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Washington Suburban Sanitary Commission

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August 27, 2014

The Honorable Rushern L. Baker, III
Prince George's County Executive
County Administration Building
14741 Governor Oden Bowie Drive
Upper Marlboro, MD 20772

The Honorable Isiah Leggett
Montgomery County Executive
Executive Office Building
101 Monroe Street, 2nd Floor
Rockville, MD 20850

RECEIVED
MONTGOMERY COUNTY
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Dear County Executives Baker and Leggett:

We are hereby transmitting the findings and recommendations of the Bi-County Infrastructure Funding Working Group's Subgroup on Unserved and Underserved Areas for your consideration. WSSC's Commissioners unanimously accepted the findings of the Subgroup on March 19, 2014 and authorized the transmittal of the attached report and findings to the legislative and executive branches of the two counties for consideration on July 16, 2014.

Unserved and underserved areas are those properties served by wells and/or septic systems (i.e. not connected to WSSC's water and sewer systems). As these wells and/or septic systems fail, homeowners face the very expensive prospect of connecting their property to WSSC's water and sewer systems. The Bi-County Infrastructure Funding Working Group established a subgroup comprised of staff members and a Commissioner from both counties and WSSC staff to study this issue and provide alternatives to the current extension process.

The current system is not a viable, long-term solution for addressing the issue of unserved and underserved areas. The Subgroup identified several financial and policy challenges with the current system for extensions. Principal among these challenges is the affordability of extensions for homeowners. The Subgroup's findings include a recommended process for moving forward toward the creation of an improved system of sub districts.

Sub districts can equitably allocate the large costs of extending public sewer extensions over a large number of properties to be served. Since extensions often serve more than one property, there is a significant question of equity. The sub district mechanism can mitigate these characteristics of the current system. The sub district mechanism also ensures that those who directly benefit from connecting to the public sewer system pay for the extension costs and are not be subsidized by rate payers.

Unified leadership from both the counties and WSSC is required to create and implement an improved system including the comrnitment of resources to educate, plan, and laying the foundation for the improved process.

Sincerely,

Gene W. Counihan, Chair
Bi-County Infrastructure Funding Working Group

Attachment

cc: The Honorable Mel Franklin and Members of the Prince George's County Council
The Honorable Craig Rice and Members of the Montgomery County Council

Water and Sewer Extension Needs for Existing Neighborhoods

Prepared by the Subgroup on Unserved and Underserved Areas for the Bi-County Infrastructure Funding Working Group

WSSC
Where Water Matters

July 2014

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EXECUTIVE SUMMARY

Statement of Problem

Located within the defined public water and sewer envelopes in Prince George's and Montgomery Counties are numerous properties served by wells and/or septic systems (i.e. not connected to WSSC water and sewer systems). These unserved and underserved areas within the counties' public service envelopes may be within close proximity to existing water and sewer mains or were approved for construction of mains and extension of water and sewer lines. However, the extension of service to these properties—even over relatively short distances—is too expensive to allow them to connect. These properties are typically older homes that were constructed prior to development of modern design criteria and regulations. Consequently, individual on-site systems were constructed on lots:

- That may not meet modern standards for septic system placement
- That lack areas approved for replacement wells or septic systems
- That may not have approvable repair or replacement areas for on-site systems

Because the operating lives of septic systems are typically estimated to be 30 ± years, the issue of unserved and underserved areas has been growing and is expected to continue to grow as septic systems age and fail.

The cost of extending new water and sewer systems to serve these properties, whether desired by the homeowner or required due to a failing well or septic system, is too expensive to be initiated. Twenty years ago, WSSC constructed and financed community water and sewer lines and assessed a front foot benefit charge to homeowners. This system took advantage of economies of scale by spreading large infrastructure costs over a large number of properties resulting in an average front foot benefit assessment that was affordable. In the late 1990's, WSSC stopped constructing water and sewer lines for new subdivisions, instead relying on developers of those subdivisions to construct and finance these mains. This shift eliminated the benefits of economies of scale to the detriment of individual homeowners. Consequently, it has become next to impossible for the homeowners to upgrade these older houses to community water and/or sewer service, even when necessary due to failed or failing on-site systems.

This problem also works against fundamental goals in each County's Comprehensive Water Supply and Sewerage Systems Plan:

- That these plans establish public service envelopes based on adopted service policies and county-wide land use planning recommendations.
- Further, that water and sewer service policies, and infrastructure extension and financing mechanisms, act to promote the use of public services within these envelopes both for new development and for existing development still using on-site systems.

Note: This report focuses primarily on sewer extensions as these are more costly and more difficult to attain sewer suitability. The findings, processes, and alternatives discussed in this report are equally applicable to both sewer and water extensions.

Bi-County Infrastructure Funding Working Group

WSSC established the Bi-County Infrastructure Working Group ("The Working Group") in 2010 to identify options for lowering the trajectory of rate increases. These options included obtaining access to alternative and/or less costly sources of revenue or methods of funding for operational and capital requirements in the context of the growing need to rehabilitate, upgrade and replace water and wastewater infrastructure and related facilities. The Working Group is comprised of representatives from the executive and legislative branches of Montgomery and Prince George's Counties, one WSSC Commissioner from each county, and WSSC staff. One of the policy issues identified for study by the Working Group is the extension of public water and/or sewer service to unserved and underserved areas of Montgomery and Prince George's Counties.

Subgroup on Unserved and Underserved Areas

A Subgroup of the Working Group was created to further study this issue and to develop possible alternatives to the existing funding mechanism. The Subgroup included staff members from the two counties and WSSC:

- Shirley Branch, Prince George's County, Department of Environmental Resources
- Chris Cullinan, WSSC, Finance Office
- Dave Lake, Montgomery County, Department of Environmental Protection
- Manfred Reichwein, Prince George's County, Health Department
- Alan Soukup, Montgomery County, Department of Environmental Protection
- Tom Traber, WSSC, Finance Office (retired 2013)

The scope of the Subgroup's efforts included:

- Documenting the current unserved and underserved conditions in each County
- Evaluating the pros/cons of the current system using "sample communities" from each County
- Evaluation of financing criteria and alternatives
- Policy challenges/deficiencies of the current system
- Identifying a roadmap to an "improved" system of extending water and sewer service to unserved and underserved areas
- Develop financing options implement an "improved" system

The Subgroup met seven times during 2013 and made three presentations to the Working Group and two presentations to WSSC Commissioners. These presentations functioned as educational presentations and progress reports. This report is comprised of the research and information presented to the Working Group and Commissioners.

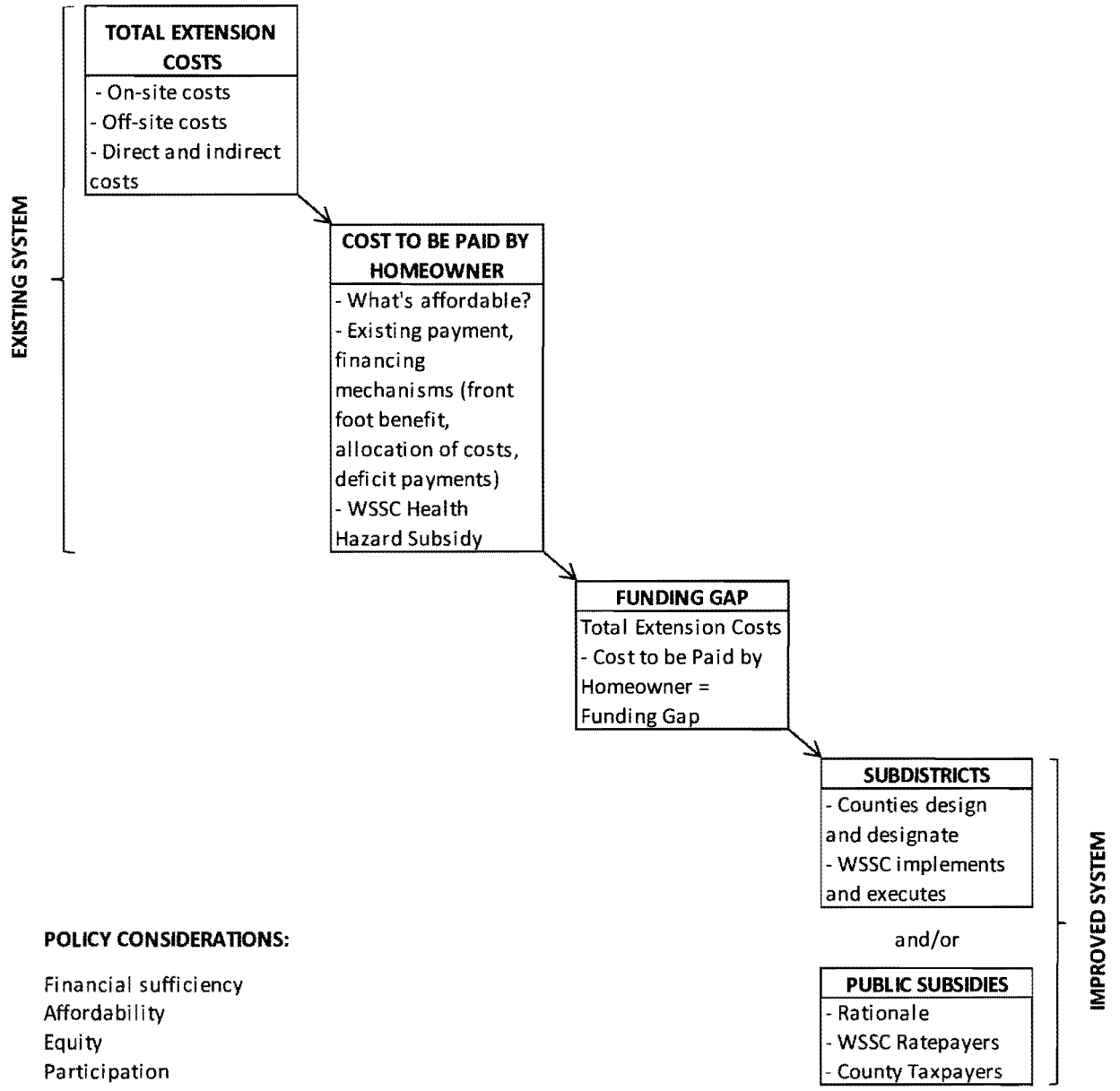
Findings of the Subgroup Regarding the Current System of Extensions

The current system of financing extensions is flawed. This is evident in the fact that since 2005, only sixteen extensions have been completed. The current front foot benefit system was designed to pool large and small extensions and allocates costs over a large number of connections which made extensions affordable. The current system does not work for small scale extensions, including health hazard situations. The current system has significant financial and policy challenges including affordability for applicants, financial sufficiency, equity and participation. Maintaining the status quo is not a sustainable, viable solution for systematically addressing the issue of unserved and underserved areas. The current system is not economical for failed systems or communities requesting service.

Framework for Moving Toward an "Improved System"

The Subgroup identified a framework for moving forward from the current system to an improved system. The framework involves several decision points and requires the coordinated efforts of Montgomery County, Prince George's County, and WSSC. The following figure illustrates the framework for moving forward including several decision points to be addressed.

