Staff Report

Bureau of Planning

Spring 2020 Amendment
Carroll County Water and Sewer Master Plan

Re: Westminster Water Chapter and Water Service Areas

This request will amend the 2019 *Carroll County Water and Sewer Master Plan*. The request detailed below, pertain to changes to the Projected Water Supply Demands and Projected Capacity table (15), Westminster Water Service Area map (20), and the Westminster Water Service Area chapter.

Request

1. Update the City's water chapter per agreement with MDE during the Triennial update, so to not delay the Triennial update. Minor changes were made during the Triennial update with understanding a more thorough update will occur in the form of an amendment.
2. Add the Stone Chapel Road, LLC property to the Existing Service Area for sewerage and divide demand between Existing, Priority and Future Planning in the Projected Water Supply Demands and Projected Capacity table (15). Include the entire Industrial zoned portion of the property to the Existing Service Area (W-1) in the Westminster Water Service Area Map (20).

Background Information

In order to not delay the Triennial update, minor changes were made during the Triennial update with an understanding a more thorough update will occur in the form of an amendment. This chapter amendment clarifies comments made by MDE during their review of the Triennial update.

The City of Westminster requested the LEF Stone Chapel LLC property be added to the Sewer Service Area. The property is dual zoned Industrial and Conservation; however, only the Industrial zoned portion is part of this amendment. The property has a total demand of 33,420 gpd. The Sewer map for Westminster has the Industrial zoned portion in Existing/Final Planning. The sewer demand is split in Table 32, with; 24,252 gpd in Priority and 9,168 gpd in Future.

Agency Comments

The Department of Planning has heard back from three different stakeholders and none of them have had any comment regarding this amendment.

Staff Analysis

The chapter amendment for sewer adheres to the agreement with MDE, and updates or clarifies the comments made during the Triennial update review by MDE.

The owners of the Stone Chapel Road LLC property will like to begin the development process for the Industrial zoned portion of the property. To better utilize the property, the owners requested placement in the water and sewer service area. With the entire Industrial zoned portion of the property in the service areas, the owner can explore development opportunities.

Staff Recommendation

County staff recommends approval of the chapter, table and map amendments. County staff is recommending that the Westminster Planning and Zoning Commission certify this request as consistent with the City of Westminster 2009 Comprehensive Plan.

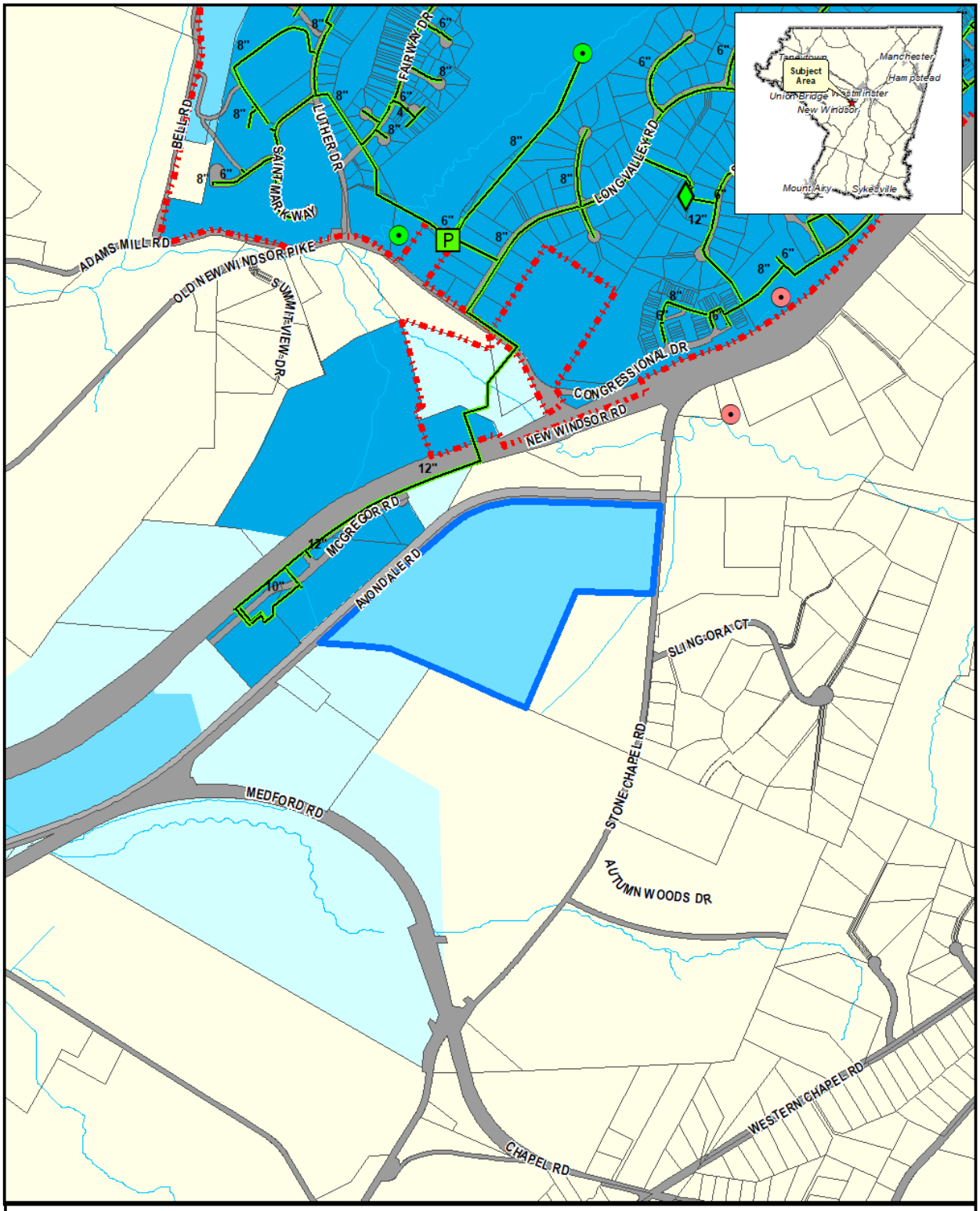
Projected Water Supply Demands and Projected Capacity

The following table summarizes projected water demand over the next ten years. It incorporates planned capacity improvements that respond to the demand projections.

Table 15[2]
Projected Water Supply Demands and Planned Capacity

Service Area	Present Year						Priority Planning (0-6 Year)						Future Planning (7-10 Year)					
	Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.	GPCD	Capacity Million Gal. Daily (MGD)			
			Res. Dem.	Oth. Dem.	Tot. Dem	Ex. Cap.			Res. Dem.	Oth. Dem	Tot. Dem.	Pl. Cap.			Res. Dem.	Oth. Dem.	Tot. Dem.	Pl. Cap.
Westminster [8 9 10]	29,308	91	2.66	0.396	3.056	4.231	30,464	91	2.768	0.479	3.247	4.731	30,464	91	2.768	0.554	3.322	5.231

[8] Westminster's Priority and Future calculations are based on 235 gal per unit for residential demand and 55 gallons/1,000 sf. other demand.
[9] Westminster does not have any residential properties in the Future Planning Category
[10] LEF Stone Chapel LLC Property has a total allocation of 33,420 gpd. The Water map for Westminster has the Industrial zoned portion in Existing/Final Planning. The allocation is split; 24,252 gpd in Priority and 9,168 gpd in Future.



Area of Amendment

Stone Chapel Property
Water Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Spring 2020 Amendment

Water Facilities
- Existing Well
- Existing Storage Tank
- Existing Pumping Station
- Future Well

Water Distribution Lines
- Existing Line

Water Service Categories
- Existing/Final Planning
- Priority (0-6 yr)
- Future (7-10 yr)

General
- Parcels
- Stream

N

Feet
0 387.5 775 1,550

Prepared by the Carroll County Department of Planning, 6/8/2020 (kc)
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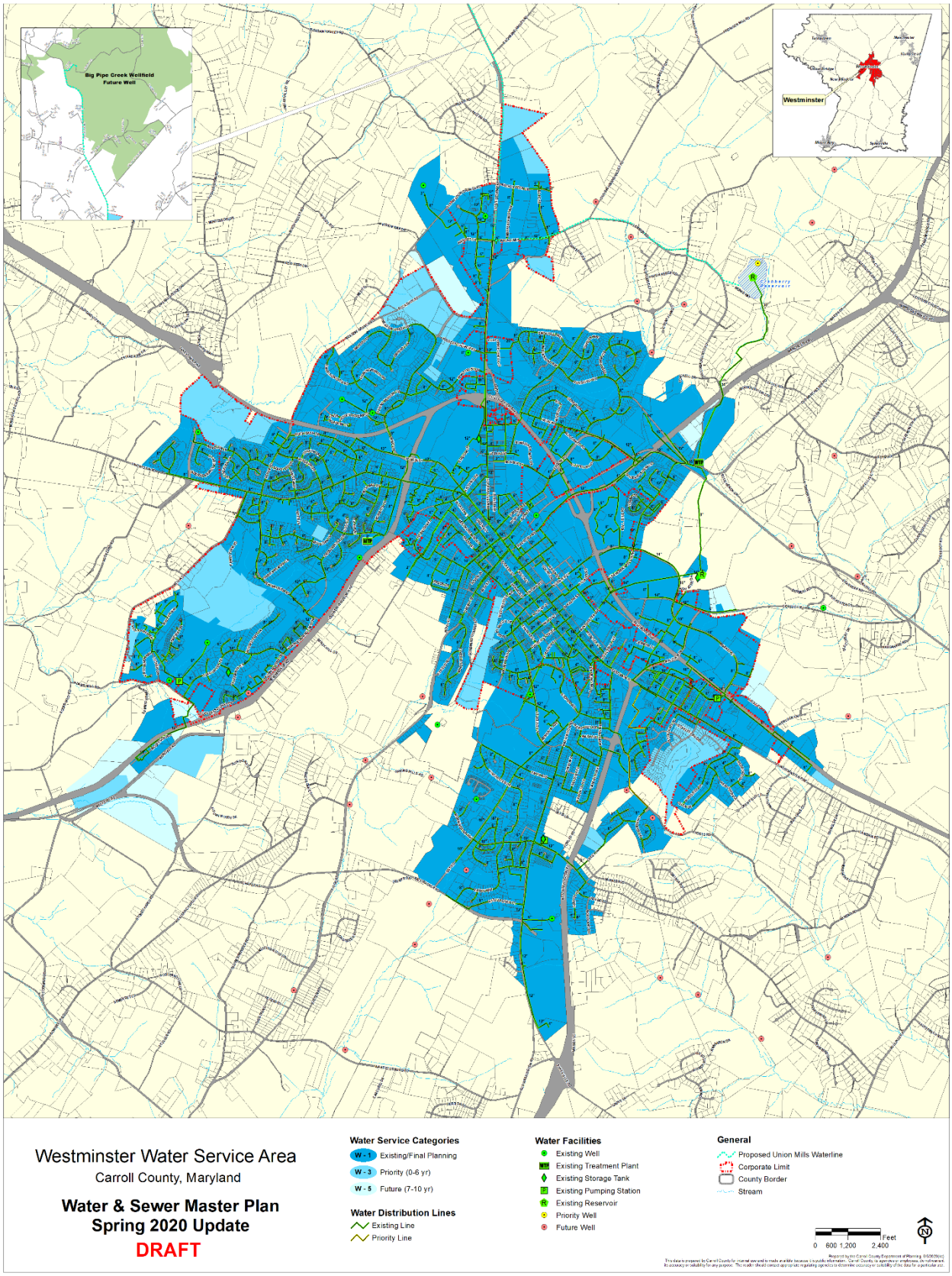

