the county. The County responded by conducting a number of studies and reexamining its wastewater treatment needs. In the mid-1970's, the County approved the construction of two interim wastewater treatment plants, the Seneca and Rock Creek WWTPs, to address the immediate capacity problems. During 1978-1981, a permanent 20 mgd treatment plant was proposed for the Rock Run site in Potomac, Maryland, and a conceptual design was developed. During this time the WSSC's allocated capacity of 153.3 mgd at the Blue Plains WWTP was divided between Montgomery and Prince George's Counties and the City of Rockville as shown in Table 4-T3:

Jurisdiction	Allocation (mgd)
Montgomery County	77.6
Prince George's County	66.4
City of Rockville	9.3
WSSC Total	153.3

To remedy an anticipated future capacity shortfall at the Blue Plains WWTP, Montgomery and Prince George's Counties finalized the Bi-County Capacity Agreement in 1983. The agreement detailed how the two Counties will share the available wastewater treatment capacity at the Blue Plains WWTP, and identified the next steps for WSSC to provide treatment capacities beyond the then-existing limiting capacity of 309 mgd at Blue Plains. Some of the major provisions of this agreement are as follows:

- WSSC shall allocate all existing and future WSSD wastewater treatment capacity in the Blue Plains Service Area on a first-come, first-served basis, regardless of County.
- The Blue Plains WWTP expansion is the preferred long-range solution to meet the WSSD wastewater treatment needs within the Blue Plains Service Area. Both Counties and WSSC will vigorously pursue implementation of this solution.
- When WSSD capacity in the Blue Plains Service Area is exhausted, including any expansion of the Blue Plains WWTP, then the proposed Rock Run WWTP would be constructed and shall become the next increment of capacity for the Blue Plains service area.
- If, for reasons beyond the control of the two Counties and WSSC, the Blue Plains WWTP cannot expand and Rock Run WWTP cannot be built, the two Counties and WSSC will undertake discussions to revise short-term flow management provisions and to redefine the long-range plan.
- Once the 20 mgd Rock Run WWTP begins operations, the policy of both Counties and WSSC shall be to operate the WSSD as a unified entity where wastewater treatment capacity is built and wastewater flow is managed in a cost-effective manner--after a thorough examination of economic, environmental and community impacts--regardless of jurisdictional boundaries.

c. WSSC - Rockville Agreements -- The City of Rockville's sewage collection system conveys flows to six different interconnections with WSSC pipelines for ultimate delivery to the Blue Plains WWTP. The city's use of WSSC conveyance facilities has been defined through several transmission agreements. A 1956 agreement provides for the City to discharge a peak flow of 6.8 MGD into the Cabin John Basin; the City's negotiated capacity in the Cabin John basin downstream of Booze Creek increases to 8.0 MGD. A 1966 agreement provides for a maximum discharge of 8.0 MGD to the Watts Branch Basin. The City of Rockville is also permitted to discharge a peak flow of 9.84 MGD into the Rock Creek Basin. In 1975, the City of Rockville and WSSC executed a treatment capacity agreement which specified that WSSC would provide up to an additional 0.4 MGD per fiscal year of treatment capacity to Rockville from the WSSC's proportionate share of

Blue Plains WWTP capacity, up to a total annual average City flow of 9.31 MGD. The City acknowledges that it has not purchased sufficient peak capacity in all sewers to convey an annual average of 9.31 MGD to the Blue Plains Wastewater Treatment Plant. Furthermore, the 1975 agreement provides that WSSC may rent treatment capacity not required by the City of Rockville.

d. WSSC - Poolesville Agreements -- A 1984 agreement between WSSC and the Town of Poolesville allows WSSC to send a maximum flow of 20,000 GPD from the Jonesville and Jerusalem communities just north of the town in the WSSD into the Poolesville WWTP for treatment.