Figure 1: Decision-Making Framework for Moving Toward an "Improved System"



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The Improved System: Sub Districts

The Subgroup suggested sub districts as a possible improved system for funding water and sewer extensions. Sub districts would spread large infrastructure costs over a large number of properties and would remedy a number of the challenges and issues under the current system. Both the counties and WSSC have experience using sub districts to finance capital program infrastructure projects, but the concept has never been used for water distribution or sewer collection systems. The fundamental goal is to equitably allocate the large costs of extending public sewer extensions over a large number of properties to be served. The current WSSC built extensions results in large costs which are not financially viable for individual applicants who initiate extension projects. In cases where an extension is able to serve more than one property, abutting property owners may opt out of connecting to the new main. This places more of the financial burden on the applicant, which raises significant questions of equity. The sub district mechanism, along with modifications to WSSC front foot benefit assessment policies, has the potential to mitigate these characteristics of the current system. The sub district mechanism would also directly benefit those who connect to the sewer system by helping pay for the substantial extension costs.

Conclusions and Next Steps

Maintaining the status quo is not a viable, sustainable solution to what is expected to be an increasing number of failing water wells and/or septic systems. An improved system for addressing the extension of water and sewer service has been identified along with a process for moving toward the improved system. Both the counties and WSSC have roles to play in the improved system. This will require unified leadership from the counties and the Commission including the commitment of resources to educate, plan, and lay the foundation for the improved process.

By consensus, the Working Group accepted the Subgroup's findings and framework for moving toward an improved system. The Working Group transmitted its consensus to WSSC's Commissioners. WSSC's Commissioners unanimously accepted the findings of the Subgroup on March 19, 2014 and authorized the transmittal of such findings to the legislative and executive branches of the two counties. The counties will be asked to endorse this concept and discussion and move forward toward an improved system. This will necessitate spending time and resources to more fully develop the process forward. The worth of this effort will be evident by the commitment of time, talent, and financial resources. The unified leadership of the Commission and counties will be required to move toward an improved system.

CURRENT UNSERVED AND UNDERSERVED CONDITIONS

This section of the report documents the Commission's experience in constructing residential service lines and the current unserved and underserved conditions in each County.

WSSC Main Extension Process

WSSC currently has two processes for constructing residential service lines.

WSSC Built Process

The first process for constructing service lines is when WSSC builds the extension in already developed areas. This report focuses on WSSC built extensions. Prior to 1998, WSSC was responsible for the design, construction and financing of all water and sewer extensions built within the Sanitary District. This included all types of projects ranging from large multi-part subdivisions to those serving just one property. The Commission would build and pay for the mains and then recover costs by assessing properties front foot benefit charges. Front foot assessment rates were reviewed and adjusted annually to cover the costs for new projects.

In 1997, a WSSC task force benchmarked with local jurisdictions and recommended changing the process by which subdivision lines are built and financed. At that time, WSSC's General Bonds (which funded subdivision line construction) were 50% of WSSC's total $1.8 billion outstanding debt, and the General Bond portion on the Commission annual debt service was 46%. In WSSC's FY'98 budget, debt service costs were 49% of total expenses. The rating agencies and the counties were becoming concerned about the large percentage of total revenues that were devoted to debt service. Since General Bonds were almost half of the debt service, the Counties and the Commission decided to eliminate the General Bond debt by having developers build the subdivision lines and turn them over to the Commission. This was the method used by virtually all jurisdictions. Over time, this would eliminate the majority of new General Bond issuances, and lower the debt service percentage of the operating budget.

The Counties were concerned about the effect that overlapping debt would have on their ratings. Utilizing assessed values to allocate WSSC's debt (since an ad valorem assessment would use assessed values), Montgomery County was allocated approximately 66% of the total and Prince George's was allocated 34%. This meant that of WSSC's $1.8 billion in debt, the Rating Agencies would use $1.2 billion for Montgomery County and $0.6 billion for Prince George's. The Counties wanted WSSC to lower the overlapping debt, and the General Bond was the most logical one to reduce by having developers pay for and build the subdivision lines and turn them over to the Commission.

In 1998, WSSC proposed legislation requiring that subdivision lines be constructed at the expense of the owner/developer. House Bill 824 was sponsored by the Montgomery County and Prince George's County delegations and supported by WSSC. HB 824 was passed and phased in over three years.

This change has had a significant impact on the costs associated with the smaller projects needed for health hazard and single residential extension projects. The cost of constructing service extensions for these health hazards and single residential dwelling units has always been very expensive, but these few, costly projects were offset by the many, less costly developer projects that WSSC constructed. In a typical year, there are several hundred of the large developer projects constructed versus only a few dozen health hazard or single residential units built. These large projects had economies of scale that lowered the average cost for all jobs. Also, the large projects involved construction in unimproved areas while the health hazard or single residential projects usually involve construction in improved areas that involve impacts to pavement and other utilities and the need for traffic control. These legislative changes resulted in a situation that makes it increasingly more difficult for homeowners to afford water and sewer extensions through WSSC.

The first process for constructing service lines is when WSSC builds the extension in already developed areas. This report focuses on WSSC built extensions.

Service Extension Process

The second process is the Service Extension Process (SEP) for developer built and financed extensions for new development. Under the SEP process, preliminary subdivision plans that are submitted to the counties for approval will be reviewed by the WSSC to determine the availability of water and sewer service, make recommendations, and note special conditions. A representative from WSSC will attend the development review committee meetings in Montgomery County and the subdivision review committee meetings in Prince George's County to discuss WSSC's findings with the Applicant and the committee. General review comments will be provided at the MNCP&PC meeting. It should be understood that new and additional review comments are likely when more detailed information on the proposed public extension(s) is provided during the Hydraulic Planning Analysis and System Integrity Review processes for SEP projects. A full description of the SEP process can be found on the Commission's website: http://wsscwater.com/home/jsp/content/sep-process-step1.faces.

The next two sections of the report document the current unserved and underserved sewer conditions in each County. The counties agreed to review areas consisting of five (5) or more lots where septic systems are in use and, do not have access to or availability of sewer mains on main line extensions.

Prince George's County

The Prince George's County Department of Environmental Resources analyzed sewer service GIS data and determined there are approximately 4,977 properties on septic systems within the sewer service envelope. Typically, these properties are located in 30+ year old neighborhoods and subdivisions, constructed prior to being planned for sewer service, or before sewer service was made available. It was expected that lots would connect when sewer service was made available via constructed mains and extensions, and would relinquish the use of septic systems. However, these lines have either gone unconstructed or not constructed within a reasonable distance for lot owners to connect, and the cost to extend and connect is beyond their means. Staff identified approximately 4,977 properties on septic systems for which 2,087 properties (approximately 42%) are within these underserved areas. The figure below summarizes the current conditions by Council District in Prince George's County. The map depicts the approximate locations (countywide) of underserved areas that met the criteria of five (5) or greater lots.

Figure 2: Summary of Current Conditions in Prince George's County by Council District

Council District	*Approximate* Septic Usage	*Approximate* Underserved areas	*Approximate* Residences	*Approximate* (Post-sewer) septic use
1	578	5	100	478
2	14	0	0	14
3	57	1	5	52
4	381	6	85	296
5	171	2	30	141
6	1,103	17	825	278
7	139	1	7	132
8	688	19	250	438
9	1,846	39	785	1,061
TOTAL	**4,977**	**90**	**2,087**	**2,890** [1]

Assumptions/Observations:

*Unsewered/underserved areas are based upon the criteria of **five (5) or more residential lots**;*
Approximate septic usage is based upon review of lots having no abutting sewer lines

District 2 - no underserved areas for the criteria used

District 6 - includes residential subdivisions i.e. Brock Hall, Brock Hall Manor & Brock Hall Gardens (@450 homes)

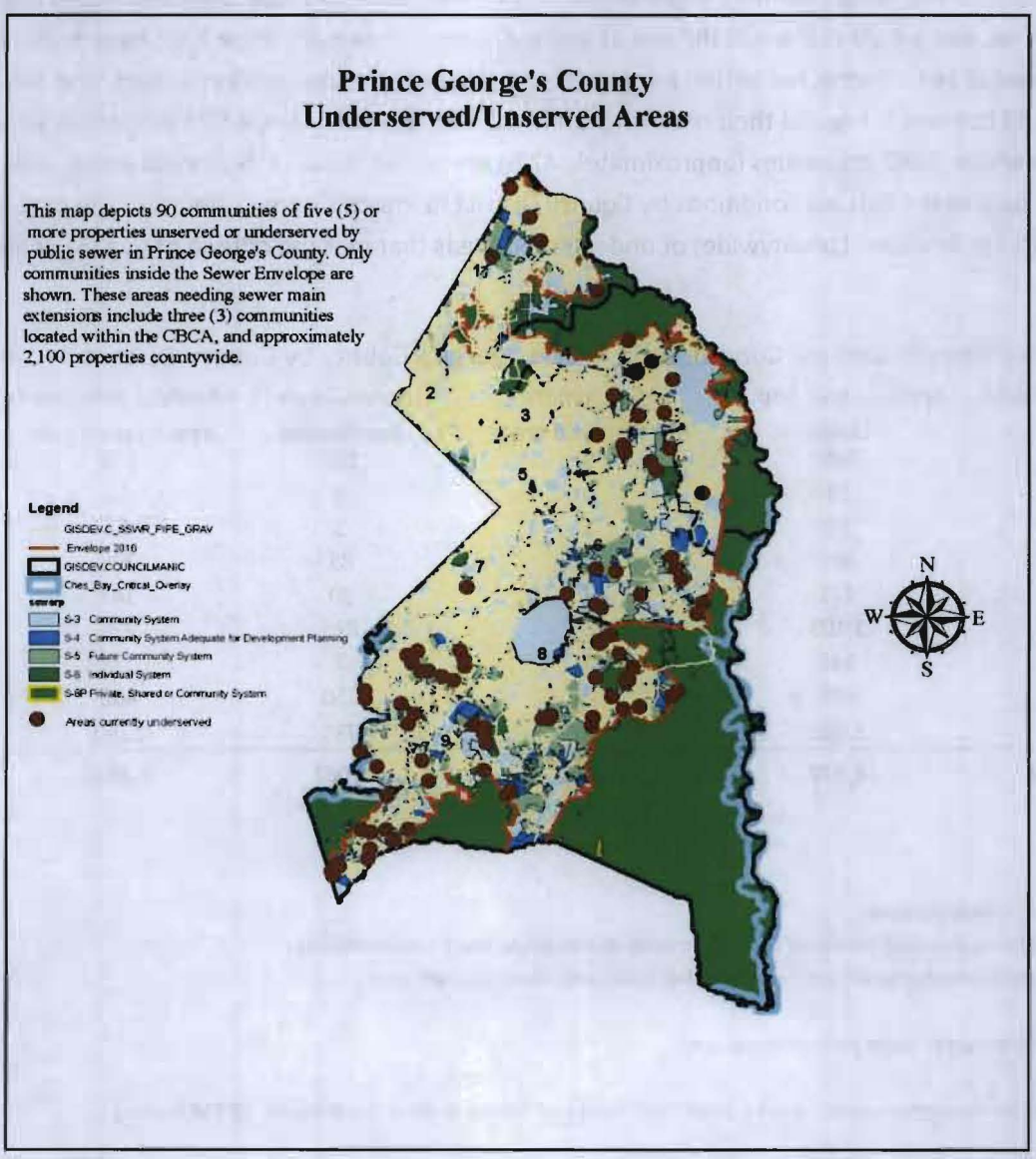
*District 8 - includes 3 communities located within the **Chesapeake Bay Critical Area** (@40 homes)*

District 9 - includes residential subdivisions i.e. Pleasant Springs, Early Manor, Wards, New England (@260 homes)

***(1)** -- of this 2,890 number, some would remain on septic systems by choice, constraints, costs and distance to sewer mains*

The following map graphically depicts this summary information.