Big Pipe Creek Wellfield
Future Well
Westminster
Westminster Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Spring 2020 Update
DRAFT
Water Service Categories
W - 1 Existing/Final Planning
W - 3 Priority (0-6 yr)
W - 5 Future (7-10 yr)
Water Distribution Lines
Existing Line
Priority Line
Water Facilities
Existing Well
Existing Treatment Plant
Existing Storage Tank
Existing Pumping Station
Existing Reservoir
Priority Well
Future Well
General
Proposed Union Mills Waterline
Corporate Limit
County Border
Stream
0 600 1,200 2,400
Feet
N

Westminster Water Service Area

Portions of the information provided in this chapter for the City of Westminster are excerpted from the most recent Water Supply Capacity Management Plan, submitted to the Maryland Department of the Environment in February 2018. The Westminster WSCMP was prepared for the City by GHD Pty Ltd.

Current Conditions

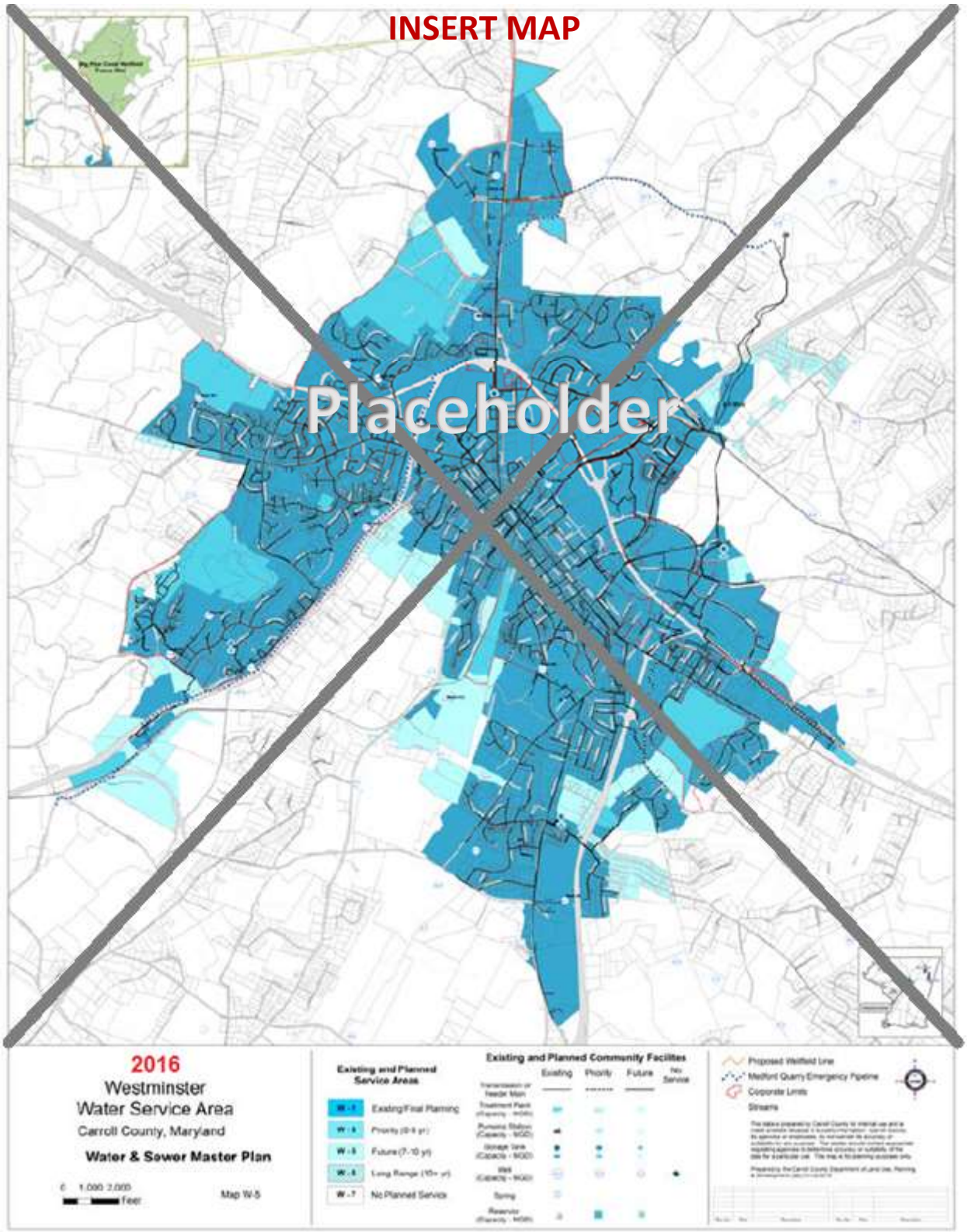
The City of Westminster's water supply system is comprised of 13 water supply wells , one augmentation well, three surface water sources, an emergency surface water supply, an emergency ground water supply, and a 121.8-million gallon (MG) raw water reservoir. The City's treatment and storage system consists of two surface water treatment plants (WTPs), two booster pump stations, one clear water reservoir, and four finished water storage tanks. Although the City operates one large water system, the City manages and operates two sub-systems: Wakefield Valley System and Cranberry System. The Wakefield Valley system includes two wells (Well No. 1 and Well No. 2) and a water storage tank and the remaining assets are included in the Cranberry system. The Wakefield Valley Wells No. 1 and No. 2 were originally an independent water distribution system but have been connected by a valve with the City's Cranberry water distribution system. The valve connecting the two systems is normally closed; however, the systems can be used to supplement each other, if necessary. The Cranberry distribution system operates with a higher pressure; therefore, water enters the Wakefield Valley distribution system through a pressure reducing valve. The Wakefield Valley well pumps can be used to augment the water supply in the Cranberry distribution system. The operation of the City's existing facilities is described in more detail in the following sections.

Regulatory Setting

The City of Westminster first developed a Water Supply Capacity Management Plan (WSCMP) in August 2006. The results of the August 2006 WSCMP indicated that the City had an existing *Drought of Record Water Deficit*. Upon completion of the WSCMP and following meetings with the Maryland Department of the Environment (MDE), the City entered into Agreement No. 998 with the State. Based on the requirements in Agreement No. 998, the City completed an Updated Water Supply Capacity Management Plan in 2008 in accordance with the 2006 MDE Water Supply Capacity Management Plan Guidance Document.

Since completion of the 2008 WSCMP, the City has pursued several actions to increase the available water supply and to mitigate increasing demands on the existing system. Further, following the last WSCMP (2018), the City has received increased permitting for existing wells in Wakefield Valley, adopted a new water allocation policy, and has brought the Gesell Well online with a renewed allocation.

In accordance with Agreement No. 998 and the 2008 WSCMP, the City has limited the approval of plats based on water supply availability, implemented water conservation programs, performed water audits, updated water metering and billing systems, and implemented regulations to allow water restrictions in the event of a drought. The City is pursuing short-, mid- and long-term strategies in order to increase its supply of water from existing sources and expand access to new sources, including water reuse options.