3. Wastewater Flow Analysis -- Flow projections are based on the County's adopted land use plans and approved service areas for future growth, and are in accordance with the County's latest master plans for development. The projected future flows are estimated in proportion to population projections with an allowance for planned commercial and industrial growth and factors such as infiltration (extraneous groundwater) and inflow (water discharged into sewer systems from roof leaders, area drains, etc.). WSSC is responsible for conducting wastewater flow measurements and flow analysis for all areas within the WSSD. Various aspects of WSSC's flow management system are discussed in the following sections.

a. Flow Monitoring -- WSSC's program for field monitoring of sewage flows provides continuous data on the status of peak and average wastewater flows throughout the WSSC system. The current monitoring system consists of permanent stations which telemeter flow data to a central computer, reducing labor-intensive field collection of data and analysis of charts, and providing greater reliability through immediate reporting of any malfunctions. Fifty permanent sewer flow monitors and seven permanent rain gauges have been installed throughout the various sewer basins in Montgomery County. In addition, WSSC uses temporary flow meters which it can install at various locations for special studies. The following table presents permanent flow meter and gauge locations by sewer basin:

Sewer Basin	Flow Meters	Rain Gauges	Billing Meters
Cabin John	8	1	3
Little Falls	1	0	1
Muddy Branch	4	0	3
Northwest Branch	6	0	0
Paint Branch ¹	1	1	1
Rock Creek	19	2	4
Rock Run	0	0	1
Seneca Creek ²	8	3	1
Sligo Creek ¹	3	0	0
Watts Branch	0	0	2
Total	50	7	15

¹ Montgomery County only
² Includes Magruder Branch (Damascus) and Jonesville/Jerusalem (Poolesville)

The WSSC Planning Section is responsible for the maintenance and operation of part of the Consolidated Engineering System (CES), a computerized record keeping system which tracks the status of unconnected sewer commitments by geographic area (basin), type of future connection (residential, commercial, etc.), estimated average daily flow contribution, and expected connection date. WSSC uses data from CES to calculate remaining available treatment capacity in a particular service area, and to assist in projecting future sewage flows at various points in the transmission system, once appropriate peaking factors and existing peak flows have been established.

Currently, CES tracks future additional flow on the basis of authorizations granted by the WSSC, plumbing permits and actual hookups. A review of the CES system with Montgomery and Prince George's counties staff is recommended (see subsection b, below). The CES system is frequently the process by which needs and priorities for sewer infrastructure are identified and linked with population projections.

b. Flow Reporting -- WSSC generates the following reports on a regular basis:

- Quarterly Available Capacity Report – This report consolidates and replaces three separate WSSC reports: Sewage Flow to Blue Plains; Quarterly Addendum for WSSC Operated Plants, Mattawoman, Poolesville, and Hyattstown; and Uncommitted Capacity Summary, which summarized WSSC's available sewage transmission capacity for which connection permits have not yet been issued.
- Report to MDE on Sewage Flows and Record Plat Commitments – This quarterly report for the State tabulates existing flows, flows committed through record plat, and remaining uncommitted flows at each of the wastewater treatment plants receiving flows from the WSSC sewerage system..
- Flow Forecast for Montgomery County Sewer Service Areas – This report is issued on an as-needed basis. Forecasts are by major basin and mini-basins or some other small geographical unit, as determined by WSSC staff. Predicted sanitary flow is based on current M-NCPPC growth forecasts and the latest unit flow factors projected for 5-, 10-, and 20 -year periods.
- Unit Flow Factor Report for Montgomery County Sewer Service Areas – This report is produced periodically and presents current unit flow factors to be used in the sewage flow report. It includes evaluation of the prior winter's water consumption for various user categories to detect any trends in projected sanitary flow. This report includes a reasonable allowance for unit infiltration/inflow based on rainfall and groundwater level probability analyses.

c. Flow Modeling -- WSSC conducts wastewater flow modeling primarily in conjunction with facility planning studies. WSSC maintains a sewer model which consists of sewer pipe inventory data throughout the sanitary system, as well as data from the comprehensive flow monitoring system described above. This information is used to determine existing and baseline flow conditions. Then land use and demographic data obtained from the M-NCPPC are superimposed on the existing flows to project future flow conditions for a particular study area.

In addition, WSSC applies various levels of more finite sewage flow modeling. For selected sewer basins, available capacity reports are produced periodically. These reports track plumbing permits, hook-ups, and outstanding authorizations for development, by study point, and link this information to the physical capacity of trunk sewer segments within a particular sewer basin. Other analyses include investigation of trunk sewers that are operating at or near capacity. The results provide information regarding the relative risk of surcharge and overflow in the selected sewer segments.