Figure 3: Map of Current Conditions in Prince George's County



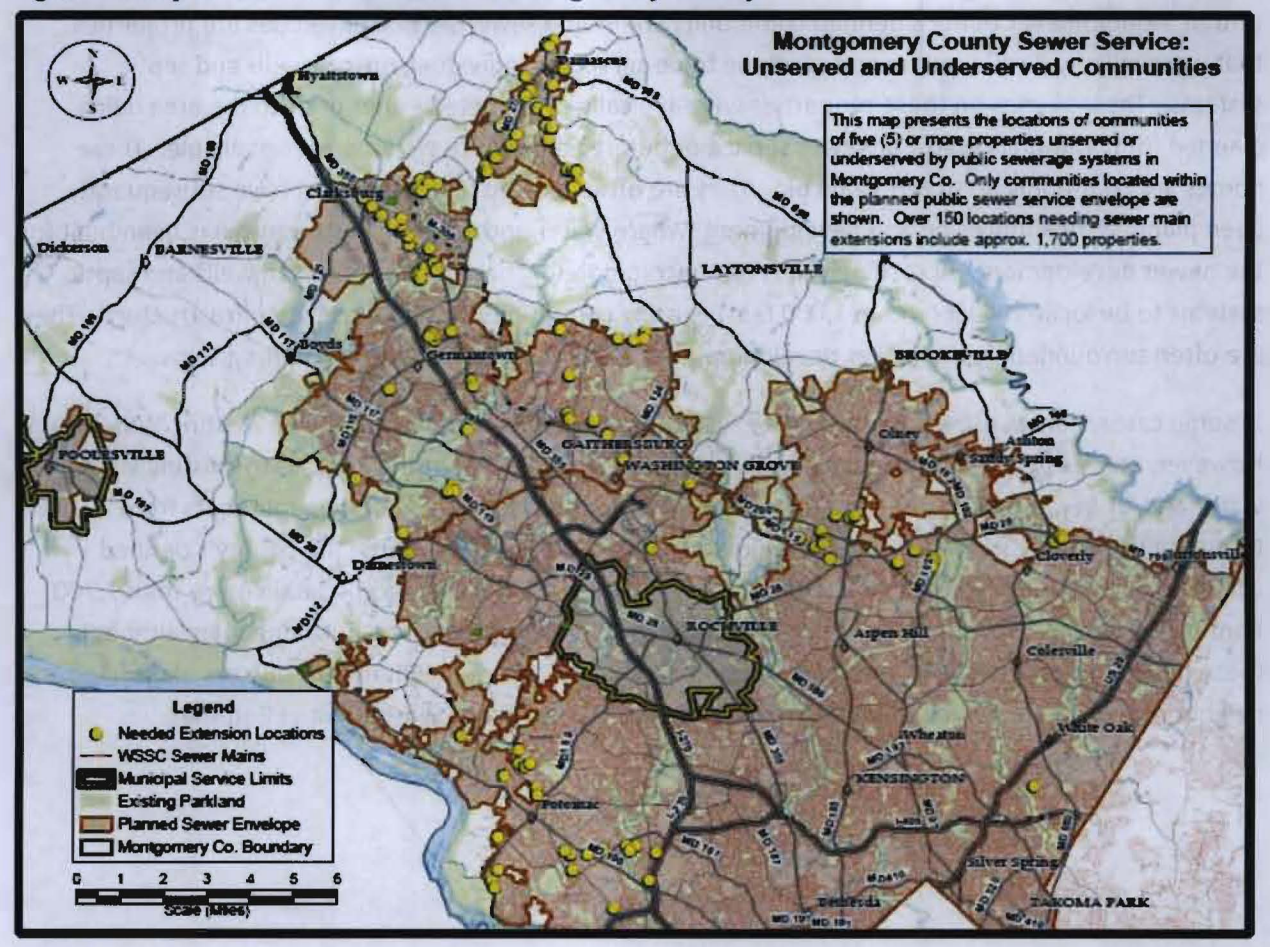
Montgomery County

Within Montgomery County's defined community water and sewer service envelopes are properties that were initially developed on and continue to be served by individual, on-site wells and septic systems. These homes on these properties were typically constructed either prior to the area being planned for community water or sewer service or before community systems were available. These homes are commonly 30 to 60+ years old. They are often located near areas that have subsequently been planned for subdivision and development; where water and sewer infrastructure has been built for the newer development. Accordingly, it is not uncommon for these older houses on wells and septic systems to be located near (within 1,000 feet) existing community water and sewer infrastructure. They are often surrounded by the newer development using community water and sewer systems.

In some cases, homes using private, on-site systems only require a connection to an existing WSSC main. However, many other properties using wells and septic systems do not have access to existing WSSC water and/or sewer mains; requiring new main extensions for service. Subgroup members from Montgomery County reported that approximately 150 neighborhoods within the county's defined water/sewer service envelopes, but without existing access to WSSC service, contain more than 1,700 homes that currently continue to use on-site systems.[1] As illustrated in the following map, although these neighborhoods are scattered widely across the county, there are identified clusters of affected neighborhoods in areas such as Clarksburg, Damascus, Germantown, Norbeck, and Potomac.

[1] To maintain consistency with the analysis provided by Prince George's County Department of Environmental Resources, the Montgomery County Department of Environmental Protection evaluated only those neighborhoods within the defined community service envelopes where at least five properties lacked access to community water and/or sewer service.

Figure 4: Map of Current Conditions in Montgomery County



FINANCIAL AND POLICY CHALLENGES UNDER CURRENT SYSTEM

The current system of financing extensions has several financial and policy challenges. This is evident in the fact that since 2005, only sixteen extensions have been completed. This section details several of the challenges associated with the current system.

WSSC Extension Costs

The sixteen extension projects completed in the past nine years have varied in length from 126 feet to 1,551 feet with costs ranging from approximately $67,000 to $801,000. The projects totaled 11,813 feet with a total cost of $5,812,785; an average cost per linear foot of $492. Note: these costs do not reflect the costs of individual property owners to connect to the extension (these are discussed in the next section of the report).

The Subgroup determined there to be certain fixed costs associated with each project regardless of length resulting in economies of scale for longer projects resulting in lower cost per linear foot. As shown in the figure below, for projects of less than 500 feet, the average cost per foot is $664 which is 35% higher than the average for all projects. By comparison, for projects of more than 500 feet, the average cost per foot is $469; 5% less than the average for all projects.

Figure 5: Comparison of Costs by Length of Extension

Front Foot Benefit Year	Project Number	Type of Extension	Project Location	County	Total Constructed Footage	# of Connections	TOTAL Project Costs	Cost per Linear Foot
2005	AS3423X02	Sewer	Rosaryville Road	Prince George's	323	2	$206,003	$638
2005	AS3434X02	Sewer	Falls Road	Montgomery	523	1	$303,815	$581
2005	AS3495X02	Sewer	Stoney Creek Road	Montgomery	854	3	$553,503	$648
2005	AW3678X03	Water	Bryants Nursery Road	Montgomery	1,132	9	$249,643	$221
2005	AS3441X02	Sewer	Corral Drive	Montgomery	1,434	8	$480,123	$335
2006	AS3616X03	Sewer	Liberty Mill Road	Montgomery	126	2	$134,296	$1,066
2006	AS9743X93	Sewer	Wall's Lane	Prince George's	963	10	$537,809	$558
2007	AS2337A98	Sewer	Montezuma Drive	Prince George's	234	1	$85,045	$363
2007	AS3792X04	Sewer	Frank Tippett Road	Prince George's	286	2	$234,957	$822
2007	AS1615X96	Sewer	Frederick Road	Montgomery	292	1	$67,323	$231
2007	AS3419X02	Sewer	Sunnyview Court	Montgomery	532	2	$353,756	$665
2007	AS3639X03	Sewer	Accent Way	Montgomery	940	13	$511,777	$544
2008	AS3885X04	Sewer	Liberty Mill Road	Montgomery	159	unknown	$214,545	$1,349
2008	AS3576X03	Sewer	Lakewood Estates	Montgomery	1,181	17	$461,464	$391
2009	AW3588X03	Water	Clarksburg Road	Montgomery	1,283	8	$617,926	$482
2009	AS2075X97	Sewer	Springfield Road	Prince George's	1,551	5	$800,800	$516
				TOTAL	11,813	84	$5,812,785	$492

This is evidence that there are certain fixed costs regardless of the length of the extension and that there are economies of scale associated spreading these costs over larger extension projects.

Connection Costs

In addition to the costs of extending new service mains, individual property owners incur costs for WSSC service connections and on-site work. These costs include WSSC fees and charges, abandonment of the existing septic system, and on-site plumbing costs. These costs are estimated to total approximately $19,000 per residential property. The following figure details these costs.

Figure 6: Average 2014 Residential Connection Costs

ADDITIONAL COSTS TO APPLICANT	
$2,850	System Development Charge (3-4 toilets)[1]
$3,500	Connection Fee (sewer/septic hookup)[1]
$75	Inspections[1]
$95	Reprocessing Fee[1]
$2,500	Abandonment of Septic System[2]
$10,000	On-site Plumbing[2]
$19,020	**SUBTOTAL ADDITIONAL COSTS**

1. WSSC Budget Office in conjunction with WSSC Permit Services Unit.

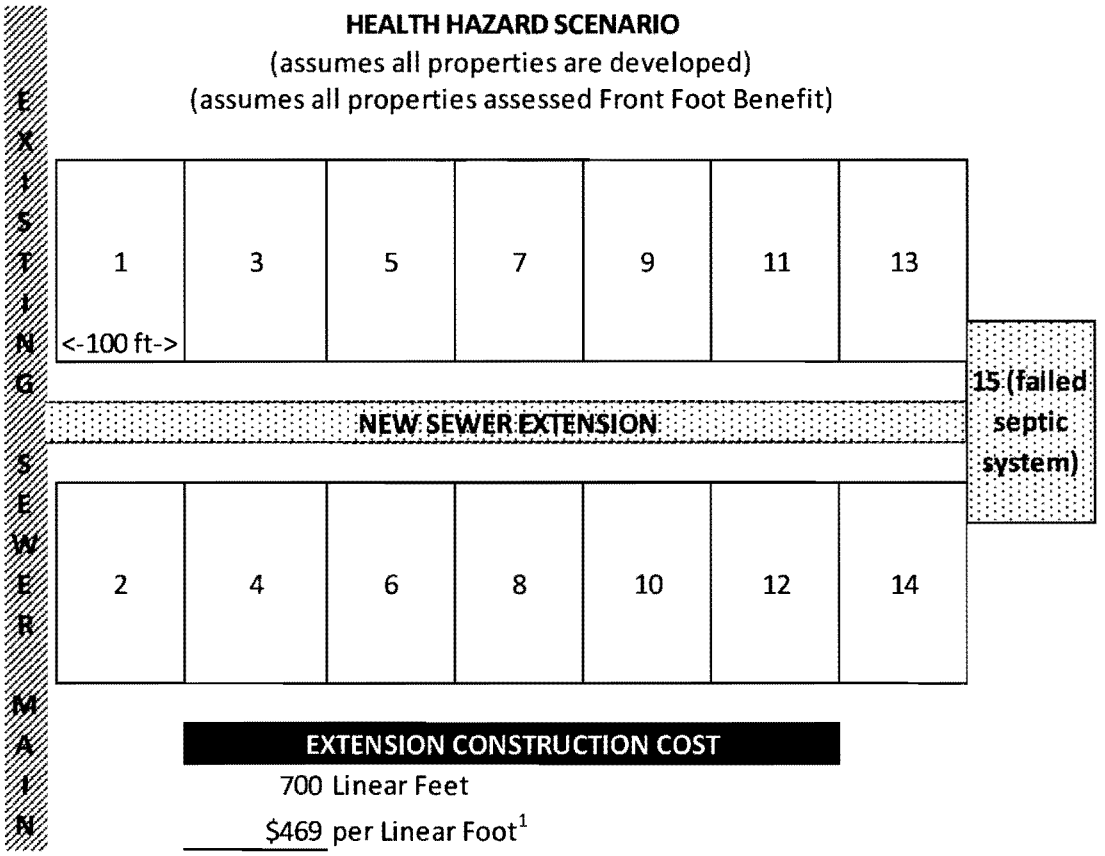
2. WSSC Development Services Group estimate.