INSERT MAP
Placeholder
2016
Westminster
Water Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Map W-5
Existing and Planned Service Areas
Existing/Final Planning
Priority (0-5 yr)
Future (7-10 yr)
Long Range (15+ yr)
No Planned Service
Existing and Planned Community Facilities
Existing
Priority
Future
No Service
Proposed Wellfield Line
Medford Quarry Emergency Pipeline
Corporate Limits
Streams

Westminster Water Service Area Appropriations
UPDATED

6-digit Watershed	Water Source	Permit Number	Permitted Daily Average Use (gpd)	Average Day Demand Month of Maximum Use (gpd)
Middle Potomac	Cranberry Water Treatment Plant	CL1957S002(10)	2,000,000	3,000,000
Patapsco	Koontz Well John Street (for stream augmentati on only)	CL1977G036(07)	500,000	750,000
Patapsco	Air Business Center (Well #4)	CL1977G136(06)	86,000	94,000
Middle Potomac	County Maintenanc e Facility (Well #3)	CL1977G236(05)	100,000	120,000
Middle Potomac	South Center Street (Well #6)	CL1977G336(04)	95,000	111,000
Patapsco	Krider's Church Road (Well #5)	CL1977G436(04)	230,000	280,000
Middle Potomac	Wakefield Valley Wells (1 & 2)	CL1977G536(04)	293,000	500,000
Middle Potomac	Carfaro (Well #7)	CL1977G636(05)	233,000	303,000
Patapsco	Vo-Tech (Well #8)	CL1977G736(04)	119,000	155,000
Middle Potomac	Koontz Property (Wells 9 & 10)	CL1977G836(03)	125,000	130,000
Middle Potomac	Roops Mill (Well #11)	CL2000G025(03)	120,000	150,000
Middle Potomac	Gesell Well & Greenvale	CL2007G019(03)	165, 000*	360,000

	Mews (Well #12)*			
Middle Potomac	Bramble Hills *	CL2000G001(04)	3,300	5,500
TOTAL			**3,904,300***	**5,955,500**
Note: Medford Quarry (Emergency Source)		CL2002S042(03)	482,000	750,000

* Gesell Well (Well #12) information is subject to change as a result of the City's Long-Term Pump Test.
* Bramble Hills Well is a non-production well. Overall system provides emergency pressure to well if needed.

Westminster Water Service Area Daily Use UPDATED

Water Source	Storage Capacity (MG)	Maximum Safe Yield (MGD)	Average Daily Use (MGD)	Maximum Peak Flow (MGD)	WTP Capacity (MGD)
Cranberry Water Treatment Plant		2.000	1.800	3.000	2.750
Wells 1 and 2 – Wakefield		0.293	0.183	0.500	0.197
Well 3 – County Maintenance		0.100	0.085	0.120	0.100
Well 4 – Air Business Center		0.086	0.072	0.094	0.170
Well 5 – Krider's Church Road		0.230	0.158	0.280	0.230
Well 6 – South Center Street		0.095	0.105	0.111	0.100
Koontz Creamery (John Street)		0.500[1]	0.255	0.750	0.500
Well 7 – Carfaro		0.233	0.130	0.303	0.300
Well 8 – Vo-Tech		0.118	0.082	0.155	0.199
Wells 9 and 10 – Koontz Property		0.095	0.080	0.130	0.125
Well 11 – Roops Mill		0.120	0.106	1.532	0.150
Well 12 – Gesell & Greenvale Mews Well*		.165[2]	-	1.532	-
Bramble Hills[3]		-	-	-	-
Raw Reservoir Cranberry	125				
Wakefield Valley Water Storage Tank	2				

Clear Reservoir	1				
McDaniel College Water Tank	.5				
Hook Road Water Tank	1.5				
Gorsuch Road High Zone Water Tank	2				
High Zone Booster Station	-				
TOTAL	**132**	**3.536**	**3.056**		

1. The Koontz Creamery Well is used to augment a tributary of the Patapsco River during low flow periods to maintain stream flow requirements and is not considered a production well.
2. Gesell Well (Well #12) information is subject to change as a result of the City's Long-Term Pump Test.
3. Bramble Hills Well is not a production well; however, it relies on the overall City system to provide pressure in case of an emergency. The information listed in this table is unavailable for Bramble Hills compared to the other City wells because this well was not owned by the City at the time of the Water Supply Capacity Management Plan.

Due to water conservation measures over many years, the City has evidence from its own data and from large, institutional users that water use for current, existing uses has been decreasing significantly. As a result, in the future the City will be looking for ways to recapture allocable water in conjunction with the MDE, so water savings from good practices could be re-allocable.

Needs Analysis

Ground Water Supply

The City has appropriation permits for 13 water supply wells located throughout the City. In addition, the City owns and operates the Koontz Creamery well that is used to augment an unnamed tributary of the Patapsco River and Bramble Hills Well. The Bramble Hills Well relies on the overall City system to provide pressure in case of an emergency. The operation of the Koontz Creamery well is discussed in more detail in the following sections. The table below summarizes the permitted capacities of the existing wells. The operation and production of the wells are explained in more detail in the following sections.

Permitted Well Withdrawal Capacities

Well Number	Source	Annual Average Permitted Withdrawal (MGD)
1 & 2	Wakefield	0.2930
3	County Maintenance	0.1000
4	Air Business Center	0.0860
5	Krider's Church Road	0.2300
6	South Center Street	0.0950
7	Carfaro	0.2330
8	Vo-Tech	0.1190
9 & 10	Koontz Property	0.0950
11	Roops Mill	0.1200
12	Gessell	0.1375
N/A	Greenvale Mews	0.0270
N/A	Koontz Creamery (John Street)	0.5000

Surface Water Supply and Storage

The City of Westminster has three surface water sources, one emergency water supply, and one augmentation well to supplement the surface water to meet flow-by requirements during lower flow periods. Two surface water intakes are located on tributaries that feed the Patapsco River. One surface water intake is located on Cranberry Branch, which is a tributary of the West Branch of the Patapsco River. Approximately 7,500-feet of 30-inch transmission line are used to convey water by gravity from Cranberry Branch into a raceway and to the Cranberry WTP for treatment.

The second surface water intake is located on a tributary of the West Branch of the Patapsco River known as Hull Creek. A small surface water impoundment and an infiltration gallery are located in Bennett Cerf Park. Raw water flows by gravity through a transmission line to the Cranberry WTP for treatment. The third surface water intake is Little Pipe Creek.

The City also owns and operates the Cranberry Reservoir, which is a 121.8-MG raw water reservoir located along Cranberry Branch north of Lucabaugh Mill Road. The water in the Cranberry Branch Reservoir is used when low flow conditions result in inadequate surface water supply from Cranberry Branch and Hull Creek. In 2011, a solar-powered mixer was installed in the reservoir to address stratification and mitigate algal growth. Raw water from the reservoir flows by gravity through the 30-

inch transmission main to the Cranberry WTP. During periods of higher stream flow, a raw water pump, 600 gpm (0.864 MGD), is used to pump water from Cranberry Branch into the Cranberry Reservoir.

The City maintains a water appropriation and a use permit that governs the withdrawal from the two surface water intakes from the Patapsco River. The Koontz Creamery well was purchased by the City in 1974 to meet the City's increasing water demand; however, the ground water supply to the Koontz Creamery well is contaminated with hydrocarbons. Therefore, it is not directly connected to the City's potable water system. Due to the increased withdrawal from Cranberry Branch and Hull Creek, MDE permitted the augmentation of the river flow with pumped water from the Koontz Creamery well through a state-approved discharge permit. The mixing, dilution, and aeration of the Koontz Creamery well water dissipates the hydrocarbons. The City maintains Water Appropriation and a Use Permit that allows a water withdrawal of an annual average of 0.5 MGD and daily average of 0.75 MGD for the month of maximum use. The water from the Koontz Creamery well is pumped into an unnamed tributary of West Branch to augment the flow in the West Branch Basin when the flow at the gauge station is less than 0.85 cfs (0.549 MGD) and continues to augment flow until the stream flow exceeds 1.62 cfs (1.05 MGD). The Koontz Creamery Well Preliminary Engineering Report Evaluation / Concept Design was finalized in January 2008. The 2018 WSCMP recommendation was to operate the well continuously and limit withdrawals during low-flow conditions to maintain flow-by requirements. This recommendation would require a permit modification to eliminate the low-flow augmentation limitation. Approval and implementation of the recommendations would increase the reliable capacity from the surface water system.

In addition, there is a permit that defines the conditions for an emergency withdrawal during a City water supply emergency (drought conditions). The City may withdraw water, via an emergency pump, from the West Branch of the Patapsco River at the Cranberry WTP when low flow conditions exist provided the withdrawal is authorized in writing by the Administration (Maryland Department of the Environment) and water use restrictions have been instituted within the Westminster service area. Two emergency pumps, 600 gpm each (0.86 MGD), are available to transfer water from the West Branch to the Cranberry WTP. Additionally, all water withdrawn from the West Branch must be returned by pumping the Koontz Creamery well.

Permitted Surface Water Withdrawal Capacities

Location Name	Permit Number	Annual Average Permitted Withdrawal (MGD)
Cranberry Branch & West Branch	CL1957S002(10)	2.0

Medford Quarry Emergency Water Supply

The Medford Quarry is located in Carroll County on approximately 397 acres generally bounded by Stone Chapel Road and Maryland Route 31. Ground water percolates into the quarry in excess of the quarry's needs. In June 2005, the City signed an agreement which provides the City access to excess ground water that enters the quarry. MDE approved the agreement, which provides the City raw water to serve the existing water customers. The Medford Quarry pump station and pipeline project was completed in 2009

and is operational. However, the permit has been updated recently due to recommendations from the 2014 WSCMP. The Water Appropriation and Use Permit No. CL2002S042(03) allows the use of Medford Quarry as an emergency water supply. The permitted withdrawal limitations are 0.482 MGD on an average daily basis, and 0.750 MGD on a maximum daily basis.

Permitted Raw Water Source Summary

The City has several ground water and surface water sources to provide raw water to the City's treatment plants or distribution systems. Table 3 summarizes the existing permitted capacity of the various sources, representing the annual average permitted capacity during average rainfall conditions. The reliable capacity under drought conditions is discussed in the following sections.

Permitted Raw Water Sources

Source	Annual Average Permitted Withdrawal (MGD)
Wakefield Wells Nos. 1 & 2	0.293
Cranberry System Wells No. 3-11	1.078
Well No. 12 Gesell and Greenvale Mews Well[1]	0.137
Cranberry System Surface Water Sources[2]	2.000
Total Sources	3.539
Koontz Creamery[3]	0.500
Medford Quarry Emergency Supply[4]	0.480

1. This information is subject to change as a result of the City's Long-Term Pump Test.
2. The Total Source Value was calculated by summing Wakefield Well No. 1 & 2, Cranberry System Wells No. 3-No. 11, Gesell Well, Greenvale Mews Well and Cranberry System Surface Water Sources.
3. Koontz Creamery well is used to augment a tributary of the Patapsco River during low flow periods to maintain low flow stream requirements. At this time, Koontz Creamery cannot be used as a drinking water supply.
4. The Medford Quarry Emergency Supply can only be used during emergency conditions.