Water and Sewer Plan Recommendation
Montgomery County suggests that opportunities to integrate this model, or an updated model, with the MC:MAPS Geographic Information System (GIS) be examined. This will provide direct access to population, employment, land use, and natural feature information data pertinent to the computation of sewage flow projections.

4. Transmission System Capacity Requirements and Moratorium Policies -- For planning purposes, the WSSC conducts comprehensive analyses on a regular basis to determine the wastewater transmission needs within the WSSD. In conjunction with these analyses, Montgomery County has developed and adopted policies to prioritize the County's transmission capacity needs. WSSC must follow these criteria and policies for each basin classification, by designating part or all of each sewerage drainage basin in the county as either an **Adequate Capacity Basin, Potential Overflow Basin, or Existing Overflow Basin,**

depending upon the transmission system's ability to handle sewerage flows. For existing and potential overflow basins these designations will be limited to the area above and tributary to the problem that causes the designation. References to the "Director" refer to the Director of the Montgomery County Department of Environmental Protection.

Table 4-T5: WSSC Sewerage Basin Designations and Policies

Designation	Description	Policy
Adequate Capacity Basin	Part or all of any basin in which regular overflows and user backups have not been experienced and the observed or calculated peak sewage flow, allowing for an appropriate wet weather reserve, does not exceed the sewer operating capacity.	WSSC may permit additional sewer hookups and commitments subject to the availability of adequate treatment capacity.
Potential Overflow Basin	Part or all of any basin which has not experienced regular overflows or user backups, but for which the calculated or observed peak sewage flow, allowing for an appropriate wet weather reserve, exceeds the peak sewer operating capacity	WSSC, after consultation with the Director, should declare by resolution that it will not permit additional sewer hookups or commitments which would significantly increase the probability of sewer overflows or user backups until a facility plan is initiated or relief measures are under construction. The WSSC may continue to permit additional sewer hookups or commitments which would result in peak sewer operating capacity being exceeded if the calculated peak sewage flow will not result in an increased significant probability of overflows or user backups prior to completion of a relief project. The identical exemptions defined for immediate public health hazards, public service buildings, and individually-owned abutting lots in the policy for Existing Overflow Basins below also apply to this policy for Potential Overflow Basins.
Existing Overflow Basin	Part or all of any basin which is experiencing regular sewage overflows or user backups such that an immediate public health problem exists. "Regular" is defined as having already occurred and projected to occur more than once in ten years, other than maintenance-related occurrences.	WSSC, after consultation with the Director, should declare by resolution that it will not permit additional sewer hookups or commitments which would increase the frequency of overflows or user backups until relief measures are underway with a projected completion date of a year or less. Exemptions: public service buildings approved by the Director, and existing unconnected buildings creating immediate public health hazards as determined by the WSSC or the Director are exempt from any sewer hookup or commitment prohibition. Lots serving existing or proposed individually-owned single-family dwelling units abutting an existing sewer line and which the applicant owned or contracted for prior to the date of the moratorium resolution are exempt from any sewer hookup or commitment prohibition.

5. Sanitary Sewer Overflows -- Sanitary sewers serve a vital function in the transport of wastewater from the customer to the treatment plant. Wastewater either flows by gravity or is pumped to the nearest wastewater treatment plant. WSSC's wastewater collection system is comprised of over 5,000 miles of sewer line and forty-four wastewater pumping stations. When sewers become blocked by things like grease or tree roots, wastewater can back up in the line and eventually overflow from a manhole. This is known as a sanitary sewer overflow (SSO). There are a number of other possible causes of SSOs including pipe deterioration,

undersized sewer lines, excess infiltration or inflow of stormwater and power outages at sewage pumping stations.

Most of WSSC's overflows are due to blockages caused by grease, tree roots, or other foreign objects and a small percentage are caused by power outages. Less than one percent are caused by "wet weather," i.e. the inflow of storm water. This attests to WSSC's commitment to maintaining and upgrading its system to keep up with the infrastructure needs of its expanding customer base.

Over the past several years the Environmental Protection Agency (USEPA) has developed specific Federal regulations to address SSOs. In 1999, EPA released "strawman" regulations for comment. These proposed regulations would require utilities to develop and implement a "Capacity, Management, Operation, and Maintenance (CMOM)" program. The CMOM will outline specific ways a utility such as WSSC will prevent and respond to SSOs. WSSC already has a number of procedures in place to minimize the occurrence of SSOs and to mitigate their impacts when they do occur. WSSC has started the process of adapting its procedures to EPA's proposed CMOM requirements.

