



**AGENDA FOR THE
WATER & SEWER COMMITTEE MEETING**

October 26, 2022

7:00 p.m.

- Monthly Water & Sewer Operations Reports
 - September 2022

- Update on Water & Sewer Projects
 - RFP – West WWTP Upgrade
 - Remsberg Park Waterline Loop
 - Linden Blvd Waterline Replacement
 - I&I Project – Walnut Street to South Jefferson Street

- Draft Comp Plan – Water Resource Element

**Public Works Monthly Report
October 6, 2022**

COMPLETED WORK

Reed Bed sludge removal completed (2018 cost \$23,098.98, 250.8 tons hauled) 2022 estimated cost **\$24,000.00** 240.2 tons hauled, 2 staff 5 days and contract hauler. DMRQA completed and mailed to MDE. MDE PFAS and PFOS samples (9/28/22), Programmed dialers and developed Alarm list and callout numbers for each station. Installed new 500 gal diesel tank. Installed new irrigation pond transducer. Valve turning throughout Town.

Public Works

New Projects or Requests

Hollow Road Blinker Lights for crosswalk. Layout design for approval from FrCo.
 Pickleball Courts: Project goals meeting and field review.
 Linden Boulevard Waterline, Culvert, MS4 and Streetscape Project description and budget development.
 Jefferson Street Parking and Traffic review: Provided this month
 Memar Water Study has been reviewed and summary provided to Water and Sewer Committee.

Unbudgeted Expenses:

On road diesel tank, 500 gal need replaced. \$4,500.00. will arrive week of September 12.
 Irrigation PS Pond transducer, Water Tank level transducer

Sludge cost for FY \$3,480 18,000 gal hauled, 0,000 gal bedded **Total hauled 36,000 gal Bedded 0,00 Gal**

Water Use (Average Daily for the Month, Flows stated in gallons per day)

Permit Limits (gal) **387,000/504,000 AD/MMU** **250,000 AD** **250,000 AD**
Base flow 176,000 Base flow 159,000

| MONTH | WATER USE | | SPRING FLOW | | East WWTP | | West WWTP | | Rain |
|------------|-----------|------------|-------------|------------|-----------|------------|-----------|------------|------|
| | past yr | present yr | past yr | present yr | past yr | present yr | past yr | present yr | |
| January | 317,614 | 300,936 | 100,405 | 85,469 | 260,000 | 241,963 | 224,000 | 147,012 | 2.5 |
| February | 300,936 | 311,685 | 109,250 | 105,258 | 291,000 | 263,000 | 179,000 | 195,000 | 2.8 |
| March ** | 297,775 | 293,702 | 144,800 | 118,808 | 281,442 | 235,867 | 208,134 | 169,018 | 3.4 |
| April ** | 316,218 | 311,260 | 147,075 | 139,909 | 221,150 | 267,481 | 220,184 | 185,830 | 3.25 |
| May | 318,004 | 317,665 | 149,126 | 126,325 | 234,000 | 300,180 | 261,000 | 293,045 | 7.6 |
| June | 327,808 | 329,912 | 136,400 | 141,430 | 183,167 | 203,251 | 183,360 | 124,123 | 2.65 |
| July | 312,871 | 314,364 | 95,242 | 106,315 | 176,000 | 195,429 | 144,000 | 137,369 | 6.4 |
| August | 321,358 | 324,822 | 72,415 | 79,521 | 185,000 | 201,118 | 154,000 | 132,900 | 3.6 |
| September | 300,680 | 302,063 | 91,340 | 67,700 | 312,000 | 226,936 | 342,000 | 159,864 | 5.7 |
| October ** | 313,370 | 318,893 | 52,296 | 88,721 | 173,000 | 213,309 | 128,000 | 198,997 | 3.2 |
| November** | 285,014 | 287,629 | 50,700 | 86,898 | 194,000 | 204,000 | 137,000 | 143,000 | 1.05 |
| December | 293,383 | 287,269 | 68,898 | 81,035 | 305,000 | 180,706 | 199,000 | 101,370 | 1.9 |

Avg Daily/yr 308,753 308,350 101,496 102,282 234,647 227,770 198,307 165,627
 Avg Yr Flw 112.69 112.55 37.05 37.33 85.65 83.14 72.38 60.45

**Hydrants flushed this month

October 2019 531,958, Spring 2020 not flushed. Fall 2020 582,024 Spring 2021 704,842 Fall 2021 744,925 Spring 2022 664,933

Sewer Flow

January flow down -23%, -21% EWWTP, -26% WWWTP. February flow up 6%, EWWTP -2%, WWWTP +19%. March flow down 2% (404,885), EWWTP down 1%, WWTP down 4%. April flow up 8% (453,311) EWWTP up 10%, WWWTP up 8%. May flow up 35% (593,225) EWWTP up 16%, WWWTP up 63%, June flow down -47% (327,395) EWWTP down -34%, WWWTP down -59%. July flow up 5% (332,798) EWWTP down 1%, W WWTP up 5%. Aug flow up 0.4% (334,018) EWWTP up 3%, W WWTP down -3%. Sept flow up 12% (334,018) EWWTP up 9%, W WWTP up 16%

Planned Work

MDE water inspection corrections and emergency plan update, water capacity request from MDE completed

ARP Budget and WS Projects: Staff updates costs and project biweekly. DPW has initiated 4 waterline projects at this date (I&I, Remsberg Park Connector Water, Linden Blvd Waterline). Brookridge PS grinder installation project is in the design phase.