Average Daily Use

The City's water system serves residential customers within the City's boundaries as well as customers in portions of Carroll County. The population served by the City's water system is summarized on the next page. Water usage is summarized per capita based on the total water sold and the total water produced by the Cranberry and Wakefield systems.

Water Usage per Capita in Cranberry and Wakefield Systems

Year	Water Quantity (MGD)	Total Population Served[1]	Water Usage Per Capita (gpd/capita)[2]
Sold Water			
2013	1.99	28,945	68.8
2014	2.13	29,077	73.3
2015	1.96	29,139	67.3
Total Delivered			
2013	2.71	28,945	93.5
2014	2.57	29,077	88.5
2015	2.66	29,139	91.2

Notes:
1. Based on data provide by the City of Westminster Finance and Planning Departments.
2. Water Usage Per Capita = Water Quantity (MGD) * 1,000,000 gal/MG / Total Population Served

Historical Growth Rates

From 2013 through 2015, the residential connections were used to determine the rate of growth for overall increase in residential and non-residential connections. The table below indicates the number of new residential and non-residential connections to the system.

Historical Change in Residential and Non-Residential Connections

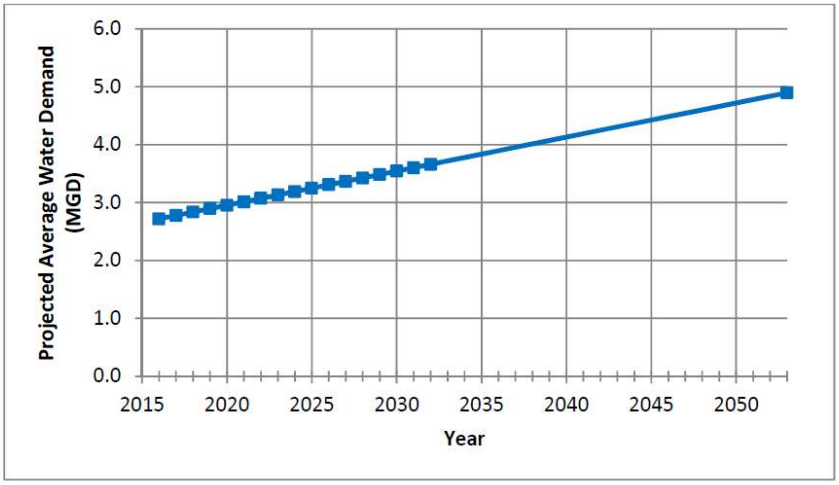
Year	New Residential Connections	New Non-Residential Connections	Overall New Connections
2013	159	-151	8
2014	134	-5	129
2015	103	-2	101
Annual Average	132	-53	79

Projected Growth

The projected build-out for residential connections is based on historical growth trends, number of issued building permits, planned and projected developments and current zoning. The graph on the following page shows the projected growth for the in-City connections and County connections through an estimated build-out year of 2053.

As a result of the City's Water allocation policy in place since 2015, which allocates a maximum of 0.0588 MGD of water per year, the growth rate of new water was effectively capped. Although this was an effective approach, the City paused all allocations when the planned addition of the Gesell Well was delayed by the required installation of filtration equipment.

Projected Build-out Water Demand



New Allocations Procedure

On June 23, 2017, the City temporarily suspended the processing of applications requiring a net new water allocation for nine months. On March 26, 2018, the Mayor and Common Council of Westminster passed and approved Resolution No. 18-04, implementing a new water and wastewater allocation policy that supersedes all prior policies. On October 8, 2018, the Mayor and Common Council of Westminster passed and approved Resolution No. 18-08, amending the adopted water and wastewater allocation policy for 2018-2024.

The current policy promotes the allocation of water for economic development purposes, such as commercial and industrial uses and to support new multifamily residential projects. The policy provides for a limited supply of water for new single-family residences, recognizing the fact that there are approximately 600 single-family residences already allocated and in the pipeline.

On August 12, 2019, the Mayor and Common Council passed and approved Resolution No. 19-16, amending the Master Distribution Chart and policy text. These changes provided for the allocation of new categories to direct more economic development allocations to projects inside the City as opposed to those outside, and to address food-and beverage-related uses. Policy text was added to create commercial share principles, and two new columns were introduced on the Master Distribution Chart. The revision also contained new text to allow a queue to form across the policy timeframe for the annual, single-unit-residential allocations inside the City.

The fourth Policy revision added language allowing property owners that possess an assigned tentative water and/or sewer allocation to utilize the allocation at a temporary location while in the development/permit review and construction process, subject to certain conditions. The temporary location would be required to cease operations before the new location could receive its use and occupancy permit approval. This amendment also creates a new column in the Master Distribution Chart titled “Allocation Re-assignment for Temporary Location” to assist staff in tracking water and/or sewer allocations in this category.

Recommendations for Long-Term System Growth

The 2018 Westminster Water Supply Capacity Management Plan recommended the following for future projects to increase the water supply capacity available to the City of Westminster in future years.

- **Big Pipe Creek**: The use of Big Pipe Creek at Union Mills has been in the Carroll County Water and Sewer Master Plan since the 1960s. Big Pipe Creek has a significantly larger watershed than the existing Cranberry intake, which results in a substantial increased baseline stream flow when compared to the existing Cranberry Branch water supply. The initial plan to utilize Big Pipe Creek involved the construction of the raw water intake, off-line reservoir, raw water pump station, and raw water main to transfer water into the existing water system.

- **Hyde's Quarry**: Hyde's Quarry is located within a 60.15-acre parcel owned by the Commissioners of Carroll County. The quarry itself is approximately 8.3 acres in size, with no obvious tributaries adding to or draining from the quarry. Preliminary testing/monitoring of Hyde's Quarry has shown promise for significant withdrawals without deleterious effects on nearby water resources.

- **Purchase of Finished Water from City of Baltimore**: The City of Baltimore has a large water supply and treatment system. An agreement could be developed to allow the City of Westminster to purchase water from the City of Baltimore.

- **Conservation**: Continue to encourage commercial water users to practice water reuse. Although some commercial users are currently reusing water, increasing the amount of water reuse would be advantageous for reducing future water demand.

The City is actively performing a pilot study to develop the basis of design for the new Westminster Water Resource Recovery Facility (WWRF). The source water for WWRF is the effluent of the existing Westminster Treatment Plant (WWTP), which is currently under construction for an enhanced nutrient removal (ENR) upgrade. The purified water from the WWRF will be utilized to augment the Cranberry Run Reservoir.

In addition to the WWRF pilot, the City will also be working with a communications firm to develop a strategy to inform and educate the public regarding this new water re-use initiative.

Future Solutions Advantages and Disadvantages

Big Pipe Creek	Hydes Quarry	Purchase of Finished Water
Advantages: • Identified as future reservoir site by City, County and MDE in 1960s • Largest untapped water source within close proximity of the City (Approx. 12 mi. from city) • Staged Implementation option • Provides ability to meet minimum stream flow requirements at Cranberry Gauge Station • Identified as future reservoir site by City, County and MDE in 1960's • Consistent with State's Smart Growth Initiative City-owned infrastructure	**Advantages:** • Withdrawal of 600,000 GPD observed during testing without deleterious effects on nearby water resources • 1.35 MGD withdrawal achievable for a limited amount of time • Owned by the Commissioners of Carroll County • Currently recommend a surface water annual average appropriation of 400,000 gallons per day (GPD) and max daily withdrawal of 800,000 GPD	**Advantages:** • Reduced infrastructure required with construction of raw water main and pump station for conveying water from Reisterstown • Potential reduction in MDE permitting requirements • Potential reduction in operational complexity • Wells become back-up supply • Provides ability to meet minimum stream flow requirements at Cranberry Gauge Station
Disadvantages: • Extended permitting process • Substantial capital cost for raw water main and raw water storage reservoir • Requires cooperative effort between City, Carroll County and MDE	**Disadvantages:** • Results of testing are not necessarily indicative of anticipated yields under summertime or drought conditions • Further testing/monitoring recommended	**Disadvantages:** • Reliance on the an outside source for finished water with significant reduction in operational control • Potential political ramifications • Substantial capital and operating costs for purchase of finished water • Potential for disinfection by-product formation due to long travel time for finished water • Requires cooperative effort between City of Westminster, Carroll County, MDE and the water supplier

Priority Projects for Continuous System Upgrades

The final section of this chapter updates the priority projects identified by the City of Westminster's Public Works Department. These are in addition to the recommendations identified in the 2018 Water Capacity Management Plan above. These projects represent continuous and ongoing system upgrades. The chart below provides current information from the City of Westminster's Public Works Department in response to a request by Carroll County Planning for updated information in this format.