Current Extension Process

The most common type of extension is for "health hazard" situations involving failing septic systems. The following figure details a hypothetical health hazard scenario to illustrate an example of such an extension. Property number 15 at the end of the cul-de-sac is experiencing a failing septic system. The nearest sewer main is 700 feet away and will pass by fourteen other properties. Based on an average cost of $469 per foot (taken from Figure 5 above), the extension will cost $328,300:

700	(linear feet)
X $469	(per linear foot)
$328,000	(total cost)

Figure 7: Example of Health Hazard Scenario



EXTENSION CONSTRUCTION COST	
700	Linear Feet
$469	per Linear Foot[1]
$328,300	CONSTRUCTION COST

1. Taken from actual costs provided by WSSC Accounting Group.

The first step in calculating the cost to the applicant at property number 15 is to project the total revenues from front foot benefit assessments over the next twenty three years (the length of the financing period for health hazard subsidies). The projected revenues from front foot benefit assessments total $177,098 over the next twenty three years.

$7.18/ft./year	(WSSC sewer front foot rate)
X 1,500 ft.	(total assessable frontage)
X 23 years	(current annual payback period)
$177,098	(23-year projected front foot revenue)

The second step is to calculate the total health hazard subsidy. WSSC's health hazard subsidy totals a maximum of $15,000 per property owner. However, because the front foot assessment contribution is

subtracted from this value, the $15,000 per property subsidy is never fully utilized. The subsidy is calculated for each property the extension will front. The subsidy is reduced by the net present value of the future stream of revenues from front foot benefit assessments over the next twenty three years. The health hazard subsidy for this hypothetical scenario is $47,902; calculation is as follows:

$15,000	(subsidy per abutted property)
X 15	(# of abutted properties)
$225,000	(maximum project subsidy)
- $177, 098	(23-year projected front foot revenue)
$47,902	(health hazard subsidy for project)

To calculate the total offset to the applicant, the projected revenues from front foot benefit assessments over the next twenty three years are added to the health hazard subsidy. This figure totals $225,000 ($177,098 projected assessment income over twenty three years + $47,902 health hazard subsidy = $225,000).

This total offset of $225,000 is subtracted from the total extension cost of $328,300, resulting in a deficit payment of $103,300 due from the applicant. WSSC allows the deficit payment to be financed over a period of twenty three years at a 3% interest rate, resulting in an annual payment of $6,300. The total payment of principal and interest over the twenty three years is $144,900.

In addition to the annual deficit payment, the property owner is also responsible for an estimated $19,020 of fees, charges, and on-site costs.

The total cost of the extension for the applicant under the best of circumstances using the current WSSC-built extension system is $163,920 ($144,900 + $19,020 = $163,920). Present front foot assessment policy issues for a specific project can work to place more of the extension cost on the applicant, including:

- County service area designations for abutted properties, specifying eligibility for public service.
- Whether of not owners of abutted properties decide to participate when new service is available.
- Abutting public properties (parks, schools, etc.) are not charged a front foot assessment.

Figure 8: Extension and Connection Cost to Individual Property Owners

EXTENSION COSTS TO APPLICANT	
1,500	Assessable Front Footage (100 feet per unit x 15 units)
$7.18	Sewer Front Foot Benefit (current rate)
$10,770	Subtotal Annual, Projected Assessment Income from All Unit Which Could be Served
$177,098	Subtotal Projected Assessment Income Over 23 Years
$15,000	Health Hazard Subsidy per Unit
15	Units
$225,000	Total Health Hazard Subsidy
-$177,098	Less Projected Assessment Income Over 23 Years
$47,902	Subtotal Health Hazard Subsidy
$225,000	TOTAL OFFSET TO APPLICANT
$103,300	APPLICANT'S DEFICIT PAYMENT
$6,300	Estimated Annual Payment
23	Years
$144,900	**SUBTOTAL EXTENSION PAYMENT**

ADDITIONAL COSTS TO APPLICANT	
$2,850	System Development Charge (3-4 toilets)[1]
$3,500	Connection Fee (sewer/septic hookup)[1]
$75	Inspections[1]
$95	Reprocessing Fee[1]
$2,500	Abandonment of Septic System[2]
$10,000	On-site Plumbing[2]
$19,020	**SUBTOTAL ADDITIONAL COSTS**
$163,920	**TOTAL COST TO APPLICANT**

1. WSSC Budget Office in conjunction with WSSC Permit Services Unit.

2. WSSC Development Services Group estimate.

Timing of Participation

In the above hypothetical scenario, the sewer extension passes fourteen other properties. If those properties have a working septic system, they cannot be required to either hook up to the extension or pay front-foot assessments to WSSC. This is known as the "Berger Rule"[2]. When the properties ultimately connect to the extension, they will have to pay the connection fees, charges, and on-site improvements and be assessed annual front foot benefit charges effective the year that public service is initiated.

Challenges/Deficiencies of Current Extension System

The current front foot benefit system was designed to pool large and small extensions and allocates costs over a large number of connections which made extensions affordable. Because main extension costs for large subdivision project are financed by developers under the SEP program, the current WSSC-built extension system does not work for small scale extensions. As illustrated using the hypothetical scenario, the current system has significant challenges including:

- Affordability for applicants
- Financial sufficiency
- Equity
- Participation

The Subgroup reviewed the existing system in light of these challenges and summarized the pros and cons listed in the figure below.

[2] See Public Utilities Article 25-205 (b)(3): *"The Commission may suspend the imposition and collection of a front foot benefit charge....if the property that is otherwise subject to the front foot benefit charge for a water or sewer has a preexisting residential dwelling that is served by a well or septic system, until the property owner requests service from the water main or sewer."* This legislation was proposed in 1994 by former Commissioner Robert Berger in response to complaints from abutting property owners about WSSC's policy of assessing them even if they did not want to connect to the new water or sewer line.

Figure 9: Summary of Pros and Cons of Existing Extension System

Policy Objectives	***Pros:***	***Cons:***
Affordability, Equity, Participation	- Applicant is able to use up to the $15K health hazard subsidy from each property the extension passes.	- The $15K has not been revised since the early 1980's, nor is it based on any particular formula or policy objective.
	-If extension passes vacant properties, these properties can be assessed Front Foot Benefit immediately.	- The $15K health hazard subsidy would have to be increased to approximately $35K to account for inflation since the early 1980's.
		- Not all extensions are health hazards and are not eligible for the $15K subsidy.
		-Existing properties with a functioning well and/or septic cannot be assessed Front Foot Benefit if extension passes by (Berger Rule).
		- Existing Front Foot Benefit system has become "orphaned" and is not tied to any specific assumptions or formulas. Also has not been increasing to keep pace with inflation or revenue needs.

In the next step of the analysis, the Subgroup used "sample" communities from each county to begin to find and test viable alternatives to the current system.

SAMPLE COMMUNITIES

The "sample communities" developed for each county are based on actual subdivisions. These represent specific examples of high priority areas for which any solution must work. These communities are used to test different financing alternatives and options.

Prince George's County – Treasure Cove

The Treasure Cove community is located in the Fort Washington area of Prince George's County along the Potomac River and in the Chesapeake Bay Critical Area. The sample community analysis totals 14 homes using septic systems and is shown in the map below.

Figure 10: Map of Treasure Cove

The detailed characteristics of Treasure Cove to be used in the sample community analysis are shown in the figure below. Sewer service would need to be extended 4,700 feet to serve the entire community at a total cost of approximately $2.4 million (including both extension and connection costs).

Figure 11: Characteristics of Treasure Cove

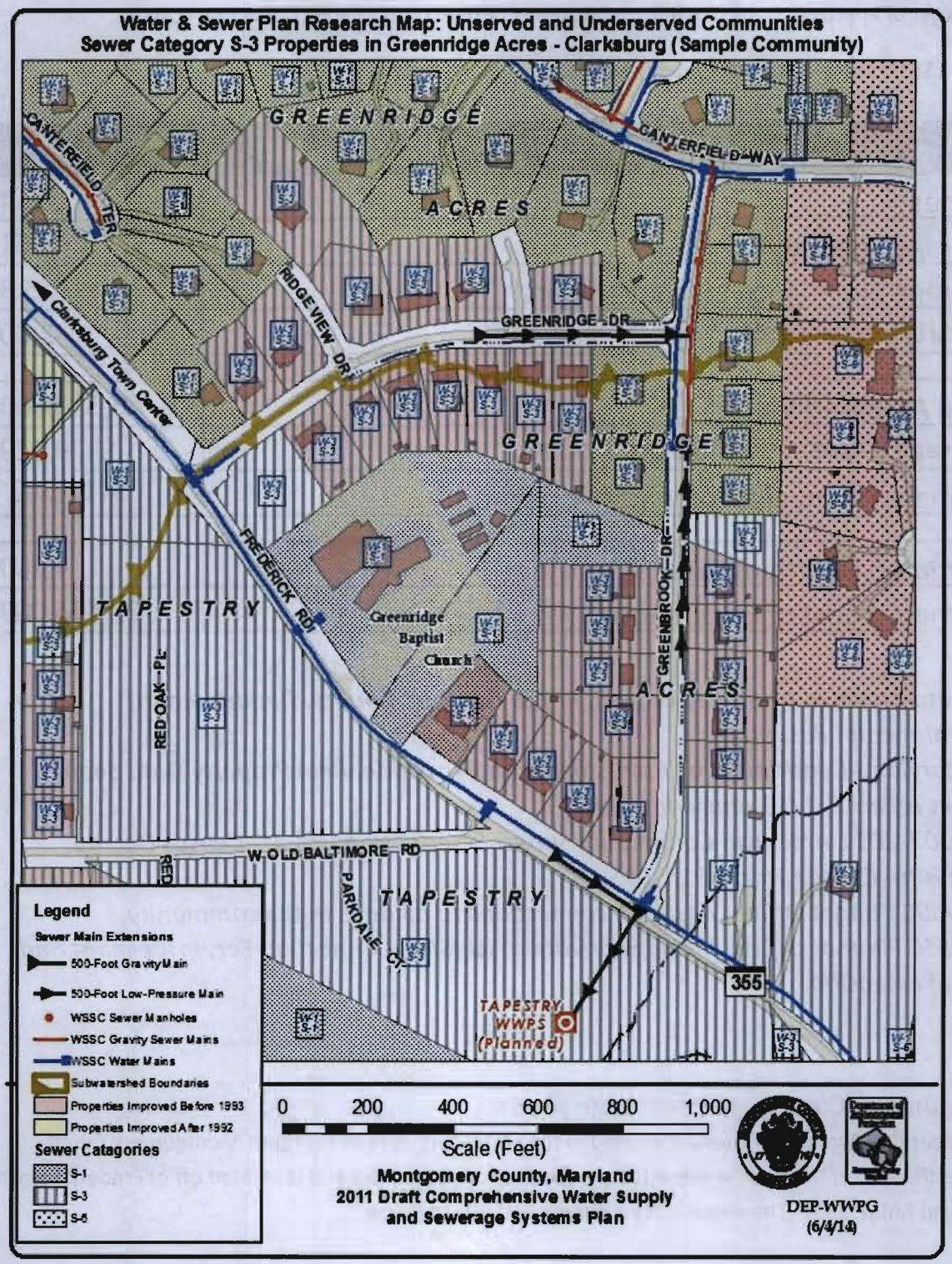
Treasure Cove - Fort Washington	
Homes[1]	14
Average Year Built[1]	1961
Average Time Since Last Sale (years)[1]	18
Density: acres/unit	2.00
Total Assessed Value[2]	$5,319,000
Average Assessed Value per House	$379,929
Estimated Annual Income per Household[3]	$112,550
Estimated Length of Extensions (feet)[4]	4,700
Estimated Cost of Extenstions[5]	$2,404,009

1. Data provided by Shirley Branch, Prince George's County, Department of Environmental Resources.
2. Maryland Department of Assessments and Taxation, Real Property Data Search. Values reflect 7/1/13 phase-in value.
3. 2007-2011 American Community Survey 5-Year Estimates, US Census Bureau. Data is for Census Tract 8014.10.
4. WSSC Budget Office. Assumes connections to all units in the community.
5. WSSC Finance Office. Includes private costs (SDC, Connection Fee, Inspection) and cost of extension.