Open Projects

I & I Walnut to Jefferson St.: Contractor has begun and completed 200 LF of new sewer. Some private laterals are in poor condition and contributing infiltration.

ADA sidewalk ramp reconstructions: None this month.

Water System:

Hydraulic Model:

System:

Broad St Streetscape: Reseeding performed September 2022.

SSO and I&I: Regulating flow daily to meet the flow discharge in our permits. Public Announcement for I & I Project and to disconnect illegally connected sump pumps (provide early notice). Monitoring is complete and consultant has requested a review meeting.

West Wastewater Treatment Plant: No issues.

East WWTP: No issues.

Municipal Center: repaired leaking pipe in boiler room.

Maintenance Facility: Contract has been executed with Triad Engineering. We have received 60% improvement plans for review. No action

Washington Street: Curb and gutter and resodding completed on north side. South side curb has been removed, replacement will begin this week.

Pedestrian Blinker signs: Received permit install at Holter Road in County ROW. Will prepare sketch plan for installation and coordination with FrCo.

Wiles Branch Stream Rehabilitation (MS4): Survey work has begun. Change order to add additional length upstream to Main St. Staff working to complete the 2022 report due this month.

Linden Boulevard Culvert Replacement: Proposal amount of \$31,600 was accepted and awarded. Change order to add additional length to Main St and 100 feet below the culvert. (MS4 qualification). Project budget has increased and revised costs and timeline has been provided to the Burgess.

Brookridge PS: Clogging pumps has occurred several times weekly. Consultant is completing the design based on Town selected equipment.

Remsberg Park Waterline Extension: Plans have been received for review and approval and submitted to MDE for the stream crossing. The projected start of this project is not firm likely start in November 2022 and work through winter.

Developments

Middletown Library: Project has begun.

ADMAR Annexation: Design for treatment plant in progress 60% submittal reviewed. Returned to Engineer.

Chesterbrook IP's: Work has been completed in the Town ROW.

Middletown Municipal Hall: Water meter vault has changed to cast in place, awaiting meter delivery, construction in progress.

Horman Property Caroline's View: Developer has requested information on the Public Works Agreements.

Future Budget Considerations

W&S: Comprehensive sewer plan, West WWTP ENR plant replacement (non process component for Town budget). upsize CB pumps (part of the facility review or ENR upgrade)

GF: Additional 1 ton truck. New Skilled labor position and 2 future positions for 2 full crews.

Regulatory

EPA

Revised Lead and Copper: Will provide summary of the requirements in the next month (not competed). Inventory of all service lines due October 2024.

PFOA PFOS: interim health advisory levels PFOA 0.004 ppt and PFOS 0.020ppt. Sample results for Well 15 4.36 ppt, Brookridge 8.36 ppt. Town is required to participate in UCRM 5 as a result of the previous sampling. MDE / EPA will pay for the testing.

Emergency Response Plan: Certification is due Dec 31, 2021 99% complete.

MDE

Permits: East WWTP Discharge Permit (exp Dec 2021) submitted 22 months prior to expiration and then revised 14 months before expiration. MDE advertised the reapplication. We have requested an increase in discharge flow from 250,000 to 350,000. MDE has approved the County Water and Sewer Plan which requested the increase in flow. MDE is has started working on the permit may be 9 months till completed.

Irrigation Pump Station Permit Renewal has been advertised by MDE.

MS4 Permit: Received a Proposal from FSA or inspection and survey MS4 stream improvements to justify the MS4 credits and have placed in the General Fund budget. (Contract Consultant for annual report is estimated to cost \$35,000 to \$50,000 based on Myersville costs). Staff working on 2022 report. Need to phase the Culvert and Stream restoration Projects. Engineer has provided an \$11,000 proposal to review the older ponds for credit. Will use patching budget for this cost.

West WWTP ENR Upgrade: PER contract has been provided for execution.

Capacity Management reports: Submitted July 30, 2022.

WATER RESOURCES ELEMENT



Introduction

~~The purpose of the~~This Water Resource Element is to evaluate the land use plan ~~for the Town of Middletown~~ and its potential impact on local water resources. These resources include ground water supplies (springs and wells) and streams that are tributaries of the Chesapeake Bay. Achieving the Town's water resources goals will take a coordinated effort by its citizens, the Town's government, and its businesses. Each has a role to play in ~~protecting preserving~~ the Town's water

resources for future generations.

Commented [SM1]: Can a reference be added on where to find the land use plan?

Water Resources Element Requirements:

- Identify drinking water and other water resources that will be adequate for the needs of existing and future development.
- Identify suitable receiving waters and land areas to meet the storm water management and wastewater treatment and disposal needs of existing and future development.

Commented [CS2]: Indicate for what term, or reference the plan in which this is defined.

Water Resources Element Purpose:

- To ensure the Comprehensive Plan integrates water resources issues and potential solutions.
- To outline how management of water, wastewater and stormwater will support planned growth, given water resource ~~limitations~~ allocations.

Water Resources Goals:

1. Maintain a safe, secure and adequate drinking water supply to accommodate the needs of the current population as well as future growth, in accordance with the Town's Land Use Plan generations.
2. Protect and enhance the quality of the Town of Middletown's surface waters, ground water resources, and wetlands, with the goal of
meeting Meet all regulatory requirements for potable water distribution to users and for treatment and discharge of wastewater.
4. Invest in and maintain water and sewer infrastructure that will provide ample treatment capacity for projected demand in year XXXX.
- 3-5. and rReduce total maximum daily loading (TMDL) of pollutants to rivers and streams.
- 4-6. Promote coordinated planning with other federal, state and local agencies responsible for drinking water, wastewater, and stormwater management.
- 5-7. Engage Middletown's citizens in watershed conservation and promote a stewardship ethic.