Westminster Water Service Area Priority Projects

Project Name	Planning Category	Description	Location	Added Capacity
Main Street Water Main	Priority (W-3) 5 years	Upgrade existing line to 12" water main	Main St. from Longwell Ave. to Penn Ave.	0 MGD
Water Treatment Plant Supply Main	Priority (W-3) 10 years	Renovate 30" water transmission line	Supply line from raw reservoir to Water Treatment Plant at Cranberry	0 MGD
Park Avenue Water Main	Priority (W-3) 5 years	Replace two 4" waterlines with 6" water main	Park Avenue from W. Green St. to W. George St.	0 MGD
Winters Street Water Main	Priority (W-3) 5 years	Replace existing lines with 6" water main	Winters St. from Railroad Ave. to John St.	0 MGD
Ridge Road Water Main	Priority (W-3) 5 years	Design and construct an 8" and 6" water main as a replacement for an old 2" and 4" main	Old New Windsor Rd. to Westmoreland St. to the dead end of the line on Ridge Road	0 MGD
Sophia Ave. Water Main	Priority (W-3) 5 years	Design and construct an 8" ductile iron water main, replaces existing asbestos concrete pipe	Fairfield Ave. to Gist and Washington Roads	0 MGD
John St. Water Main	Priority (W-3)	Design and construct 6" water main replacement	John St. between W. Main St. and Winters Alley	0 MGD

Replacement (only)

Replacement				
MD 27 Water Main	Priority (W-3) 5 years	Replace existing main with a new 16" DIP main to reduce breaks	MD 27 corridor	0 MGD
MD 140 Parallel Water Main	Future (W-5) 10 years	Construction of parallel main to equalize pressure and improve system operations	MD 140 corridor	0 MGD
Increased Reservoir Surface Elevation	Future (W-5) 10 years	Increase capacity of reservoir by increasing the water surface elevation	Cranberry Reservoir	0 MGD
Interzone Main	Future (W-5) 10 years	Connect zones with a new 12" main to enhance operations	Poole Road vicinity	0 MGD
New Water Supply	Priority (W-3) 5 years	Study and develop a new water source	Westminster area	TBD

Staff Report

Bureau of Planning

Spring 2020 Amendment
Carroll County Water and Sewer Master Plan

Re: Westminster Sewer Chapter, and Sewer Service Area

This request would amend the 2019 *Carroll County Water and Sewer Master Plan*. The request detailed below, pertain to changes to the Projected Sewer Supply Demands and Projected Capacity table (32), Westminster Sewer Service Area map (29), and the Westminster Sewer Service Area chapter.

Request

1. Update the City's sewer chapter per agreement with MDE during the Triennial update, so to not delay the Triennial update. Minor changes were made during the Triennial update with understanding a more thorough update will occur in the form of an amendment.
2. Add the Stone Chapel Road, LLC property to the Existing Service Area for sewerage and divide demand between Priority and Future Planning in the Projected Water Supply Demands and Projected Capacity table (32). Include the entire Industrial zoned portion of the property to the Existing Service Area (S-1) in the Westminster Sewer Service Area Map (29).
3. Remove the Jantz property from the Sewer Service area, per request from the owner.

Background Information

In order to not delay the Triennial update, minor changes were made during the Triennial update with an understanding a more thorough update will occur in the form of an amendment. This chapter amendment clarifies comments made by MDE during their review of the Triennial update.

The City of Westminster requested the LEF Stone Chapel LLC property be added to the Sewer Service Area. The property is dual zoned Industrial and Conservation; however, only the Industrial zoned portion is part of this amendment. The property has a total demand of 33,420 gpd. The Sewer map for Westminster has the Industrial zoned portion in Existing/Final Planning. The sewer demand is split in Table 32, with; 24,252 gpd in Priority and 9,168 gpd in Future.

BPR Surveying on behalf of the owner, requested the property removed from the Sewer service area. During the Triennial update, the property was removed from the Water Service area.

Agency Comments

The Department of Planning has heard back from three different stakeholders and none of them have had any comment regarding this amendment.

Staff Analysis

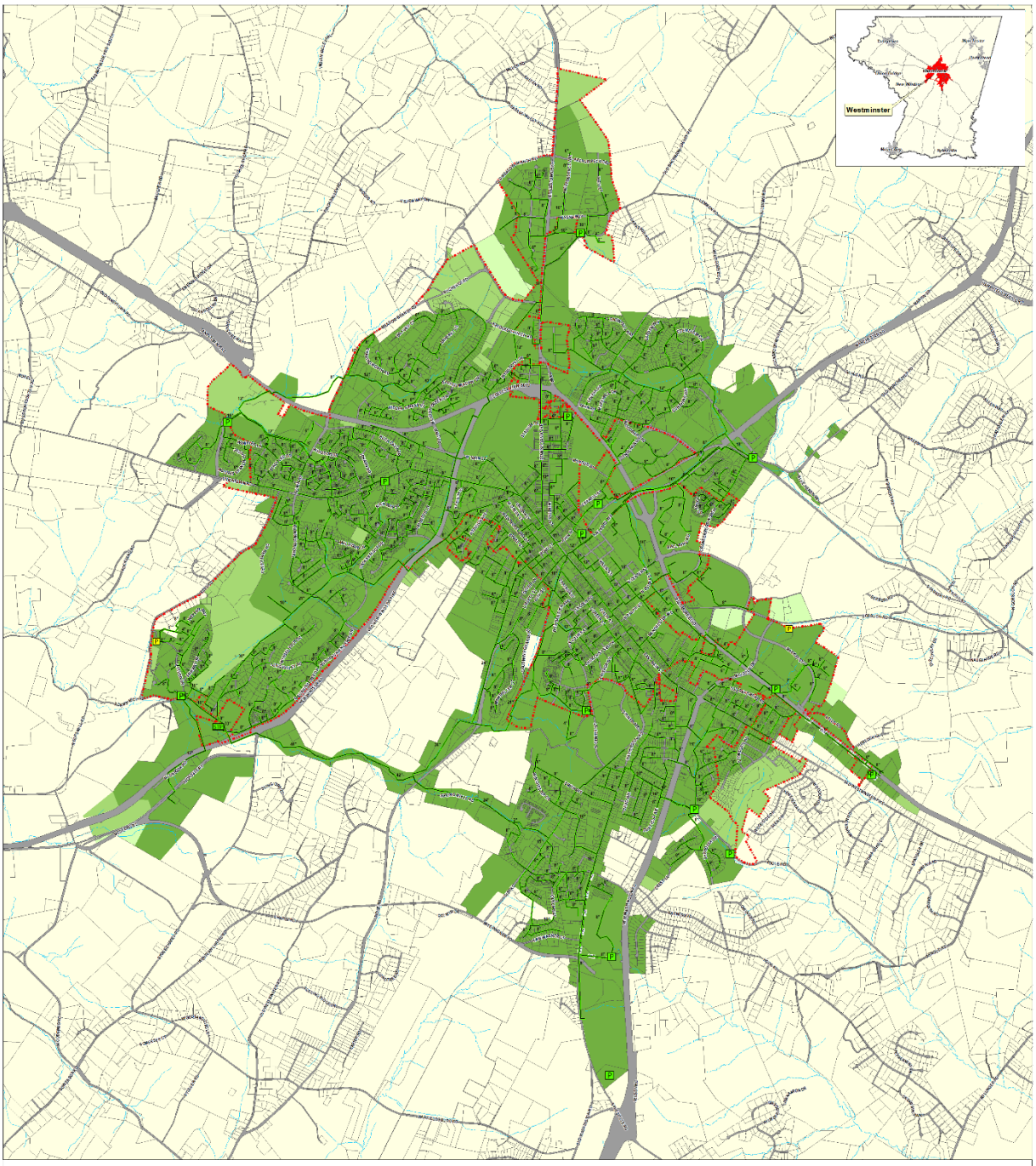
The chapter amendment for sewer adheres to the agreement with MDE, and updates or clarifies the comments made during the Triennial update review by MDE.

The removal of the Jantz property from the Sewer Service area, aligns with the property's removal from the Water Service area during the Triennial update.

The owners of the Stone Chapel Road LLC property will like to begin the development process for the Industrial zoned portion of the property. To better utilize the property, the owners requested placement in the water and sewer service area. With the entire Industrial zoned portion of the property in the service areas, the owner can explore development opportunities.

Staff Recommendation

County staff recommends approval of the chapter, table and map amendments. County staff is recommending that the Westminster Planning and Zoning Commission certify this request as consistent with the City of Westminster 2009 Comprehensive Plan.