The USEPA and the U.S. Department of Justice have initiated the development of an enforcement strategy for all major sewer systems with reported SSOs. In Maryland, this federal policy has included WSSC. Presently the WSSC is negotiating a consent agreement (order) with the U.S. Department of Justice to address past overflows and to adopt a monitoring and management system to prevent the occurrence of SSOs in the future.

The State of Maryland has placed new emphasis on its requirement to report all SSOs to the Department of the Environment (MDE) within twenty-four hours of their occurrence, as well as the need to notify the public whenever an SSO has any significant potential to affect public health or the environment. MDE has provided guidance suggesting that wastewater utilities need to work closely with local environmental and health departments to identify any such potential impacts and to notify the public when warranted. WSSC, in conjunction with Montgomery and Prince George's Counties, has developed procedures for this coordination and public notification.

Montgomery County DEP and WSSC are fundamentally committed to excellence in the safeguarding of public health and the protection of the environment and are committed to aggressive sanitary sewer overflow programs.

6. Sewer Sizing Policies -- WSSC's Design Manual provides both general and specific sewer design criteria and designates the WSSC Development Services Group with the responsibility for sizing the new sewer mains to be constructed within a proposed development. In general, sewer systems are designed for ultimate flow within the drainage area unless the WSSC determines that the County's land use policies allow for a lesser requirement.

For sewers serving a complete sewershed, the ultimate sewage flow is determined by assuming that the entire basin will develop in accordance with approved master plans. Sewer systems which serve only part of a sewershed are sized to serve the entire sewershed. Normally, sewer systems are designed to function by gravity. In special cases, gravity lines will be allowed to flow under a slight pressure head or surcharge.

7. Pressure Sewer Systems -- Where gravity sewers are not appropriate for use, WSSC can approve the use of pumping stations and force mains or grinder pumps and low-pressure sewers. Pumping systems are used where there are no receiving gravity sewers lower in a drainage basin (as in the Hawlings River watershed), or where the construction of gravity mains needed to connect with the existing gravity sewage system is either uneconomical or environmentally unacceptable (as at the Sheffield subdivision served by the Redland Park WWPS in the Rock Creek watershed).

WSSC's experience with grinder pumps and small-diameter, low-pressure sewer mains has revealed problems in some cases with objectionable odors and corrosion in the receiving gravity sewer mains. Before these problems became evident, WSSC had constructed several projects substantially dependent on grinder pump systems. Once they became aware of these problems, WSSC instituted a policy limiting the number of allowed grinder pumps within individual projects. WSSC also uses techniques such as weirs in house

connections and filters in manholes to mitigate the odor problems affecting customers connected to the receiving gravity sewers. As WSSC's experience with grinder pump systems has grown, empirical evidence has shown that the number of dwelling units connected to the pressure systems is not necessarily the critical factor in creating odor and corrosion problems. Rather, the evidence points to sewage lag time in the pressure system prior to its discharge into the receiving gravity sewers. A WSSC task force is currently evaluating this evidence and is expected to make new policy recommendations for the use grinder pump systems during 2003. Once adopted by WSSC, the County will incorporate those policies as a part of this Plan.

8. Infiltration and Inflow (I/I) Control Program -- Infiltration of groundwater into aging, defective or damaged sewers and the inflow of water from sources such as direct connections of roof leaders, area drains, drains from springs and swampy areas, and manhole covers may contribute to sewage collection system overloading or may stress the capacities of wastewater conveyance and treatment facilities.

WSSC has reviewed its collection system data and is aware of excess I/I in several of the sewer basins in the WSSD. In the past few years, WSSC focused a significant effort on evaluating the county's Rock Creek basin, which led to the development of a Sewer System Evaluation Survey (SSES) for that basin. The SSES recommendations included corrective actions for specific problems identified in manholes and sewer pipelines. The total estimated cost to rehabilitate the system defects identifies in the study area was approximately \$10.6 million.