Commented [DL3]: This should also include other water resources for other disciplines.

Commented [CS4]: Is this a goal because it is necessary, or because the Town simply wants to? To what level or by how much? We cannot measure whether or not we achieve this if we don't have a benchmark.

Commented [CS5]: What will this goal achieve for Middletown?

Executive Summary

In order to meet the water resources goals above:

1. The Town will diversify sources of public drinking water and explore alternatives in order to meet future demand.
2. The Town will employ demand management strategies and conservation measures (water pricing, recycling and reuse) to maximize use of existing resources.
3. New development projects will be staged according to the availability and adequacy of the drinking water supply.
4. Per the Town's Adequate Public Facilities Policy, developers must provide 250 gallons of allocable water per dwelling unit and must use the Maryland Department of the Environment (MDE) Water Balance calculations to determine the maximum number of equivalent dwelling units (EDU's) possible for the property to be developed. No use of other aquifers is permitted. The number of houses dwelling units permitted will depend on factors including the water allocation by the Maryland Department of the Environment (MDE) and the amount of water developed on the property.
5. The Town will encourage and support research and monitoring of local groundwater conditions, aquifer recharge, watersheds and streams.

Commented [DL6]: I am concerned about this statement because Middletown should NOT seek alternatives for future public drinking water. Middletown has a limit to its growth because of the limited resource. If this is intended to suggest additional sources of local ground water then the words need to reflect this goal.

Commented [CS7]: Perhaps just delete this item #1? Per others, it needs more clarity if it is to stay in the document.

Commented [SM8]: Proposed rewording: The Town will seek additional means to protect and enhance the quality and quantity of public drinking water and explore alternative methods to ensure allowable demand can be met during periods of severe drought and/or if the current demand is increased in the future.

Commented [DL9]: This may be true, but since we have a consolidated water system (wells for the Town exist in several aquifers and is combined) it is not a good policy to restrict future water supplies from local aquifers...it could create hardships when water is needed in the future.

Commented [CS10]: Does it have to be developed "on the property?"

Commented [CS11]: Will this research and monitoring be by the Town? By others?

6. The Town shall work to provide a buffer around its water resources.

Water Resources Vision

Maintain a safe, secure and adequate drinking water supply to accommodate the needs of the current population as well as future generations, while protecting and enhancing the quality of the areas surface water, groundwater, and wetlands. Promoting coordinated planning with other federal, state, and local agencies responsible for drinking water, wastewater water, and stormwater management.

D
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Commented [CS12]: Agree with DL. Does the Town have a Watershed Management Program in place that needs to be referenced here?

Also, in the Water Resources Vision text box below, begin the second sentence with "Promote coordinated planning..." to keep the tense consistent.

Commented [DL13]: As stated this does not really say anything. It gives not dimensions to buffers or what will or will not be allowed in these buffers. If you are suggesting well head protection then this should be stated, because this is a defined buffer a System.

ing Water System Background

Geological and Climatic Conditions

The Town of Middletown's drinking water supply is currently served exclusively from groundwater sources. The available supply of groundwater in Middletown is dependent upon the underlying geologic conditions, local rainfall, and water demands. In most areas, the water-bearing characteristics of the geology offer low storage capacity and low transmissibility. An extensive stream network and the nature of fine particle soils contribute to these characteristics. The United States Geologic Survey (USGS) and Maryland Geological Survey have generalized the water-yielding character of Frederick County's aquifers and organized them by hydrogeomorphic region. Middletown is located in the Piedmont Crystalline region.

Commented [DL14]: what kind of water demands?

The poorest aquifers, in terms of yield and capacity, include fractured rock aquifers which are typical in the Piedmont Crystalline regions.

Commented [SM15]: Is there a map that can be inserted here that shows this region and the contributing drainage areas of it?

In addition to geology, climatic conditions impact groundwater supply. Seasonal variation in groundwater table level is a primary limitation to its use as a reliable water supply. In a recent evaluation of the Catoctin Creek watershed, it was concluded that groundwater may be an adequate source for the Town during average precipitation years, but under drought conditions, groundwater supplies are not adequate to meet existing demand and support the biological and natural resources of the watershed¹. Groundwater supply limitations are typically accentuated during the summer months. Mid-June through mid-September is historically the driest time of the year, and groundwater supply declines significantly during the summer months.

Commented [SM16]: Does Middletown have the capability to monitor the level of groundwater in our wells/springs routinely? If so, is it possible to discuss the natural recharge in the wet months here too? I'm interested if over the years we are trending up, down, or remain stable with our available groundwater quantities.

Commented [CS17]: I had a similar thought as SM. Can we include a figure to illustrate the historical trends?

¹ 2006. MDE. An Evaluation of Water Resources in the Catoctin Creek Watershed, Frederick County, Maryland.

Existing Water Resources - The Middletown water system is supplied by twenty-three (23) wells and four (4) major groups of springs located on the west side of the Catoctin Mountain, north of town. The Middletown water system draws from the Catoctin Mountain Watershed Aquifer. Raw water sources from the springs and XX of the wells are stored in a 1-million-gallon ground storage tank. Raw water from the raw water tank flows directly to our water treatment plant (WTP 01). Water treatment consists of adding caustic soda, for pH adjustment, and chlorine, as a disinfectant to protect against microbial contaminants. From the plant, the water is pumped to the 400,000 gallon elevated storage tank. Two other sources of raw water are treated by independent water treatment plants and flow directly into the distribution system. Those wells are 15 (WTP 02) and 22 and 23 (WTP 03 - Brookridge). Both facilities remove iron and manganese and disinfect the water for public

Commented [SM18]: I think the Watershed section should be before this section, then this section, and followed by Current Water Allocations after that.