Westminster Sewer Service Area
Carroll County, Maryland

Water & Sewer Master Plan
Spring 2020 Update
DRAFT

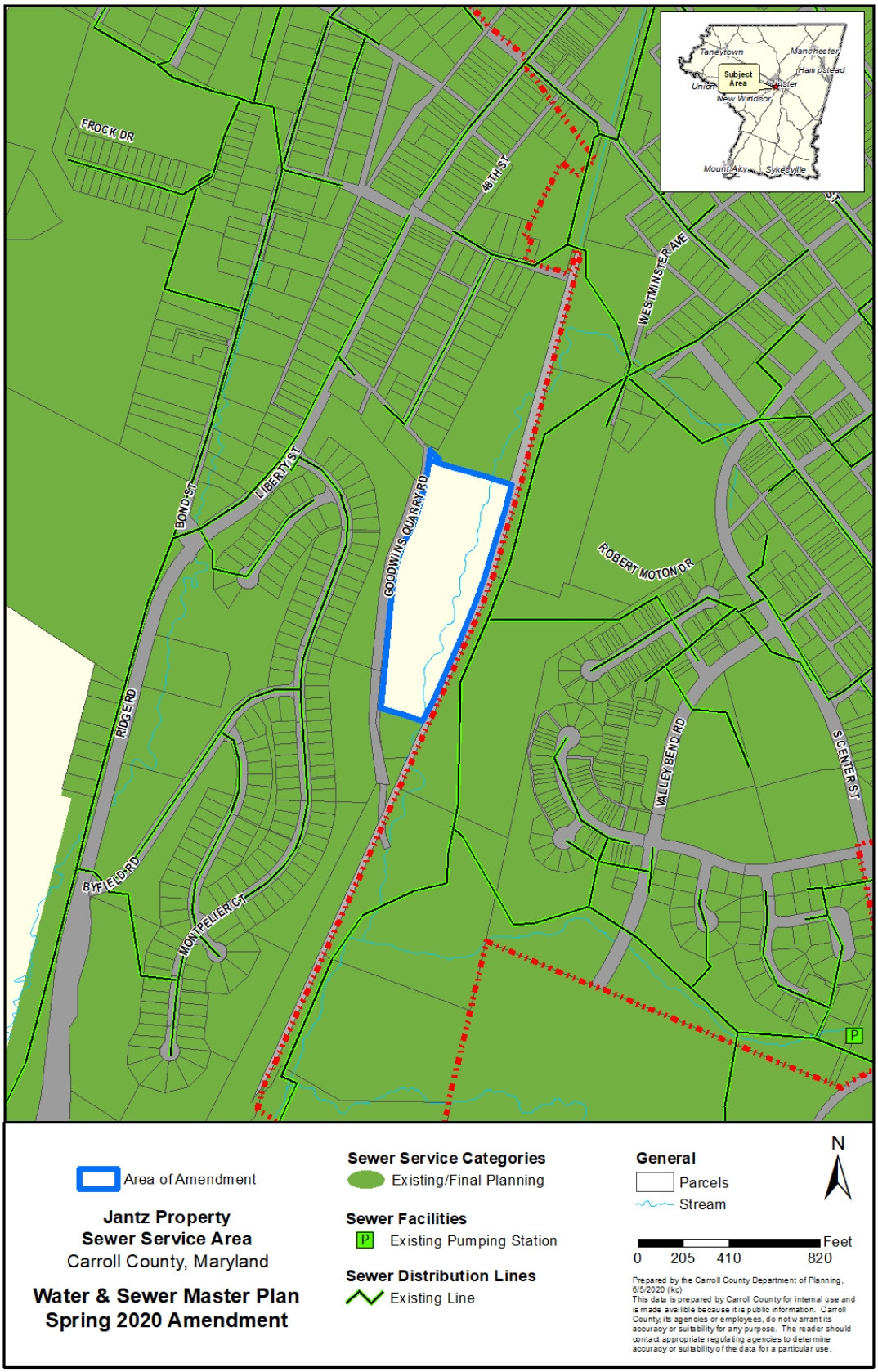
Sewer Service Categories
- S - 1 Existing/Final Planning
- S - 3 Priority (0-6 yr)
- S - 5 Future (7-10 yr)

Sewer Distribution Lines
- Existing Line
- Existing Force Main

Sewer Facilities
- Existing Treatment Plant
- Existing Pumping Station
- Priority Pumping Station

General
- Corporate Limit
- County Border
- Stream

0 1,200 2,400 Feet


FROCK DR
48TH ST
WESTMINSTER AVE
LIBERTY ST
BOND ST
GOODWINS QUARRY RD
ROBERT MOTON DR
RIDGE RD
VALLEY BEND RD
S CENTER ST
BYFIELD RD
MONTPELIER CT
P
Taneytown
Manchester
Hampstead
Subject Area
Union
Westminster
New Windsor
Mount Airy
Sykesville
Area of Amendment
Jantz Property
Sewer Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Spring 2020 Amendment
Sewer Service Categories
Existing/Final Planning
Sewer Facilities
Existing Pumping Station
Sewer Distribution Lines
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Prepared by the Carroll County Department of Planning, 6/5/2020 (kc)
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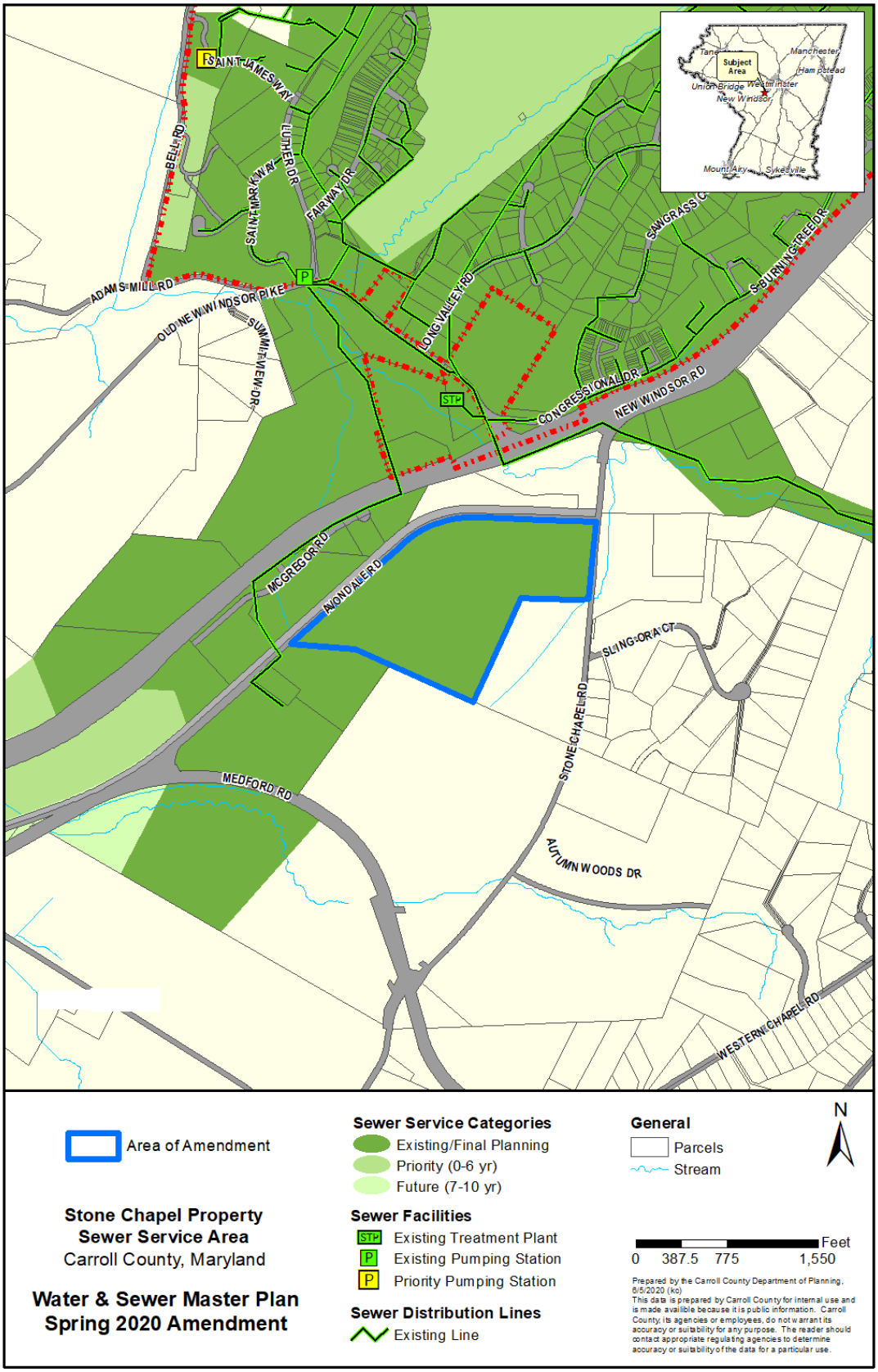
SAINT JAMES WAY
BELL RD
LUTHER DR
SAINT MARK WAY
FAIRWAY DR
ADAMS MILL RD
OLD NEW WINDSOR PIKE
SUMMIT VIEW DR
LONG VALLEY RD
SAWGRASS CT
SUBURBAN TREE DR
CONGRESSIONAL DR
NEW WINDSOR RD
MCGREGOR RD
AVONDALE RD
SLING ORA CT
STONE CHAPEL RD
MEDFORD RD
AUTUMN WOODS DR
WESTERN CHAPEL RD
Subject Area
Manchester
Hampstead
Union Bridge
Westminster
New Windsor
Mount Airy
Sykesville
Area of Amendment
Stone Chapel Property
Sewer Service Area
Carroll County, Maryland
Water & Sewer Master Plan
Spring 2020 Amendment
Sewer Service Categories
Existing/Final Planning
Priority (0-6 yr)
Future (7-10 yr)
Sewer Facilities
Existing Treatment Plant
Existing Pumping Station
Priority Pumping Station
Sewer Distribution Lines
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General
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Prepared by the Carroll County Department of Planning, 6/5/2020 (kc)
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Projected Sewer Supply Demands and Projected Capacity

The following table summarizes projected sewer demand over the next ten years. It incorporates planned capacity improvements that respond to the demand projections.

Table 32[11]
Projected Sewerage Demands and Planned Capacity*

Service Area	Present Year						Priority Planning (0-6 Year)						Future Planning (7-10 Year)					
	Res. Pop. Ser.[1]	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.[2]	GPCD	Capacity Million Gal. Daily (MGD)				Res. Pop. Ser.[3]	GPCD	Capacity Million Gal. Daily (MGD)			
			Res. Dem.	Oth. Dem.	Tot. Dem.	Ex. Cap.			Res. Dem.	Oth. Dem.	Tot. Dem.	Pl. Cap.			Res. Dem.	Oth. Dem.	Tot. Dem.	Pl. Cap.
Westminster[19]	28,839	144	4.156	0.676	4.832	5.000	29,995	142	4.264	0.759	5.023	6.5	29,995	142	4.264	0.834	5.098	6.5

19 LEF Stone Chapel LLC Property has a total demand of 33,420 gpd. The Sewer map for Westminster has the Industrial zoned portion in Existing/Final Planning. The allocation is split; 24,252 gpd in Priority and 9,168 gpd in Future.

Westminster Sewer Service Area

Portions of the information provided in this chapter for the City of Westminster are excerpted from the City's most recent Wastewater Capacity Management Plan, submitted to the Maryland Department of the Environment (MDE) in January 2018. The WWCMP was prepared by Whitman, Requardt and Associates, LLP.