Montgomery County – Greenridge Acres

The Greenridge Acres community is located in the Clarksburg area of northern Montgomery County. The specific area in the sample community analysis totals 32 homes and is located off of Frederick Road (Maryland Route 355). The community is shown in the map below.

Figure 12: Map of Greenridge Acres



WSSC
Where Water Matters

The detailed characteristics of Greenridge Acres to be used in the sample community analysis are shown in the figure below. Sewer service would need to be extended 2,300 feet to serve the entire community at a total cost of approximately $1.3 million (including both extension and connection costs).

Figure 13: Characteristics of Greenridge Acres

Greenridge Acres - Clarksburg	
Homes[1]	32
Average Year Built[1]	1967
Average Time Since Last Sale (years)[1]	21
Density: acres/unit	0.64
Total Assessed Value[2]	$9,818,232
Average Assessed Value per House	$306,820
Estimated Annual Income per Household[3]	$140,987
Estimated Length of Extensions (feet)[4]	2,300
Estimated Cost of Extenstions[5]	$1,340,401

1. Data provided by Alan Soukop, Montgomery County, Department of Environmental Protection.
2. Maryland Department of Assessments and Taxation, Real Property Data Search Values reflect 7/1/13 phase-in value.
3. 2007-2011 American Community Survey 5-Year Estimates, US Census Bureau. Data is for Census Tract 7002.05.
4. WSSC Budget Office. Assumes connections to all units in the community.
5. WSSC Finance Office. Includes private costs (SDC, Connection Fee, Inspection) and cost of extension.

Evaluation of Financing Criteria and Alternatives

The Subgroup examined several common financing alternatives for funding extensions in the two sample communities. The financing alternatives included:

- Loans
- Revolving loan program
- Property tax revenue backed debt or loan
- Property liens
- Tax Increment Financing (TIF)
- Federal programs
- State programs
- Public subsidies
- Combination of applicant funding and public subsidies

The detailed analyses and findings can be found in Appendix A at the back of this report. Using the criteria of revenue sufficiency, revenue base, equity, and participation, the Subgroup identified the following issues and concerns with the various financing options:

Figure 14: Summary of Issues and Concerns Identified by Subgroup

Critieria	*Description*	*Issues*
Revenue Sufficiency	Does it pay?	Sufficient revenues to justify effort.
Revenue Base	How is it paid?	Timing of payment
		"Piggybacking" on an existing revenue.
Equity	Who pays?	Affordability.
		Basis of cost allocation (usage, fixed, ability to pay).
		Private benefits vs. public subsidy.
Participation	When paid?	Developed properties vs. undeveloped properties.
		Where are lines of participation drawn?
		Incentives vs. requirements.

Any future system of funding extensions will have to address these issues and concerns and minimize any potential conflicts.

Conclusions

Based on its examination of the current system and the above analyses using the sample communities, the Subgroup reached the following conclusions:

- Maintaining the current WSSC-built system (the status quo for health hazard and individual extension cases) in light of current and future needs is untenable.
- The sample communities demonstrate the importance of density (small infrastructure footprint, large revenue base) in promoting economies of scale, fiscal viability, and participation.
- There is a need to establish affordability criteria for homeowners to determine what costs are appropriate and able to be funded.
- There is a need to promote equity among payers in allocating costs and participating in funding the extension.
- There is no one solution from among the preceding options that addresses all financial and policy challenges/objectives. A sustainable solution may involve a combination of approaches and funding.

DEVELOPING AN "IMPROVED SYSTEM"

This section of the report details the desired characteristics of an "improved system" for funding extensions.

Desired Characteristics

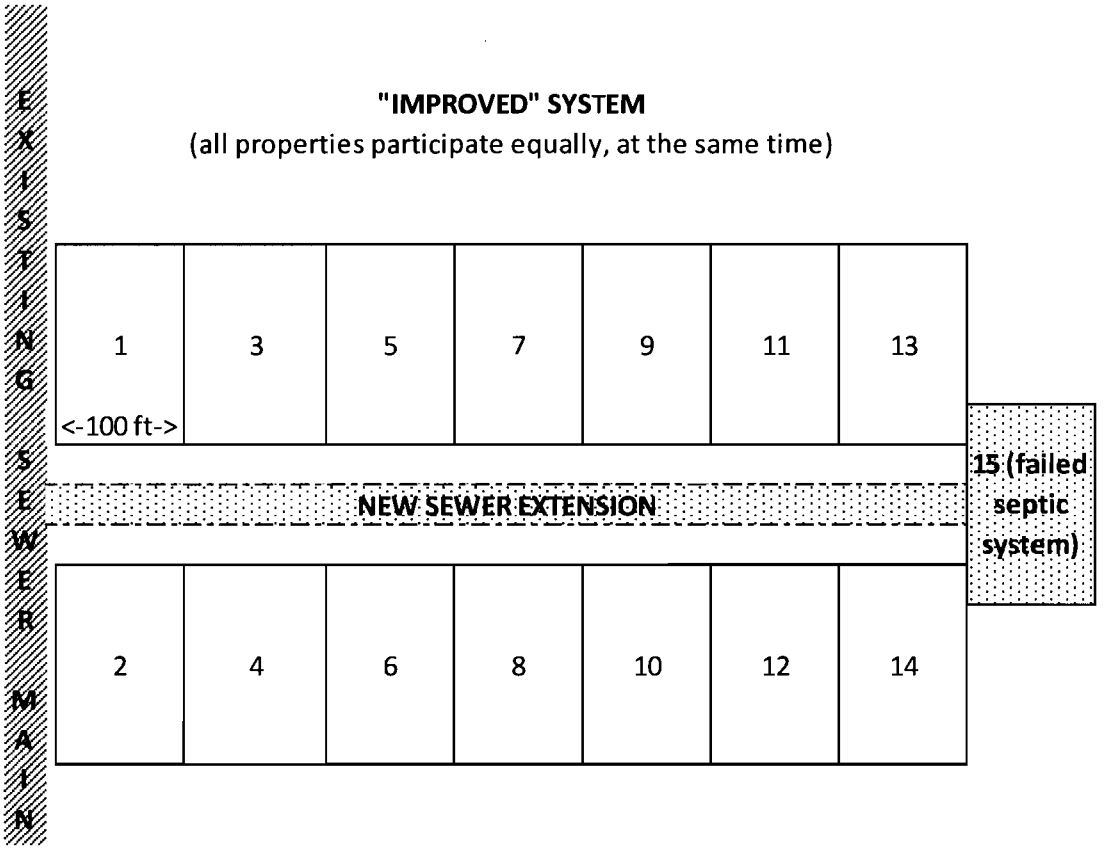
Based on the analyses of the current system and the sample communities, the Subgroup identified the following desired characteristics and considerations in formulating an improved system for funding extensions.

Figure 15: Summary of Desired Characteristics/Considerations for an Improved System

	"Improved" System
Policy Objectives	***Desired Characteristics/Considerations***
Affordability, Equity, Participation	- Promote each County's infrastructure and service planning goals for public service within the planned service envelope
	- Extension improves property value. What is % of the extension improvement compared to the value of the house? 10% is a reasonable starting point.
	- Affordability assistance program which based on income. How would they become eligible? Who would administer?
	-There are "hidden costs" associated with septic systems (i.e. they will ultimately fail and need replacement). However, few homeowners remain in their homes 20-30 years.
	- Could there be a County requirement at the time of closing for homeowners to disclose the age and condition of their septic system? This would provide better information and create a "value" associated with septic v. sewer.
	- Counties could create a Septic Management Plan with a fee program to help fund/"seed" extensions. Would the fee be paid by all County residents (under the auspices of public health, safety, welfare) or just those on septic systems (more like a user fee)?
	- Willingness to participate in extension could be a criteria used by the Counties in establishing sub-districts.
	- Age of septic system could be incorporated into criteria establishing sub-districts.
	- Could a homeowner lock in Front Foot Benefit rate at today's dollars as opposed to waiting when assessments start at a higher rate? Assumes Front Foot Benefit rate is based on actual costs and is adjusted on a regular basis.

To further explore these desired characteristics, the Subgroup revisited the health hazard scenario from Figure 7. While the cost and circumstances of the two scenarios are the same, the Subgroup substituted several of the desired characteristics to ascertain whether the policy and financial concerns and issues could be resolved.

Figure 16: Example of Health Hazard Scenario under an Improved System



700 Linear Feet
$469 per Linear Foot
$328,300 CONSTRUCTION COST

To improve participation and equity, the Subgroup assumed all 15 properties would participate in the project at the same time. This provision also maximizes the benefits of economies of scale and density by spreading costs over the maximum number of properties. Each property is assumed to be eligible for the full $15,000 health hazard subsidy with no discounting for future front foot benefit assessments. Finally, the Subgroup assumed that each property owner is fully (100%) responsible for connecting their property to the extension. The figure below details the calculations for allocating the costs of the extension and connection.