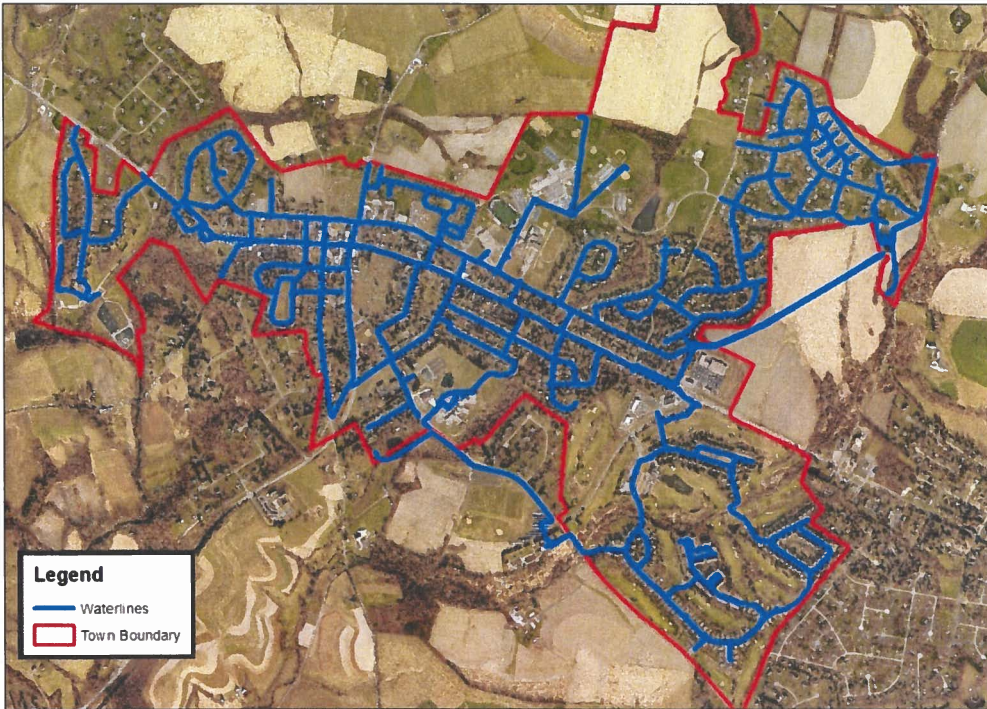
Commented [DL19]: Do we use defined subaquifers?

Commented [DL20]: Later you use "watersheds" the relationship between aquifer and watersheds needs to be discussed. I see later that the text seems to call watershed "aquifers" if this is accurate then the "Catoctin Mountain Aquifer," as presented is not appropriate. This needs review.

Commented [CS21]: Are these 2 of the 23 wells cited above or different wells?

Commented [CS22]: Describe the treatment being done here as was described for WTP 01.

Commented [SM23]: Can we label all the locations of these features on the embedded map?



Town of Middletown - Water Distribution System

consumption. No fluoride is currently added to the system, following a decision by the Town Board to cease fluoride addition in 20XX.

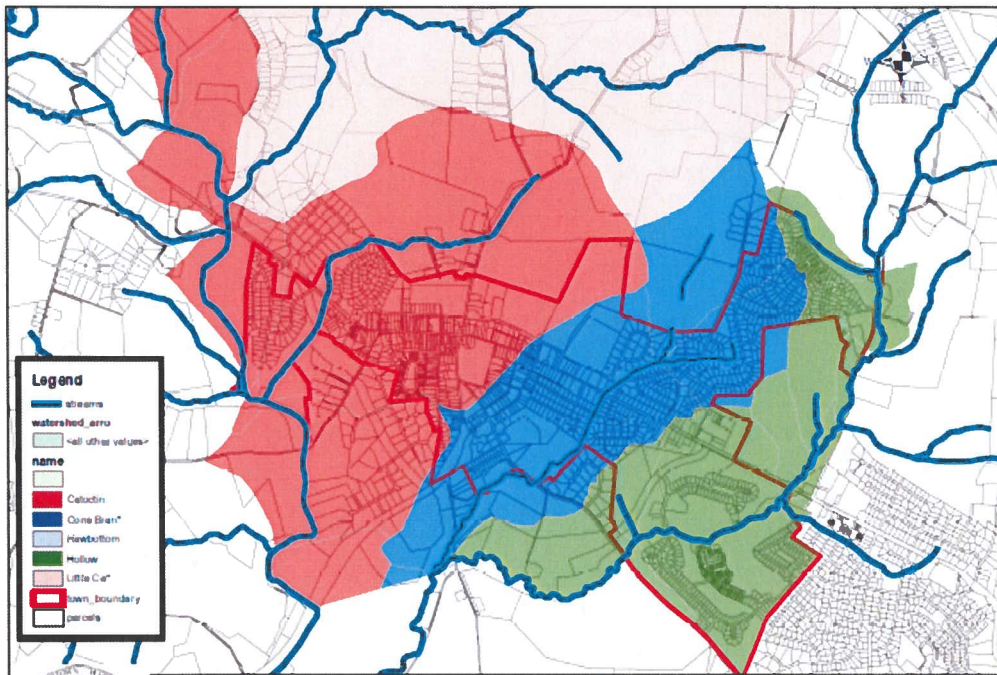
WATERSHEDS - Catoctin Creek flows through the Middletown Valley, an intermountain area characterized by heavily rolling land and narrow streams. The valley is surrounded on three sides by the Catoctin and South Mountain ridgelines. These mountain ranges form the boundary of the Catoctin Creek watershed, which accounts for approximately 25% of Frederick County's total land area. Although Catoctin Creek Watershed is the watershed referred to in overviews regarding the Middletown Valley, for the purposes of allocation of water rights, the Maryland Department of the Environment (MDE) has broken down the Catoctin Creek Watershed into other sub-sections for legal allocations to users of the watershed.