WSSC has identified other sewer basins in the WSSD as priority basins requiring SSES work. However, limited financial resources have limited WSSC's ability to address these issues in a timely fashion. In the FY 2003 WSSC budget both Montgomery and Prince George's Counties identified funding policies to begin addressing these I/I problems through the Sewer Reconstruction Program. Accordingly, WSSC has begun an SSES in the Cabin John basin and has agreed to provide the Counties with a list of problem basins and their priority for future SSESs. Analysis of the Cabin John basin flows revealed not only a problem with I/I, but also a potential sewage exfiltration problem.

The I/I control program also directly supports renewed federal initiatives for controlling Sanitary Sewer Overflows (SSOs) which include facility and manhole overflows as well as basement back-ups. Using I/I assessment techniques, WSSC explores the causes for each SSO event, and seeks resolutions to preclude future occurrences. Survey tools deployed during I/I or related work (physical inspection of manholes, TV inspection of sewers) yield rehabilitation recommendations which are implemented in the Sewer Reconstruction Program. In this manner, WSSC routinely detects and corrects leaking as well as non-leaking structural defects.

The sewer rehabilitation program needs greater coordination between WSSC and Montgomery County. WSSC needs to communicate to the County information related to how sewerage systems are evaluated, how capital resources are allocated within the program, and what systems have been and are scheduled for work. The County has similar information needs with regard to the water main rehabilitation program. The WSSC CIP allocates for both counties a total of \$27.4 million in FY 2000 for these programs (Information Only Projects W-1.00 and S-1.00). The County presently has no basis to ensure that WSSC allocates these financial resources appropriately with regard to areas or systems with the greatest needs. County assessment of rehabilitation programs could lead to a better-coordinated infrastructure planning effort and better timing of required new capital projects.

Water and Sewer Plan Recommendation
WSSC needs to provide Montgomery and Prince George's Counties with a list of sewer basins prioritized for SSES work based on the impact of excess flows on sewer conveyance systems and treatment facilities. This list will need to be updated annually and accompanied with a financial plan to allow these problems to be addressed in a timely manner.

9. Industrial Pretreatment Program -- WSSC implements a federally-required pretreatment program, the Industrial Discharge Control Program (IDCP). The IDCP has four primary goals:

- To monitor and control the discharge of industrial waste into the sanitary sewer system.
- To prevent the discharge of pollutants which will interfere with the operation of wastewater treatment plants, including interference with sludge use and disposal.
- To prevent the discharge of pollutants which will pass through the treatment works or otherwise be incompatible with such works.
- To improve opportunities to recycle and reclaim municipal and industrial wastewater and sludge.

The program also helps protect WSSC personnel and WSSC sewerage systems by regulating the discharge of toxic, corrosive, and other prohibited substances into the sanitary sewer.

IDCP requirements apply to all industrial users within the WSSD, and include those industrial users whose wastewater is treated at the District of Columbia's Blue Plains WWTP. WSSC regulates industrial users in the WSSD through a variety of activities including field investigations and sampling, permitting, compliance reviews, and enforcement measures. In order to comply with WSSC discharge limitations, some industrial users are required to install pretreatment equipment to treat their wastewater prior to discharging it to WSSC's sanitary sewers. In some cases, the equipment may be relatively minor (e.g., silver recovery units or grease traps); in other cases, the required level of pretreatment can be extensive.

WSSC achieves the pretreatment program's goals by performing the following primary functions:

a. Investigation/Monitoring -- WSSC conducts on-site investigations of industrial users, evaluating industrial user processes, chemical usage, types and volumes of wastes generated, and methods of waste disposal. Compliance monitoring is conducted independently of the industrial user to determine whether their discharges meet WSSC standards. Grab and composite samples of the industrial user's processed wastewater are collected using manual and automatic sampling methods. Analytical results are then compared to WSSC limits to determine the industrial user's compliance status.

b. Compliance/Enforcement -- Discharge permit applications are sent to industrial users to determine if they should be permitted through the IDCP. WSSC issues discharge authorization permits to those industries qualifying as significant industrial users. The discharge permits authorize industrial users to discharge their process wastewater to WSSC's sanitary sewer system, specifying discharge limitations, restrictions and self-monitoring requirements. The permitted industrial user is required to perform monitoring of its wastewater discharges and report the results to WSSC. IDCP staff review the user industry's self-monitoring reports to determine compliance with its authorized discharge limitations. This review also assures that the sample collection, preservation, and analyses performed by, or on behalf of, the industrial user are conducted in accordance with approved methodologies and that the results accurately represent the industry's discharges.