Figure 17: Extension and Connection Cost to Individual Property Owners under "Improved System"

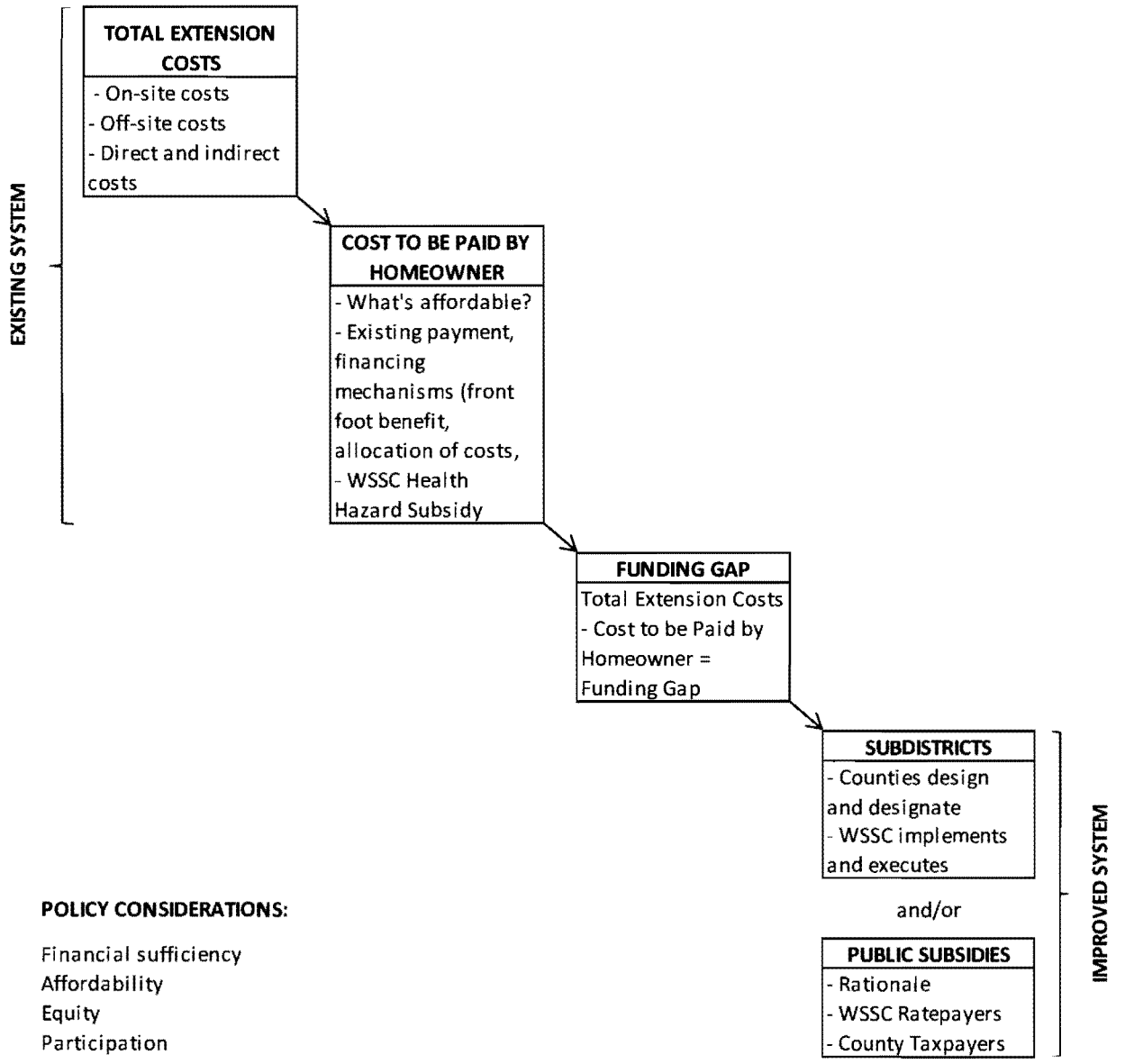
EXTENSION COSTS	
$328,300	Construction Cost
15	Properties (assumes all properties which could be served are assessed equally, at same time)
$21,887	COST PER PROPERTY
-$15,000	Less Health Hazard Subsidy per Property (assumes no reduction in Health Hazard Subsidy from future assessment revenues)
$6,887	**NET EXTENSION COST PER PROPERTY**
ADDITIONAL COSTS PER PROPERTY	
$2,850	System Development Charge (3-4 toilets)
$3,500	Connection Fee (sewer/septic hookup)
$75	Inspections
$95	Reprocessing Fee
$2,500	Abandonment of Septic System
$10,000	On-site Plumbing
$19,020	**SUBTOTAL ADDITIONAL COSTS**
$25,907	**TOTAL COST PER PROPERTY OWNER**

The net cost to each of the 15 properties is $25,907 compared to the cost of $163,920 to the one property with the failing septic system. This scenario highlights the benefits of pooling and allocating costs over a large number of properties as well as improvements in equity and participation. This provides insight into how an "improved system" might be structured and developed with details related to responsibilities and a process for implementation.

FRAMEWORK FOR MOVING FORWARD TO AN IMPROVED SYSTEM

The Subgroup next identified a framework for moving forward from the current system to an improved system. The framework involves several decision points and requires the coordinated efforts of Montgomery County, Prince George's County, and WSSC. The figure below illustrates the framework for moving forward including several decision points to be addressed.

Figure 18: Decision-Making Framework for Moving Toward an Improved System



WSSC
Where Water Matters

The following sections detail each of the decision points and the Subgroup's findings on how to move forward and roles of the counties and WSSC.

Decision Point: Extension Costs

Extending and connecting water and/or sewer service to existing development using private, on-site systems is expensive. The Subgroup's analyses have identified several strategies for minimizing these costs.

Collection System Extension Costs

As previously documented, there are economies of scale and savings from serving as many properties as possible with each extension. Spreading the costs over the largest number of properties lowers the average cost per property and more closely mirrors WSSC's original approach to funding service lines for subdivisions.

On-site Connection Costs

The average residential connection cost is $19,000 consisting of various fee, charges, and on-site improvements. To the extent that a large number of properties are being connected ensures uniform pricing and possible opportunities for negotiating volume discounts and savings.

Decision Point: Cost to be paid by Homeowners

Affordability and equity are the central considerations on what costs should be paid by homeowners.

Affordability

A determination of what is affordable for homeowners to pay will have to be made. The Subgroup's findings list several criteria to measure what is "affordable", including the EPA affordability guidelines or percentage of the cost of the extension versus a home's value.

Equity

Related to the issue of affordability is equity, i.e. what is fair for a homeowner to pay? Homeowners on well and/or septic do not pay water and sewer rates yet it is known that wells can go dry and septic systems fail. Individual connections to the public water and sewer system are largely viewed as a "private benefit". Additionally, the Subgroup believes that connecting to public water and/or sewer increases a home's value although no empirical data is available to quantify this. This belief is based on the reliability of service associated with public utilities versus the unreliability of aging well or septic service.

Related to the issue of financial equity, is the issue of participation. As noted earlier, the current system works against fundamental goals in each County's Comprehensive Water Supply and Sewerage Systems Plan which establish public service envelopes based on adopted service policies and county-wide land use planning recommendations. A home which has working well or septic system is not required to connect to an extension which may pass by to serve a neighboring property whose well or septic system is failing (the Berger Rule). It is reasonable to assume that neighboring properties that are also on well or septic will be facing a similar circumstance as the property whose systems are failing. Why would these neighboring properties not participate at the same time? While there may not be the ability to compel these property owners to participate, an improved system may be constructed to prompt these property owners to participate in the extension project and costs. This approach would also maximize health, safety, and welfare objectives by preemptively addressing a large number of these systems which are likely in the same condition.

Decision Point: Funding Gap

Any gap between the extension and connection costs and what a homeowner can affordably pay for will have to be closed.

Public Subsidies

As noted earlier, individual connections to the public water and sewer system are viewed as a private benefit as only that property is receiving service. Why should the public, who have already paid for their share of connecting to the water and sewer systems, subsidize this private benefit? It can be argued that there is a public good from a health, safety, and welfare perspective to addressing failing wells and septic systems (WSSC's Health Hazard Subsidy for example). Note: Not all extensions are health hazards and are, therefore, not eligible for the subsidy.

The current $15,000 Health Hazard Subsidy has not been adjusted for inflation since its inception in the early 1980's. As noted earlier, the subsidy would have to be increased to $35,000 to account for inflation. The subsidy is not based on a specific formula or designed to offset a particular aspect of the extension. The current Health Hazard system reduces the subsidy by the net present value of future Front Foot Benefit revenues. This offset can significantly reduce if not eliminate the Health Hazard Subsidy.

In the event that an extension is not eligible for the Health Hazard Subsidy or there is still a funding gap, additional public subsidies will be required. Any decision to provide additional public subsidies would have to address the rationale and indicate who will pay. Specifically:

- Rationale
  - How much?

- Why?
- When? (up front or over time)
- What form? (cash, reduced interest rates, matching funds)
- To whom? (eligibility)
- To what end? (leverage desired policy objectives)

- Who pays?
  - County taxpayers.
  - WSSC ratepayers.

THE IMPROVED SYSTEM: SUB DISTRICTS

The Subgroup specifically identified sub districts as the improved system for funding water and sewer extensions. Sub districts would spread large infrastructure costs over a large number of properties and would remedy a number of the challenges and issues under the current system. Both the counties and WSSC have experience using sub districts to finance infrastructure. See Appendix B for a more detailed, legal description of sub districts.

WSSC's Past Use of Sub Districts

Prior to the establishment of the System Development Charge (SDC), sub districts were used by WSSC to construct wastewater pump stations and force mains (capital program projects). Usually the facilities would serve more than just the properties of the applicant, and the burden of the facilities' construction costs under a system without sub districts made the applicant's development unprofitable. The basin to be served by the facilities was relatively easy to define, and the expected build out (number of properties to be served) was determined by WSSC based on input from developers and M-NCPPC projections. The cost of the facility construction was allocated to the various property types and sizes, which became the sub district charge.

In actuality, the basins never developed to the levels expected when the initial calculations were performed, leaving the cost for the debt service on the bonds used to construct the facilities to all Commission ratepayers. Once SDC became effective, the counties passed a joint resolution restricting WSSC to collecting the higher of the SDC or sub district charge (if applicable). By 2000, as it turned out, the SDC was always higher, except for those properties exempt from SDC. Effective May 15, 2000, by Commission resolution, the collection of sub district charges was suspended.

Sub Districts and WSSC-Built Main Extensions

The concept of applying the sub district mechanism to WSSC-built extensions is some ways similar in many ways to the Commission's past experience. However, this proposed use of sub districts is different in that the majority of properties in these sub districts are already developed and built out. This proposed system would not depend on estimates of future growth. It would therefore minimize the flaw wherein basins never developed to the levels expected, leaving part of the cost for the debt service on the bonds used to construct the facilities to all Commission ratepayers.

The fundamental goal is to equitably allocate the large costs of extending public sewer extensions over a large number of properties to be served. The current health hazard extension system results in large costs to individual applicants which are not financially viable. Also, the extension is often able to serve more than one property which raises significant questions of equity. The sub district mechanism can

mitigate these characteristics of the current system. The sub district mechanism, in combination with modified front foot benefit assessment policies, also works to support the concept that those who directly benefit from connecting to the public sewer system pay an equitable and reasonable share of the extension costs.

Process for Implementing Sub Districts

The Subgroup envisions an implementation process involving two distinct phases. The first phase is a Planning and Policy Phase to be undertaken by each of the counties to amend their Water and Sewer Plans to incorporate sub districts. Subdistricts would be evaluated and developed on a priority basis and subject to a public review process as amendments incorporated into the Counties' plans. The next phase is an Execution Phase to be undertaken by WSSC to construct extension projects. Note: To ensure continuity, staff from WSSC would be involved in the Planning and Policy Phase and staff from the Counties would be involved in the Execution Phase.

Policy and Planning Phase

The Counties would amend their existing Water and Sewer Plans to incorporate sub districts. The agency responsible for developing the county Water and Sewer Plan (Department of Environmental Resources in Prince George's County or Department of Environmental Resources in Montgomery County) has the authority to identify priority service areas based on adopted criteria. These areas and criteria would be developed in the draft Water and Sewer Plan, reviewed and recommended to the County Council by the County Executive. The County Council would set a public hearing to receive public comments on the proposed Plan (including the proposed priority areas for sewer service and proposed criteria. The County Council would discuss the proposals and public input in the appropriate Council committee and the committee would make recommendations to the full County Council for adoption. Once these priority areas and criteria are adopted the agency would use the adopted Water and Sewer Plan policies to propose sub -districts for water/sewer extensions consistent with WSSC adopted policies for service and assessment. These proposed sub-districts would proceed through a category change and Water and Sewer Plan amendment process (administrative or Council public hearing) to adopt the sub-district to allow WSSC to initiate water/sewer extensions as adopted in the Water and Sewer Plan. This process would allow the county to identify need, prioritize need, initiate project planning, evaluate community and elected official support, and define a project area for WSSC project planning (including assessment process), design, and construction.