Commented [CS24]: Similar to SM comment above. I suggest moving this section to be first: Watersheds, then Geology, then Water Resources.

Commented [SM25]: How does Catoctin Creek Watershed correlate to the Piedmont Crystalline Region referenced in Background section above?

Commented [SM26]: Can we list each sub-section and note the ones that are currently within Middletown limits and also any within proposed annexations/developments. The below map appears to show three (3) current watersheds, but we also appear to be counting EDU's in Bussard Creek Watershed which isn't shown on the map.

Commented [DL27]: How is this map related to the map in the background section?



Middletown Watersheds

MDE uses the principal that water rights are based on control/ownership of land within each watershed. These rights are then reviewed through MDE determining the water balance within the [watershed aquifer](#) using the formula below:

| | WATERSHEDS | | | |
|---|---------------|-------------|--------------|---------------|
| | Catocin Creek | Cone Branch | Hollow Creek | Bussard Creek |
| Gross Acreage By Digital Planimetry | 369 | 527 | 646 | 10 |
| Net Acreage Available for Allocation (Assumes 10% impervious surface) | 332 | 474 | 581 | 9 |
| Drought (1-in-10) Ground Water Availability (432 gpd/ac) | 143,467 | 204,898 | 251,165 | 3,888 |
| Set-Aside for Maintenance of a 7Q10 Base Flow (15 gpd/ac) | 4,982 | 7,115 | 8,721 | 135 |
| Groundwater Potentially Allocable in the Watershed (gpd) | 138,486 | 197,783 | 242,444 | 3,753 |
| Groundwater Potentially Allocable in the Watershed (gpm) | 96.17 | 137.35 | 168.36 | 2.61 |
| Currently Allocated by Appropriation Permit (gpd) | 25,500 | 73,500 | 308,000 | 0 |
| Available Allocation (gpd) | 112,986 | 124,283 | -65,556 | 3,753 |
| Potential Units (EDU's) | 452 | 497 | 0 | 15 |

Commented [CS28]: Several recommendations for this table:

1. Retitle it to "Middletown Watersheds" if that is appropriate. I suggest only showing data applicable to what is inside Town boundaries.
2. Add units "(ac)" to lines 1 and 2
3. Is the gross acreage reported ONLY in Middletown Limits? If yes, say so
4. 3rd and 4th lines should indicate "...Availability @432 gpd/ac (gpd)" and "...Flow @15 gpd/ac (gpd)"
5. Are all gpd figures reported "annual average?" If yes, say so
6. Add "See Below" to "Currently Allocated by Appropriation Permit (gpd)"
7. Say "Potential Units (EDUs) @ 250 gal/EDU"
8. Add a row indicating the actually developed and approved EDUs
9. Add a "Total" column so it is relatable to "Current Water Allocations" information.

The Hollow Creek Aquifer is over-allocated due to the failure of the Braddock Heights water system. Allocation was taken from the Hollow Creek Aquifer when Frederick County had to take over the Braddock Heights' water system.

Commented [SM29]: Has this ever caused an availability issue for Middletown in periods of drought?

It is important to recognize that the maximum allocation of water, using the MDE water balance for the Middletown Valley aquifer, makes it challenging to meet the Smart Growth Density of 3.4 units/acre. This factor must be considered in determining future zoning densities for the Town. It should also be noted that Middletown's geology makes it difficult to find high producing wells.

Commented [SM30]: When/how was this done by Frederick County, and is there any possibility of Frederick County correcting the allocation of water rights?

Commented [CS31]: Cite the document where this is defined. Is it a Town limit or County limit? Is it required? What are we meeting now?

Current Water Allocations

Middletown's current (2022) total water appropriation permit from MDE is 387,000 gpd (Annual Average) and 504,000 gpd (Month of Maximum Use).

Commented [CS32]: Is this a new section? Use common headings or section numbers.

Commented [SM33]: The above graphic for EDU's shows 73,500 gpd of permitted capacity for the Cone Branch Watershed, but the below graphic for Permits shows 53,500. Can this be clarified?

Current Appropriation Permits

| Watershed | Annual Average (GPD) | Month of Maximum Use (GPD) | Permit Number | Expiration Date |
|----------------|----------------------|----------------------------|-----------------|-----------------|
| Hollow Creek | 308,000 | 390,800 | FR1974G025 (07) | 4/1/2022 |
| Catoctin Creek | 25,500 | 33,200 | FR1974G125 (02) | 9/30/2032 |
| Cone Branch | 53,500 | 80,000 | FR1974G225 (06) | 5/1/2023 |

Total 387,000 504,000

As stated previously, the amount of water appropriations MDE will allow per acre is low in the context of land development. Because of that reason, it is critical that the Town consider carefully where and what density the Town applies to land within its growth area. Therefore, the Town has established a policy that land will be developed in the Town based on the water rights that the land to be developed brings with it. Although the transfer of water allocations between watersheds is permitted by MDE, the Town does not allow those transfers due to potentially being left with undeveloped land in an aquifer with no future allocations available under current state guidelines.