Current Conditions

The City of Westminster owns and operates the Westminster Wastewater Treatment Plant (WWTP) that treats wastewater from the Westminster sewage service area. The WWTP, located on Old New Windsor Pike, was originally constructed in 1973. It discharges into the Little Pipe Creek, a tributary to the Double Pipe Creek, which is a major tributary to the Monocacy River. The WWTP has been expanded and upgraded over time to provide biological nutrient removal (BNR) levels of treatment. The WWTP is an activated sludge treatment system permitted for an annual average flow of 5.0 million gallons per day.

The Westminster WWTP has been operating above 80% of its design and permit capacity since at least 2005. The City has been actively working to secure sufficient available wastewater treatment capacity.

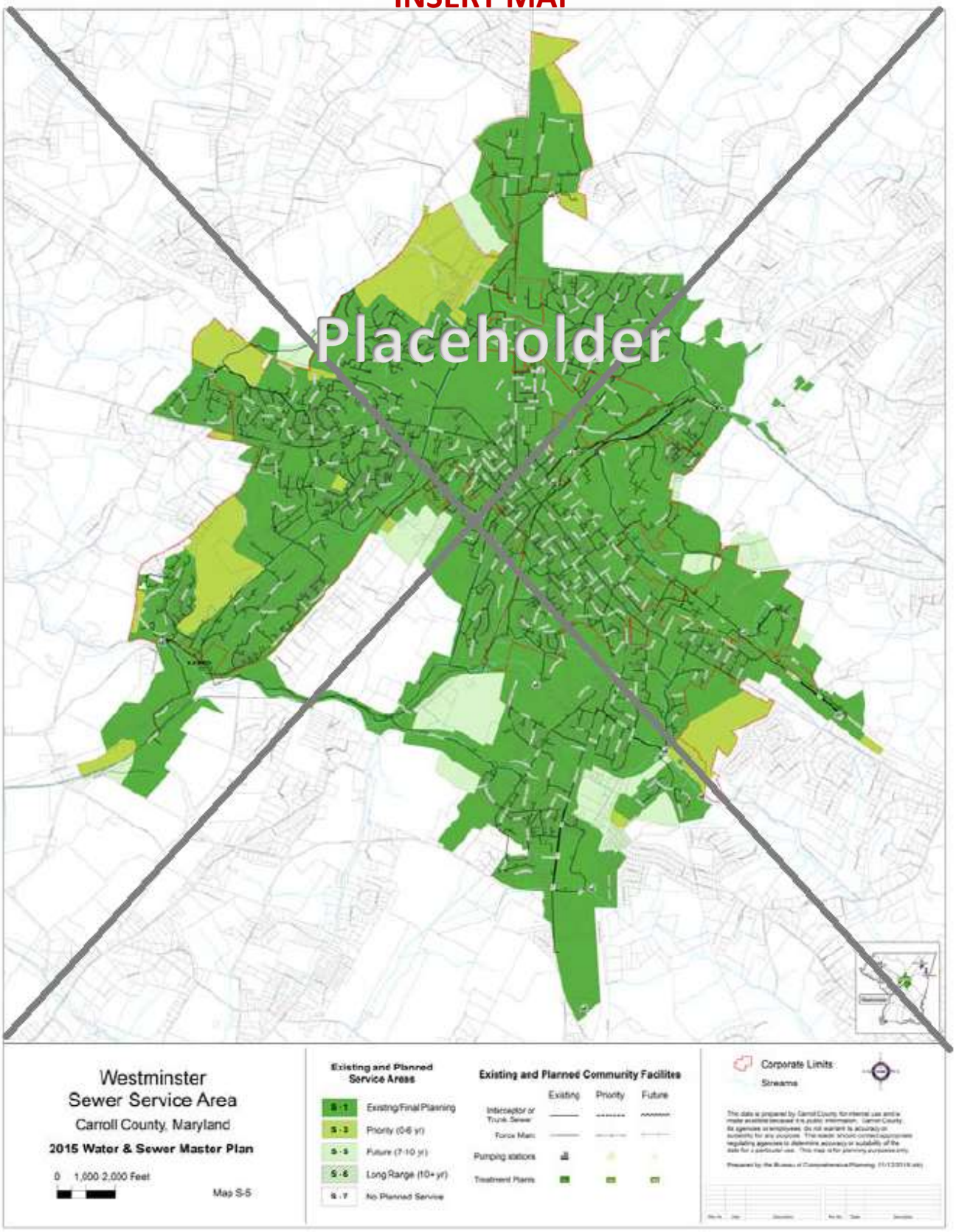
The City recognizes that infiltration and inflow (I&I) into the sewage collection system is a significant contributor to the annual average flows to the WWTP. The City has undertaken several I&I studies and completed several collection system rehabilitation projects. The City recently completed a two-phase system wide rehabilitation project, including replacement of 1,312 LF of collection pipeline, grouting of 1,078 pipe joints, and installation of 3,707 LF of pipeline repair liner. Addition projects will continue to be on going.

The City's *2009 Comprehensive Plan* included plans to upgrade the WWTP to provide Enhanced Nutrient Removal (ENR) levels of treatment and expand the capacity to 6.5 MGD annual average flow design capacity. The City has designed an upgrade of the WWTP to provide ENR levels of treatment (i.e., effluent annual average total nitrogen concentration of less than 4 mg-N/L, and total phosphorus of less than 0.3 mg-P/L) at a design annual average flow of 5.0 MGD. Construction of the ENR upgrade project got underway in early 2019. Construction is expected to take approximately 43 months to complete.

Regulatory Setting

The MDE requires municipalities operating wastewater treatment plants at flows above 80% of their design capacity to complete an Available Capacity Report, a Wastewater Capacity Management Plan (WWCMP), and a Municipal Sewage Capacity Report (MSCR). The Available Capacity Report provides information on WWTP flows, treatment, and permitted capacity. The WWCMP is a planning and engineering tool used to monitor the relationship between WWTP capacity and collection system growth. The MSCR evaluates the treatment plant's capacity and performance, and provides guidance for steps to be taken to provide sufficient WWTP capacity for expected growth. The WWCMP consolidated

INSERT MAP


Placeholder
Westminster
Sewer Service Area
Carroll County, Maryland
2015 Water & Sewer Master Plan
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Map S-5
Existing and Planned Service Areas
S-1 Existing/Final Planning
S-2 Priority (0-6 yr)
S-3 Future (7-10 yr)
S-6 Long Range (10+ yr)
S-7 No Planned Service
Existing and Planned Community Facilites
Existing
Priority
Future
Interceptor or Trunk Sewer
Force Main
Pumping stations
Treatment Plants
Corporate Limits
Streams

the information in lieu of three separate documents. This chapter draws from the WWCMP and updates the charts from prior Carroll County Water & Sewer Master Plans.

Inventory of Existing Wastewater Treatment Plants, Interceptors, Sewage Pumping Stations and Force Mains

Westminster Sewer Service Treatment Plant (updated)

WWTP Treatment Type	Points of Discharge	WWTP Design Capacity (MGD)	Average Flows (MGD)	Method of Sludge Disposal
Activated sludge	Little Pipe Creek	5.000	4.832	Integrated Agronomics is contacted to remove and dispose of sludge by landfilling in Pennsylvania and Virginia
Westminster WWTP Discharge Permit Number: 14DP0837				**NPDES Number**: MD0021831

Westminster Sewer Service Interceptors (same as 2014)

Interceptor	Diameter (inches)	Average Day Flow (MGD)	Design Flow (MGD)
Copp's Branch	18-30	Not metered	-
Meadow Branch	12	Not metered	-
Maryland 27	24-48	Not metered	-

Westminster Sewer Service Pumping Stations (same as 2014)

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)
1 Sullivan Avenue	N 699738.85 E 1312599.55	2	0.374	0.051	0.051
3 John Street and Railroad Avenue to Monroe	N 696845.29 E 1314524.55	2	0.676	0.061	0.061
4 John Street and Carroll Street to MD 140	N 695828.31 E 1313919.20	2	0.640	0.036	0.036
5 Cranberry	N 698394.98 E 1319778.95	2	3.168	1.900	1.900
6 Vo-tech	N 681626.90 E 1315263.07	2	0.518	0.050	0.050
7 MD 140 to Hemlock Lane	N 687704.57 E 1323834.77	2	0.180	0.020	0.020
8 MD 140 and Old Baltimore Pike	N 690586.02 E 1320529.58	2	0.432	0.051	0.051
12 Airport Industrial Park	N 705925.48 E 1313822.35	2	0.864	0.066	0.066
13 Near Carroll Lutheran Village	N 690247.02 E 1300214.17	2	0.720	0.032	0.032
14 Near Roops Mill	N 699569.35 E 1301957.57	2	0.720	0.275	0.275
15 Poole Road	N 686433.34 E 1317793.41	2	0.720	0.209	0.209
Total		***22***	***9.012***	***2.751***	***2.751***

Westminster Sewer Service Pumping Stations (same as 2014)

Pumping Station	Coordinate Location*	# of Pumps	Capacity of Each Pump (MGD)	Normal Pumping Capacity (MGD)	Average Day Pumping (MGD)

*Coordinate locations are Maryland State Plane 1983 Datum.

Westminster Sewer Service Force Mains (same as 2014)

Force Main	Maximum Day Pumpage in MGD	Diameter (inches)	Design Flow (MGD)
Old Bachman Valley Road	Not metered as such. Unable to provide.	8	0.124
Bond St./MD 27	Not metered as such. Unable to provide.	16	3.168
John Street (2)	Not metered as such. Unable to provide.	8 & 8	0.097 & 0.092
MD 140 (2)	Not metered as such. Unable to provide.	6 & 6	0.026 & 0.062
The Greens	Not metered as such. Unable to provide.	10	0.103
Vo-Tech	Not metered as such. Unable to provide.	10	0.074
Sullivan Avenue	Not metered as such. Unable to provide.	6	0.054
Poole Road	Not metered as such. Unable to provide.	10	0.103
Carroll Lutheran Village	Not metered as such. Unable to provide.	10	0.062
Total			***3.811 & 3.842***

*Provided Design Average Daily Flow for Design Flow.