The benefits of utilizing these existing plans include a process that is already established and defined in state law, there are opportunities for public input, and it is a transparent process. The amendment process would establish the objectives, conditions, and priorities of the sub districts. Some examples of standards and criteria for the creation of sub district areas might include:

- Density of development
- Age of septic systems
- Distance from existing water and sewer mains
- Proximity to a Chesapeake Bay Critical area (Prince George's County only)

In addition to the sub district standards and criteria, the amendment process would identify the number of properties to be included in the sub districts along with the scoring/ranking system for prioritizing properties.

Execution Phase

Once sub districts and specific projects have been identified through the Policy and Planning Phase, WSSC would commence the Execution Phase of constructing projects. WSSC would undertake the following activities:

- Conduct community meetings
- Design/bid/build projects
- Collect payments
- Redesign the front foot benefit process and calculations

Issues/Challenges for Implementing Sub Districts

There are some things to be considered before choosing to move forward with the sub district approach for health hazard extensions:

- How to develop the charge – by using estimated costs charged at the front end, or by using actual costs determined after project completion?
- To eliminate the property count weakness and promote participation and equity, it would be advisable to charge all properties in the sub district immediately, whether they choose to connect or not.
- WSSC's current front foot assessment formula, system, and policies would need to be amended.

Caveats

Additional public subsidies may still be needed if the extension is not affordable for property owners after the creation of the sub district. The definition of affordability would need to be defined and the rationale and payment mechanism for equitable public subsidies would also need to be established.

CONCLUSIONS AND NEXT STEPS

The current system of extending water and sewer service to unserved and underserved areas is flawed. The current system has numerous challenges and shortcomings including affordability, equity, and participation. Maintaining the status quo is not a viable, sustainable solution to what is expected to be an increasing problem. An improved system for addressing the extension of water and sewer service has been identified along with a process for moving toward the improved system. Both the counties and WSSC have roles to play in the improved system. This will require unified leadership from the counties and the Commission including the commitment of resources to educate, plan, and lay the foundation for the improved process.

By consensus, the Working Group accepted the Subgroup's findings and framework for moving toward an improved system. The Working Group transmitted its consensus to WSSC's Commissioners. WSSC's Commissioners unanimously accepted the findings of the Subgroup on March 19, 2014 and authorized the transmittal of such findings to the legislative and executive branches of the two counties for consideration and proposals for next steps. This report will be transmitted to the legislative and executive branches of the two counties.

APPENDIX A – EVALUATION OF FINANCING CRITERIA AND ALTERNATIVES

Affordability

Making extensions affordable to property owners is a central challenge. As a point of reference to define "affordability", the United States Environmental Protection Agency (EPA) uses the criteria of 2% of annual household income for sewer service. Based on data from the *American Community Survey* published by the Census Bureau, the estimated annual income per household in Greenridge Acres is $140,987 and $112,550 in Treasure Cove. Using the EPA affordability guidelines, households in Greenridge Acres should be able to afford $2,820 per year for sewer service ($140,987 x 0.02 = $2,820) while households in Treasure Cove should be able to afford $2,251 per year for sewer service ($112,550 x 0.02 = $2,251).

Using sewer rates and Account Maintenance Fee rates for FY'13 and based on water use of 210 gallons per day, the estimated annual sewer service costs totals $501. This figure is below the affordability guidelines for each sample community. The net difference could be used to "affordably" finance sewer extensions. The annual amount available for financing is shown at the bottom of the figure below. Using Greenridge Acres as an example, $2,820 - $501 = $2,319 available annually.

Figure A-1: Ability of Sample Communities to Fund Extensions under EPA Affordability Guidelines

	Greenridge Acres	Treasure Cove
Estimated Annual Income per Household (rounded)[1]	$140,987	$112,550
2% of Annual Household Income[2]	$2,820	$2,251
Estimated Annual Sewer Service Costs[3]	$501	$501
Annual Amount Available for Financing	$2,319	$1,750

1. 2007-2011 American Community Survey 5-Year Estimates, US Census Bureau. Data is for Census Tracts 7002.05 (Greenridge Acres) and 8014.10 (Treasure Cove).
2. Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development, USEPA, Publication 832-B-97-004, February 1997.
3. WSSC Budget Office. Assumes 210 gallons per day of water at the 7/1/12 rate of $6.25 per 1,000 gallons. Also includes $22 Account Maintenance Fee.

These annual amounts available for financing will be used to test the affordability of alternative financing options.

Alternative Financing Options

Loans

The figure below illustrates several loan scenarios using different interest rates and repayment terms to show what could be affordably financed by households in the two sample communities. Of the six scenarios shown below, two of the Greenridge Acres scenarios could be affordably financed. None of the three Treasure Cove scenarios could be affordably financed.

Figure A-2: Funding Scenarios of Sample Communities Using EPA Affordability Guidelines

Greenridge Acres

Annual Amount Available for Financing => **$2,319**

	Annual Interest Rate	Term of Loan (years)	Estimated Amount Able to Borrow	Ave.,Total Cost per Unit	Surplus/ (Shortfall)	Able to Finance?
Scenario 1	0.00%	20	$46,380	$41,888	$4,492	Yes
Scenario 2	4.00%	20	$31,516	$41,888	($10,372)	No
Scenario 3	2.00%	30	$51,937	$41,888	$10,050	Yes

Treasure Cove

Annual Amount Available for Financing => **$1,750**

	Annual Interest Rate	Term of Loan (years)	Estimated Amount Able to Borrow	Ave.,Total Cost per Unit	Surplus/ (Shortfall)	Able to Finance?
Scenario 1	0.00%	20	$35,000	$171,715	($136,715)	No
Scenario 2	4.00%	20	$23,783	$171,715	($147,932)	No
Scenario 3	2.00%	30	$42,620	$171,715	($129,094)	No

Revolving Loan Program

A revolving loan program is a funding arrangement from which loans are made for multiple projects. The fund gets its name from the revolving aspect of loan repayment, where the central fund is replenished as individual projects pay back their loans, creating the opportunity to issue other loans to new projects. The State of Maryland's Water Quality Revolving Loan Fund is an example of this type of loan program.

The revolving loan program example shown below for Treasure Cove is based on a number of assumptions, including:

- A capitalization scenarios under which Montgomery County, Prince George's County, and WSSC each contribute $2.5 million ($7.5 million total) for the creation of the loan program.

- Loan payment terms of 2.00% annual interest rate and 30 year repayment.
- Each "request" is comprised of 14 households, requesting $2.4 million (the same characteristics of Treasure Cove).

Under these assumptions, the program does "revolve" but only on an average of once every five to six years. This equates to assisting 112 homes over forty five years (about 2.5 homes annually). However, the revolving loan scenario does not meet the affordability guidelines. The annual repayment per household would be approximately $7,700 which is well above the $1,750 amount available annually to affordably finance extensions.

Figure A-3: Revolving Loan Example Using Treasure Cove

CAPITALIZATION SCENARIO	
WSSC	$2,500,000
Montgomery County	$2,500,000
Prince George's County	$2,500,000
TOTAL	$7,500,000

Repayment Terms		
Years:	30	
Interest Rate:	2.00%	<=this matches annual construction cost increase assumption

	Year	Starting Fund Balance	Requests	Ave. Cost per Request	Annual Tatal of Requests	Ending Fund Balance	TOTAL Annual Repayment	Year 1 Series	Year 2 Series	Year 3 Series	Year 4 Series	5 Year Increment: Year 5 Series	Year 10 Series	Year 15 Series
	1	$7,500,000	1	$2,404,009	$2,404,009	$5,095,991	$107,339	$107,339	$0	$0	$0	$0	$0	
	2	$5,203,330	2	$2,452,089	$4,904,178	$299,151	$326,310	$107,339	$218,971	$0	$0	$0	$0	
	3	$625,461	0	$2,501,131	$0	$625,461	$326,310	$107,339	$218,971	$0	$0	$0	$0	
	4	$951,771	0	$2,551,154	$0	$951,771	$326,310	$107,339	$218,971	$0	$0	$0	$0	
	5	$1,278,081	0	$2,602,177	$0	$1,278,081	$326,310	$107,339	$218,971	$0	$0	$0	$0	
5 Year Increments	10	$2,909,631	1	$2,873,013	$2,873,013	$36,618	$454,590	$107,339	$218,971	$0	$0	$0	$128,280	
	15	$2,309,567	0	$3,172,039	$0	$2,309,567	$454,590	$107,339	$218,971	$0	$0	$0	$128,280	$0
	20	$1,516,924	0	$3,502,187	$0	$1,516,924	$604,890	$107,339	$218,971	$0	$0	$0	$128,280	$0
	25	$919,757	0	$3,866,698	$0	$919,757	$774,153	$107,339	$218,971	$0	$0	$0	$128,280	$0
	30	$4,790,520	1	$4,269,147	$4,269,147	$521,373	$964,770	$107,339	$218,971	$0	$0	$0	$128,280	$0
	35	$4,258,952	0	$4,713,483	$0	$4,258,952	$638,460	$0	$0	$0	$0	$0	$128,280	$0
	40	$2,643,498	0	$5,204,066	$0	$2,643,498	$510,180	$0	$0	$0	$0	$0	$0	$0
	45	$5,194,397	0	$5,745,709	$0	$5,194,397	$510,180	$0	$0	$0	$0	$0	$0	0
	TOTAL		**8**					**$3,220,164**	**$6,569,135**	**$0**	**$0**	**$0**	**$3,848,395**	**$0**

# of homes @ 14 homes/request =>	112	Annual Cost per Request Over Life of Loan	$107,339
Ave. capitalization value per home=>	$66,964	Homes per Request	14
		Annual Cost per Home	$7,667
		Amount Available Annually for Financing per Home @ EPA Affordability Guidelines	$1,750
		Surplus/(Shortfall)	($5,917)

Use of Property Tax Revenues

Another source of potential revenue to fund extension costs is property taxes. This approach is similar in concept to WSSC's Front Foot Benefit Assessment. However, unlike Front Foot Benefit, the scenarios shown below do not use front footage as the basis for assessment.

Based on publically available information from the Maryland Department of Assessments and Taxation, the average value of a home in Greenridge Acres is $306,820 and $379,929 for Treasure Cove.

Figure A-4: Assessed Values of Sample Communities

	Greenridge Acres	Treasure Cove
Homes	32	14
Total Assessed Value[1]	$9,818,232	$5,319,000
Average Assessed Value per House	$306,820	$379,929

1. Maryland Department of Assessments and Taxation, Real Property Data Search. Values reflect 7/1/13 phase-in value.

The figure below illustrates several loan scenarios using various financing terms and the resulting property tax rate per $100 of assessment needed to fund the annual debt service payment. Of the six scenarios shown below, the resulting property tax rate per $100 of assessment to repay the loan exceeds the FY'13 general county tax rates. While this revenue source can meet the requirements of revenue sufficiency, it is not affordable or practical.