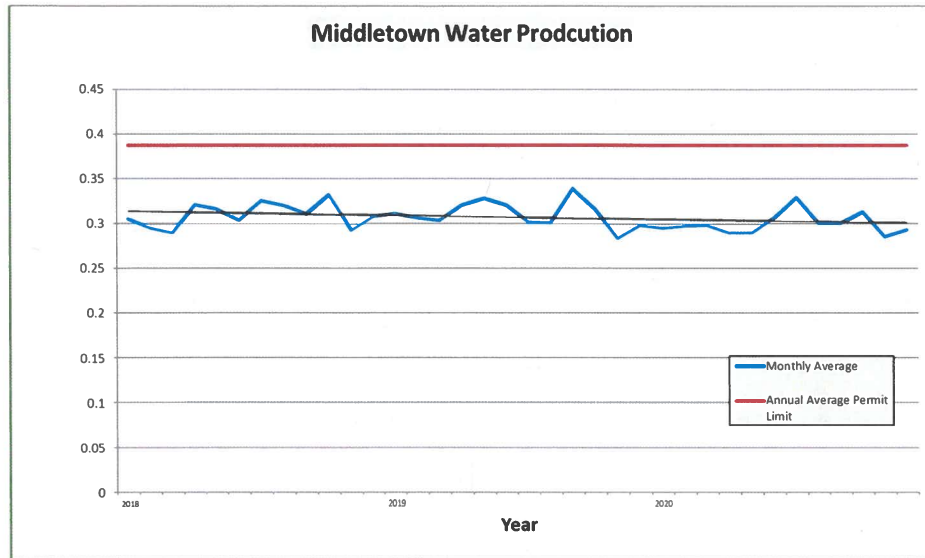
Commented [CS34]: This wording is confusing. Is this in reference to annexations? Land developed in Town already has water rights allocated for it, right?

Commented [SM35]: Can we cite or reference the Town Code and/or policy here?



Existing Demand

As of 2022, the Town of Middletown has 1,702 water service accounts. The existing demand for these accounts varies seasonally, with a three (3) years average daily demand at 307,000 gallons per day (gpd).



Commented [SM36]: Can we discuss how the existing demand is balanced between the service accounts? I think the pie chart that goes with the Quarterly Report that we get currently shows this information.

Commented [CS37]:
 1. Add the units for the y-axis to this chart.
 2. Add the black line (is this average daily demand?) to the legend.
 3. The title references "Production" while the information is for "Demand"; suggest resolving this.

Future Demand

The future demand for water in the town of Middletown is directly related to future annexations. New residential dwelling units are targeted to occur in Frederick County's Community Growth Areas which includes the Town of Middletown. However, the town must keep development balanced with available water and state water allocation policies which will limit the density that can occur within our growth limits.

Commented [SM38]: Is there anything else that will substantially affect future demand? How about projected population growth and table 8-7 below?

The estimated total infill and redevelopment potential for Middletown by 2040 is an additional 202 residential dwelling units (see Table 8-6). The infill lots of record, along with the lots of approved site plans and the Foxfield Section 6 preliminary plan, total 101 acres. The vast majority of that acreage is the 94 acres associated with the active adult subdivision.

Commented [DL39]: I agree...this is however only true if alternative sources of drinking water are not sought (see 1st comment in this review)

Table 8-6

| Approved Prelim. Plats | Development | Units | Population |
|--------------------------------|--------------------------------------|------------|--------------|
| R-20 | Foxfield Section 6 - Active Adult | 148 | 296 |
| Existing Lots of Record | | | |
| R-1 | 204 Lombardy Ct. | 1 | 2.7 |
| R-1 | E. Green - adj to Miller Property | 1 | 2.7 |
| R-1 | 500 East Main Street | 1 | 2.7 |
| R-1 | 502 East Main Street | 1 | 2.7 |
| R-2 | E. Green - behind Williams | 1 | 2.7 |
| R-2 | 28 Walnut Street | 1 | 2.7 |
| R-2 | 310 S. Jefferson Street | 1 | 2.7 |
| R-2 | 312 S. Jefferson Street | 1 | 2.7 |
| R-2 | 316 S. Jefferson Street | 1 | 2.7 |
| R-3 | 116 East Main Street | 1 | 2.8 |
| TC | 406 West Green Street | 2 | 5.4 |
| Approved Site Plans | | | |
| TC | Memorial Hall Apts. | 15 | 42 |
| R-3 | Caroline's View Apts.(Horman) | 9 | 25.2 |
| R-3 | Franklin Commons Townhouses | 18 | 50.4 |
| Totals: | | 202 | 446.1 |

¹ Based on population projections of 2.0 for R-20 active-adult zoning, 2.7 for R1 and R2 zoning, 2.8 for R3 zoning and TC zoning districts.

Based on population projections through 2040 of 202 potential dwelling units, an additional 50,500 gpd of water and sewer capacity will be required. See Table 8-7.