Sludge Management

Sludge from the WWTP presently is hauled from the plant and applied to farmland or transported to a landfill in Pennsylvania. As part of the most recent upgrade to the plant, the volume of sludge is now reduced by a dewatering process. In conjunction with upgrades being made to the wastewater treatment plant to add Enhanced Nutrient Removal, the City is constructing a sludge drying system. Dried sludge could then be transported and burned at a cement manufacturing facility in nearby Union Bridge, Maryland or used as a soil conditioner. See table below for sludge management.

Westminster Sewer Service Sludge Management (updated)

Quantity (tons/yr)	Quality	Method of Disposal/Use	Permit #	Future Disposal Method	Problems
5,187.44 wet	Dewatered to 15% solids	Landfill Disposal	215-STR-2424-July 2025	Sludge drying system	None

Carroll County entered into an agreement with the City of Westminster in 1987 to construct, operate, and maintain a septage receiving and pre-treatment facility at the Westminster WWTP. This facility opened in 1993. The septage facility receives and treats septage pumped from septic systems, holding tanks, and dry wells located throughout the County, and leachate removed from County landfills.

The septage and leachate is discharged by haulers who are authorized and licensed by the County. The septage facility is designed to receive average daily combined flows of 26,000 gallons, with a peak daily

combined flow not to exceed 39,000 gallons. Following pre-treatment, which consists of removal of Biochemical Oxygen Demand (BOD), the solids are dewatered, and the septage sludge cake is hauled by truck to the County Landfill. The liquid removed from the septage is treated at the City's WWTP and discharged in accordance with the City's National Pollutant Discharge Elimination System (NPDES) permit. All normal expenses associated with the operation and maintenance of the septage facility are the County's responsibility. The Board of County Commissioners approved a $4M upgrade to the septage facility to produce cleaner effluent, which will ensure that the City of Westminster's WWTP can meet ENR requirements imposed by the MDE.

Allocation Procedure

On June 23, 2017, the City temporarily suspended the processing of applications requiring a net new water and/or sewer allocation for nine months. Concurrent with the water suspension, the City was also preparing an update to its WWCMP. The City decided to wait for completion of the WWCMP, before reviewing applications for sewer allocations, since WWTP capacity is informed by the update. On March 26, 2018, the Mayor and Common Council of Westminster passed and approved Resolution No. 18-04, implementing a new water and wastewater allocation policy that supersedes all prior policies. The policy has been amended four times since its initial adoption.

Westminster's Sewer Service Area presently extends outside its corporate limits. In August 2002, the Mayor and Common Council adopted Good Cause Waiver legislation for the extension of public water and sewer outside the corporate limits. That legislation requires new or redevelopment projects to be in compliance with the Town-County Agreement, which stipulates that the owner of a property contiguous to the City's corporate limits must initiate annexation of the property into the City in order for the property to be served. If the property does not meet the test for annexation, the owner must file a Good Cause Waiver application with the City. In order for the Mayor and Common Council to approve a Good Cause Waiver, the property must be identified as S-1 or S-3 in the Carroll County Water and Sewer Master Plan. If approved, the applicant must also execute an "Intent to Annex" agreement. The applicant must also obtain a sewer allocation from the City. These procedures provide control over the extension of City utilities outside the City limits.

Needs Analysis

Estimated wastewater demands from partially built and unbuilt parcels were considered in short-term and long-term categories as part of the 2018 WWCMP. The short-term category included known projects with and without approved building permits. Projects were evaluated regarding expected timeframe and whether or not they already had an MDE-approved allocation. The chart on the following page indicates the short-term and allocated categories to correspond with the timeframe of this chapter.

The WWTP is also being upgraded to provide ENR levels of treatment for an annual average design flow of 5.0 MGD. The construction of ENR-related improvements will take several years to complete. The 2015-2017 operating data was used in determining the available wastewater capacity compared to an annual average of 5.0 MGD design and permit flow. The chart on the following page shows capacity.

Wastewater Demand with I&I for Current Planning Period

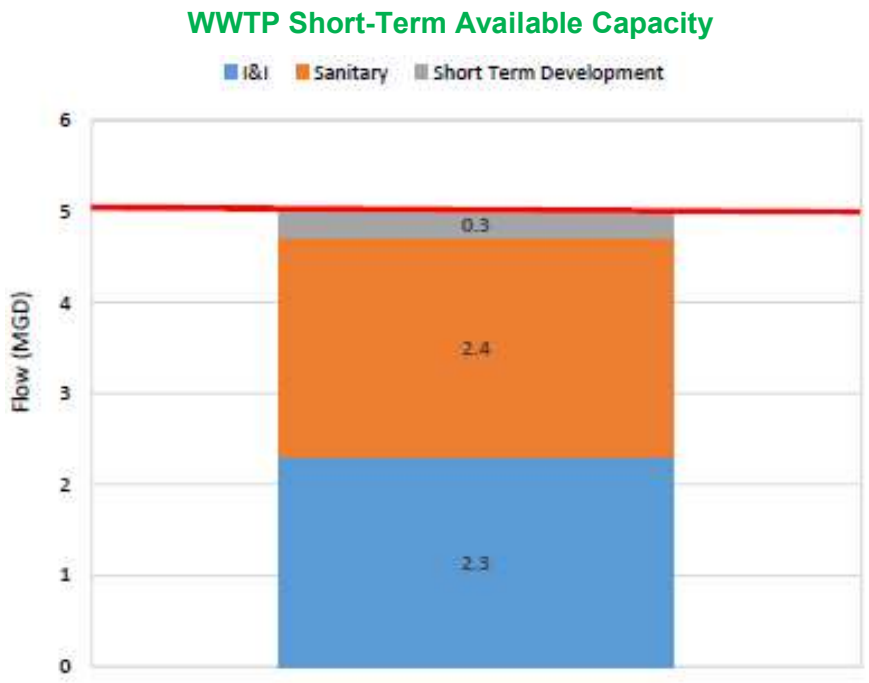
	Demands	Associated I&I	Total Wastewater
	gpd	*gpd*	*gpd*
Allocated Demand	90,605	17,214	107,819
Short-term Demand	181,571	24,498	206,069
TOTALS	**272,176**	**41,712**	**313,888**

Based on the existing 4.7 MGD average flows added to the 0.3 MGD of short term and 0.8 MGD of long-term demand, the Westminster WWTP is expected to have a total long-term wastewater demand of 5.8 MGD. From these estimates, the WWTP would need to be expanded to accommodate the long-term wastewater demands.

Determination of Available Wastewater Capacity

The Westminster WWTP is planning an upgrade to provide ENR levels of treatment for an annual average design flow of 5.0 MGD. The upgrade will require several years before being constructed and brought fully on line. The 2015-2017 operating data is considered in determining the available wastewater capacity compared to an annual average of 5.0 MGD design and permit flow. The WWTP is currently hydraulically underloaded, with a three-year unadjusted average daily flow of 4.7 MGD compared to the 5.0 MGD design and permitted capacity.

The chart below depicts the 2015-2017 wastewater flows, split into the portions related to I&I and to sanitary flows, and the potential additional capacity for the projected short-term development wastewater demands.



Despite the current flows nearing the design flow, the WWTP has consistently performed very well, providing effluent quality better than the NPDES discharge permits for every month of the 2015-2017 period. There have been no reported bypasses or overflows during this period.

The City continues to operate its plant well within current NPDES permit limits. The planned ENR project incorporates state-of-the-art nutrient removal technology. Once this ENR project has been completed, this technology will limit future design and permitted capacity expansion to 6.5 MGD.

Priority Projects

The charts below represent updated information as provided by the City of Westminster's Public Works Department in response to a request by Carroll County Planning for updated information in this format.

Westminster Sewer Service Area Sewage Priority Projects

Project Name	Planning Category	Description	Location	Capacity Added
Sewer System Rehabilitation	Priority (S-3) Immediate	Rehabilitate leaking mains	Throughout the City's 65 miles of sewerage collection system	1.76 MGD
Rehabilitate Pump Station 15	Priority (S-3) 5 Years	Replace pumps	Poole Road off MD 97	0 MGD
Upgrade Pump Station 12	Priority (S-3) 5 Years	Install two new submersible pumps, a new wet well, valve vault, and piping	Old Bachman's Valley Rd. adjacent to West Branch Trade Center Industrial Park	0 MGD
WWTP Expansion	Priority (S-3) 5 Years	Expand Treatment Capacity	WWTP on MD Route 31	1.5 MGD
Enhanced Nutrient Removal	Priority (S-3) Immediate	Install new treatment technology	Wastewater Treatment Plant	0 MGD
Upgrade of the Pre-treatment Septage Facility	Priority (S-3) Immediate	Upgrade the septage facility to produce cleaner effluent	Existing WWTP	0 MGD

Long-term Recommendations

The 2018 WWCMP identified current trends towards decreasing influent flows. Along with the ongoing and planned I&I reduction efforts, there should be long-term, reduced wastewater inflows over time The City's allocation policy will further control the growth of flows.

When the ENR upgrade is complete and operational, a complete re-evaluation of the treatment plant's hydraulic and treatment capacity is planned. Through a combination of flow equalization and incremental improvements at the WWTP, the system's capacity could be increased with relatively modest capital investments.

★

2020 CARROLL COUNTY WATER AND SEWER MASTER PLAN

July 14, 2020

The Westminster Planning Commission hereby Certifies that the 2020 Spring Amendment to the 2019 Carroll County Water and Sewer Master Plan as it pertains to the City of Westminster is consistent with the 2009 City of Westminster, Maryland Comprehensive Plan.

Chairperson of the Westminster Planning Commission