Figure A-5: Property Tax Backed Loan Scenarios

Greenridge Acres

SCENARIO 1		SCENARIO 2		SCENARIO 3	
Principal	$1,340,401	Principal	$1,340,401	Principal	$1,340,401
Annual Interest Rate	4.00%	Annual Interest Rate	0.00%	Annual Interest Rate	2.00%
Term (Years)	20	Term (Years)	20	Term (Years)	30
Total Principal & Int. Amount	$1,972,581	Total Principal & Int. Amount	$1,340,401	Total Principal & Int. Amount	$1,795,464
Annual Principal & Int. Payment	$98,629	Annual Principal & Int. Payment	$67,020	Annual Principal & Int. Payment	$59,849
Estimated Tax Rate per $100	$1.00	Estimated Tax Rate per $100	$0.68	Estimated Tax Rate per $100	$0.61
General County Tax Rate per $100	$0.724	General County Tax Rate per $100	$0.724	General County Tax Rate per $100	$0.724
Percentage of General County Tax Rate	139%	Percentage of General County Tax Rate	94%	Percentage of General County Tax Rate	84%

Treasure Cove

SCENARIO 1		SCENARIO 2		SCENARIO 3	
Principal	$2,404,009	Principal	$2,404,009	Principal	$2,404,009
Annual Interest Rate	4.00%	Annual Interest Rate	0.00%	Annual Interest Rate	2.00%
Term (Years)	20	Term (Years)	20	Term (Years)	30
Total Principal & Int. Amount	$3,537,824	Total Principal & Int. Amount	$2,404,009	Total Principal & Int. Amount	$3,220,164
Annual Principal & Int. Payment	$176,891	Annual Principal & Int. Payment	$120,200	Annual Principal & Int. Payment	$107,339
Estimated Tax Rate per $100	$3.33	Estimated Tax Rate per $100	$2.26	Estimated Tax Rate per $100	$2.02
General County Tax Rate per $100	$0.96	General County Tax Rate per $100	$0.96	General County Tax Rate per $100	$0.96
Percentage of General County Tax Rate	346%	Percentage of General County Tax Rate	235%	Percentage of General County Tax Rate	210%

A second property tax backed approach would be to assess a lien against an applicant's property for the cost of the extension which would be repaid when the property is resold. However, as shown in the figure below, the cost of the extension as a percentage of the assessed values in the two sample communities is more than 10% in the case of Greenridge Acres and almost 50% in Treasure Cove. This level of additional cost could negatively impact the market value of the home and the homeowner's ability to resell the home. Also, the lien may not be repaid for a number of years as the average time between sales could be lengthy. In Greenridge Acres, the average time since last sale is 21 years. The average time since sale for Treasure Cove is slightly shorter, 18 years.

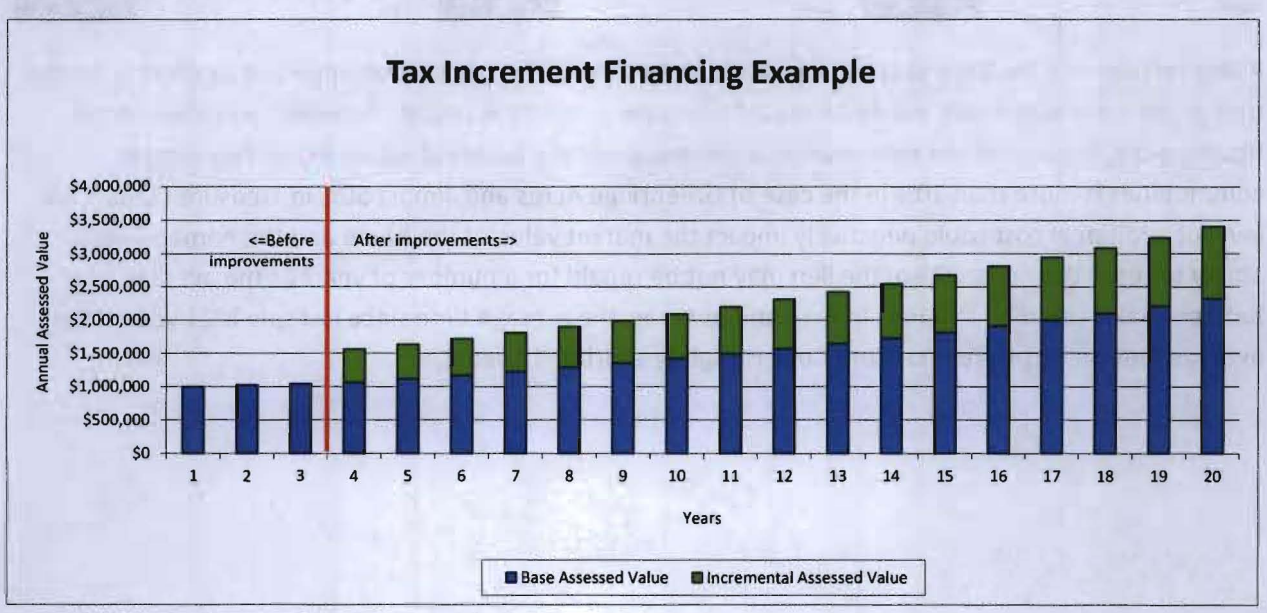
Figure A-6: Property Lien

	Greenridge Acres	Treasure Cove
Homes	32	14
Total Assessed Value[1]	$9,818,232	$5,319,000
Average Assessed Value per House	$306,820	$379,929
Average Extension Cost per House	$41,888	$171,715
Cost of Extension as % of Assessed Value	14%	45%
Average Time Since Last Sale (years)[1]	21	18

1. Maryland Department of Assessments and Taxation, Real Property Data Search. Values reflect 7/1/13 phase-in value.

A third approach utilizing property tax revenues is tax increment financing (TIF). TIF utilizes the net increase in property tax revenues resulting from increasing assessed values due to capital improvements. The net increase in property tax revenues is used to finance the debt that is issued to build the capital improvements. The graphic below illustrates how TIF generates incremental increases in assessed values.

Figure A-7: Tax Increment Financing (TIF)



TIF is typically used in instances of new, "greenfield" development where the current assessed values are low and the capital improvements are a prerequisite for new development to commence. For the sample communities, these developments have already occurred and the beginning assessed values are already established. Additionally, there is little evidence to suggest that replacing septic systems with public sewer service would dramatically increase assessed values to generate sufficient revenues to finance the extension of service. For these reasons, TIF is not an appropriate financing arrangement for the sample communities.

Federal Programs

Community Development Block Grants (CDBG) are distributed by US Housing and Urban Development (HUD) to local governments and non-profits. Eligibility criteria require:

- At least 51% of the persons or households must be low and moderate income; or,
- Must live in an area (census tract or block group) that is low and moderate income as determined by HUD; or,
- Addresses a slum or blighted condition or meets an urgent need.

Water and sewerage projects are grant eligible projects. However, the Subgroup's review of recent and future grant programs do not indicate a large number or water and sewerage system program grants. It is unlikely that the sample communities would be eligible for CDBG funding given their income and housing stock characteristics.

State Programs

The State of Maryland utilizes the Bay Restoration Fund (BRF) to finance improvements to wastewater treatment plants owned by utilities throughout the state. The State uses revenues from the BRF (commonly referred to as the "flush tax") to finance upgrades to reduce nitrogen and phosphorus pollution into the Chesapeake Bay.

The Subgroup's research into this program revealed that Talbot County connected 241 homes to a nearby sewer system utilizing a BRF grant. The grant covered only a small portion of the total cost (approximately 15%). The grant was awarded because of a unique combination of factors. All of the homes being connected to the municipal system were previously served by a large on-site community system that failed. The project was in the Priority Funding Area (PFA) and within the service area of a municipal system that had been upgraded to enhanced nutrient removal (ENR) and was already in the County's Water and Sewer Plan.

The Maryland General Assembly passed and the Governor signed a bill during the 2014 legislative session to expand the use of BRF revenues to fund failing septic systems. HB11 would allow BRF monies to be used to connect failing septic systems outside of a Priority Funding Area (PFA) to a wastewater treatment plant with available capacity. MDE is to adopt regulations establishing review and public notice procedures.

Currently, BRF revenues cannot be used to fund new main extensions. The expanded use of BRF monies may be part of a funding solution for the sample communities.

Public Subsidies

One option available to public entities to address issues of affordability and revenue sufficiency is public subsidies. Public entities can choose the subsidy amount and what objective they are seeking to achieve with the subsidy. The subsidies can be used in conjunction with other funding sources or funding from applicants. The example illustrated below is a loan program using a combination of funding from applicants using the EPA affordability guidelines with public subsidies funding the annual shortfalls. Under this scenario, the applicants would fund 16% of the costs of the extension with the subsidy covering the remaining 84%.

Figure A-8: Example of Combination of Applicant and Public Subsidies

Treasure Cove

COST	
Connection Costs	$91,280
Extension Costs	
Principal	$2,404,009
Financing Costs (@ 4% for 20 years)	$1,133,815
TOTAL	**$3,629,104**

FUNDING SOLUTION

Private	*Amount of Payment*	*# of Payments*	*TOTAL*	
Connection	$91,280	1	$91,280	
Extension (@ EPA Affordability Guidelines)	$24,499	20	$489,983	
Subtotal			$581,263	16%

Public Subsidy	*Amount of Payment*	*# of Payments*	*TOTAL*	
Extension	$152,392	20	$3,047,841	84%
TOTAL			**$3,629,104**	**100%**

WSSC
Where Water Matters

APPENDIX B – LEGAL DESCRIPTION OF SUB DISTRICTS

The authorizing section of Maryland Code for sub districts is as follows:

§25–101.

(a) In this section, "industrial user" means:

(1) an industry identified in the category "Division D – Manufacturing" of the North American Industry Classification System developed by the United States Office of Management and Budget; or

(2) any industry in another class of significant waste producers that the Commission establishes by regulation.

(b) Notwithstanding any other provision of this subtitle or Subtitles 3 through 5 of this title that requires a regulation, rate, or charge to be uniform throughout the sanitary district, if the Commission determines that in any area of the sanitary district the conditions for service from any of its systems, including the cost of instituting and maintaining the service, are substantially different from the conditions for service generally in the sanitary district, the Commission may define the area as a sub district and adopt a different regulation, rate, or charge to apply in that sub district.

(c) Notwithstanding any other provision of this subtitle or Subtitles 3 through 5 of this title that requires a regulation, rate, or charge to be uniform throughout the sanitary district, if the Commission determines that conditions for service from any of its systems, including the cost of maintaining and operating the systems, to a property occupied by an industrial user are substantially different from the conditions for service generally in the sanitary district, the Commission may adopt regulations and set higher rates or charges or adopt more restrictive usage regulations for industrial users.

(d) Before adopting any different regulation, rate, or charge under this section, the Commission shall:

(1) publish notice of the proposed modification in at least one newspaper of general circulation in each county of the sanitary district; and

(2) hold a public hearing on the necessity or advisability of a modification of the regulation, rate, or charge.

The legal basis for County Water and Sewerage Plans is Environmental Article, Subtitle 5, Sections 9-501 through 9-521 of the Annotated Code of Maryland and the Code of Maryland Regulations, Title 26, "Environment", subtitle 3, Chapter 1"Planning Water Supply and Sewerage Systems" (COMAR 26.03.01.01 - .08)

Under this authority it is the county's responsibility to plan for the needed water supply and sewerage services to be provided in the county. Accordingly, the Plan identifies areas where policies (contained in the adopted plan) call for water and sewer infrastructure. Through the designated category process properties are identified as served (W-1/S-1), eligible to be served by extensions (W-3/S-3), planned for future service (W-4/S-4 or W-5/S-5) or identified as properties for no planned service (W-6/S-6).

The county identifies areas that are designated "public health problem" areas that could be served by public sewer if service could be extended. These areas are consistent with the Water and Sewer Plan policies to receive service (consistent with master plans, consistent with Water and Sewer Plan policies related to zoning density, located within the sewer envelope, etc.)