IMPACTS OF TOWN INFILL/REDEVELOPMENT GROWTH

Table 8-7
Impacts of Town Infill/Redevelopment Growth on Public Facilities & Services
Based on Population Projections Through 2040

| Classification | Infill/Redevelopment Areas |
|---|----------------------------|
| Dwelling Units | 202 |
| Population | 446 |
| New Residential Water/Sewer Demand @250 gpd/unit (gpd) ² | 50,500 |
| New Non-Residential Water/Sewer Demand (gpd) | ? |
| TOTAL | |
| New Residential/Non-Residential Water/Sewer Demand (gpd) | 50,500+ |

Commented [CS40]: Where is the footnote for this?

Planned Future Water Sources – Per Middletown’s Adequate Public Facilities Policy, Foxfield Section 6 has developed __ wells and has received a water appropriation of __ gpd. This development will require an additional 37,000 gpd of water and sewer capacity based on buildout capacity of 148 units and 250 gpd/unit. The town will receive a water surplus of __ gpd from this development that will be considered reserve capacity.

Commented [SM41]: Does this increase Middletown permit capacity? If so, which watersheds would be affected?

Any future annexation must find, develop and appropriate the required amount of water prior to consideration of annexation.

Water Supply Risks

In a recent evaluation of the Catoctin Creek watershed, it was concluded that groundwater may be an adequate source during average precipitation years, but under drought conditions, groundwater supplies are not adequate to meet existing demand and support the biological and natural resources of the watershed². The available supply of groundwater in Middletown is dependent upon the underlying geologic conditions. In most areas, the water bearing characteristics of the geology offer low storage capacity and low transmissibility. An extensive stream network and the nature of fine particle soils contribute to these characteristics. The United States Geologic Survey (USGS) and Maryland Geological Survey have generalized the water yielding character of Frederick County’s aquifers and organized them by hydrogeomorphic

² 2006, MDE. *An Evaluation of Water Resources in the Catoctin Creek Watershed, Frederick County, Maryland.*

region. Middletown is located in the Piedmont Crystalline region. The poorest aquifers, in terms of yield and capacity, include fractured rock aquifers which are typical in the Piedmont Crystalline regions. In addition to geology, climatic conditions impact groundwater. Seasonal variation in groundwater table level is a primary limitation to its use as a reliable water supply. Ground water is stored in aquifers and crevices beneath the ground that are recharged by precipitation. In an unconfined aquifer, the most common in the Middletown valley, ground water moves horizontally before it is discharged into a stream or other surface water body, such as a seep, spring, or wetland. Stream flow directly correlates with the rise and fall of the water table; both are impacted by climatic and drought conditions.

Disruptions to the natural hydrologic cycle by land use affects availability of both ground water and surface water supplies. The steady increase in the area's population that is expected over the next twenty years poses a significant impact to the availability of this limited natural resource. Increased development reduces water recharge areas and has the potential for introducing new pollutants and contaminants to watersheds.

Water Supply Conclusions

Commented [SM42]: I found these paragraphs in a previous version and think they fit well here and with some of the goals.

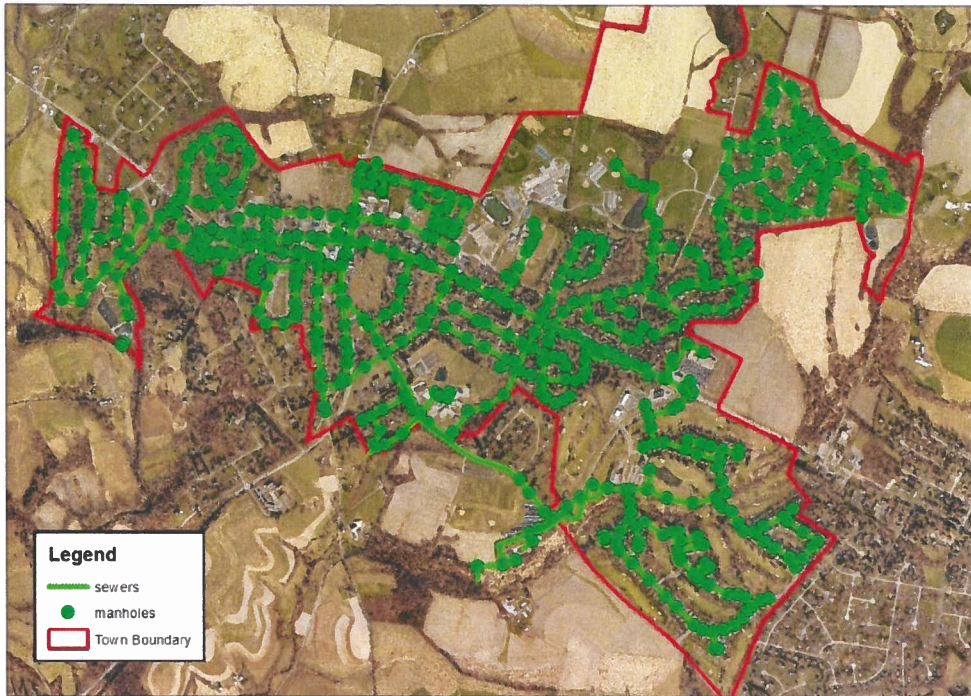
Commented [CS43]: I think we need a section here describing what the prior information means and if the Town is well-supplied, what risks it faces, per SM's comments, and how it will meet the goals set out at the beginning of this section. (Most of the stated goals are not elaborated on at all. These should probably be discussed if they are being presented.)

Sanitary Sewer Background

Geological Conditions/Watershed - The town of Middletown is in the Catoctin Creek Watershed. The streams receiving the treated waste water are Hollow Creek on the east side of town and Catoctin Creek on the west side of town. Hollow Creek flows into Catoctin Creek, which flows into the Potomac River and to the Chesapeake Bay.