c. Enforcement Action -- WSSC takes enforcement actions against those industrial users who violate discharge limits or fail to comply with other regulatory requirements. Enforcement actions can include notices of violation, civil citations with monetary penalties, administrative orders, and termination of water/sewer service.

d. Data Management -- Through its pretreatment program, WSSC maintains electronic files and databases of information on industrial users. This information includes the results of industrial investigations, analytical data from the industrial user as well as WSSC, permit information (including limitations and special conditions), and enforcement actions taken against violators. WSSC recovers a portion of the pretreatment programs costs through an annual fee assessed to the permitted industrial users. The varying annual fees are based on the anticipated level of effort associated with the industrial users within specific industrial categories.

In addition to activities associated with regulating industrial users, WSSC also evaluates the wastewater characteristics of its wastewater treatment plants (Damascus, Parkway, Piscataway, Seneca and

Western Branch). WSSC also annually sampling of the influent and effluent for each plant for EPA designated priority pollutants. The analytical data is used to develop local limits for industrial users and to evaluate treatment plant compliance with water quality standards. WSSC is also required to report its monitoring results for each treatment plant to the State's DNR.

10. Wastewater Treatment System Requirements: General Provisions -- In addition to discharge and construction permit requirements on existing and new treatment plants administered by the State of Maryland, Montgomery County shall review and approve all new facilities and all significant modifications to existing facilities within the county. All new community and multi-use treatment systems and points of discharge shall be specifically delineated in this Plan prior to the issuance of final construction and discharge permits by the State of Maryland. In addition, the County government may require stricter levels of treatment where warranted by projected receiving water quality impacts resulting from the discharge. These requirements also apply to all individual systems exceeding 1,500 gallons per day average daily flow and all individual systems of any size requiring a groundwater or surface water discharge permit, except heat pump discharges. Permit applicants have the burden of adequately demonstrating to the County that the proposed facilities will not have a significant, detrimental impact on the surrounding community or receiving waters.

Proposed modifications to existing treatment facilities, including both system upgrading and expansion, are also subject to the County's approval. This includes any proposed community multi-use or individual system treatment facility or discharge point modification which requires a State construction and/or discharge permit. Any modifications requiring MDE's review and approval shall also require prior incorporation of the proposed modification in this Plan, as either a text amendment or as an adopted capitol improvement program (CIP) project. Specific proposals for new or modified facilities shall be submitted to the Director of DEP with supporting documentation as required by the Director.

The State of Maryland, as part of its efforts to improve the ecological health of the Chesapeake Bay, is investigating the impact of lowering the wastewater treatment plant nitrogen discharge standard from 8 milligrams per liter (mgl) to 3 mgl. This new standard would affect all of the wastewater treatment plants serving Montgomery County, and would have significant financial implications for WSSC and WASA with regard to the facility upgrades and treatment process improvements needed to comply with the lowered standard.

11. Financing Sewerage Systems -- WSSC uses several methods to fund the construction and operation of the sewerage system. Detailed information concerning WSSC's funding methods is included in Chapter 1, Section IV.A.

C. Existing and Planned Sewerage Systems and Projected Needs -- The sewage collection and conveyance system within the WSSD consists of over 4,000 miles of gravity and force mains ranging from 6 to 102 inches in diameter and 52 wastewater pumping stations, including 26 stations in Montgomery County. This section presents an overview of the County's long-term sewerage system needs and anticipated constraints within each service area and individual sewershed. The anticipated sewerage system needs and constraints discussed in this section focus on the major components of WSSC's transmission and treatment facilities. The information presented here is based on the results of various studies as referenced at the end of this chapter.

The planned projects programmed in the WSSC CIP are intended to address the county's current and/or short-term wastewater conveyance or treatment needs. The CIP projects include funding and schedules for planning, design, land acquisition, and construction of facilities. These facilities often support new development in accordance with the County's approved plans and policies for orderly growth and development. Other projects are for system improvements and/or for compliance with environmental regulations and policies.

Flow projections within the WSSD are based on the County's adopted plans and approved service areas for future growth, and are in accordance with the County's latest master plans for development. M-NCPPC provided the population and growth estimates used in WSSC's studies. WSSC has developed flow projections to determine the approximate time a planning decision for each facility should be made.