Commented [CS44]: Agree with SM. Also add the 3 pump station locations.

Commented [SM45]: Can these outfall streams and the locations of WWTP's be highlighted on the below graphic?



Town of Middletown - Sanitary Sewer Collection System

Existing Sewer Resources

The town of Middletown has two Waste Water Treatment Plants (WWTP). The East WWTP is located on Holter Road, discharges into Hollow Creek, and is an activated sludge plant built in 2000. The treated effluent is seasonally pumped to Richland Golf course as a conservation method to preserve drinking water and decrease discharge to Hollow Creek. The West WWTP is located in Willes Branch Park, discharges into Catoclin Creek and is a lagoon plant built in 1976. There are three sewage pump stations that send sewer to the WWTP: Brookridge South Pump Station, Cone Branch Pumps Station and Foxfield Pump Station.

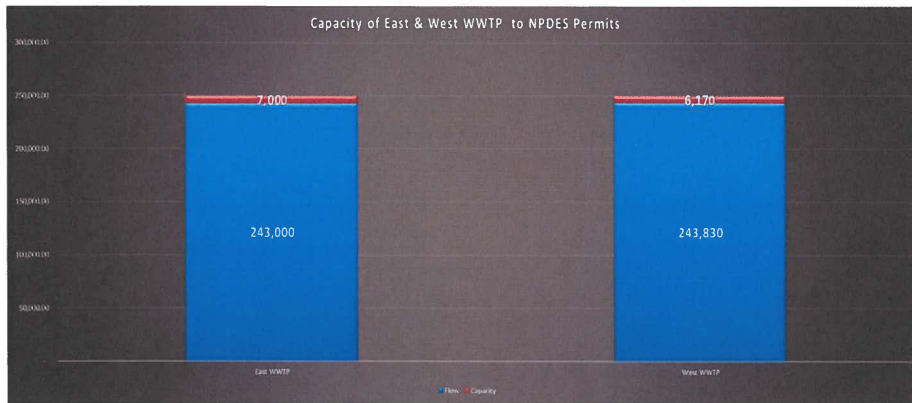
Current Sewer Capacity

The Town has a total permitted capacity for discharge of treated wastewater of 500,000 gpd, as described further below.

East WWTP – The East WWTP has a current permitted capacity of 250,000 gallons per day (gpd) and a design capacity of 350,000 gpd. An application to increase the permitted capacity by 100,000 gpd is pending with the Maryland Department of the Environment (09/2022).

West WWTP – The West WWTP has a current permitted capacity of 250,000 gpd and is at design capacity. Due to the age of this plant, a study is underway (2022) to consider upgrades or other alternatives for this plant using state grant funds from the Bay Restoration Fee.

Inflow and Infiltration (I&I) – happens when water from the environment that does not need to be treated enters the sewage system. This water uses up permitted capacity and causes unnecessary treatment expenses. The Middletown sanitary sewer system has a large amount of I&I that affects the capacity of the system as evidenced by the increase in flow during heavy rains. Two large I&I remediation projects are underway (09/22) to decrease the I&I impacts to permitted capacity and therefore should increase available capacity when complete.



Commented [CS46]: Move this figure below the following text.

Current Sewer Demand

The Town of Middletown's current sewer system capacity, based on calculations by flow, is 243,000 gpd at the East WWTP and 243,830 gpd at the West WWTP.

Based on the current permitted total capacity of 500,000 gpd, the Town has capacity for an

Commented [CS47]: This is not clear, and nor is the graphic. If the East WWTP has a design capacity of 350,000 gpd, why is the flow capacity 243,000 gpd? If the West WWTP is "at design capacity" of 250,000 gpd, why are we reporting only 243,830 gpd?

additional 52 taps/EDU's. With the request for a permit increase at the East WWTP and the I&I remediation work in progress the town will substantially increase sewer capacity. The 100,000 gpd permit increase will increase sewer capacity by 400 taps/EDU's.

Commented [CS48]: How this is determined is unclear; a table would be useful.

Commented [CS49]: Per above, add a table for clarity.

Future Sewer Demand

The estimated total infill and redevelopment potential for Middletown by 2040 is an additional 202 residential dwelling units (see Table 8-6). The infill lots of record, along with the lots of approved site plans and the Foxfield Section 6 preliminary plan, total 101 acres. The vast majority of that acreage is the 94 acres associated with the active adult subdivision. The future sewer capacity for this projected growth is 50,500 gpd. With the increase in the East WWTP permit (100,00 gpd) and the I&I remediation projects, sewer capacity is more than adequate for this growth.

Table 8-6

Commented [CS50]: I don't think you need to repeat this table; it can just be referenced.

| Approved Prelim. Plats | Development | Units | Population |
|--------------------------------|--------------------------------------|-------|------------|
| R-20 | Foxfield Section 6 - Active Adult | 148 | 296 |
| Existing Lots of Record | | | |
| R-1 | 204 Lombardy Ct. | 1 | 2.7 |
| R-1 | E. Green - adj to Miller Property | 1 | 2.7 |
| R-1 | 500 East Main Street | 1 | 2.7 |
| R-1 | 502 East Main Street | 1 | 2.7 |
| R-2 | E. Green - behind Williams | 1 | 2.7 |
| R-2 | 28 Walnut Street | 1 | 2.7 |
| R-2 | 310 S. Jefferson Street | 1 | 2.7 |
| R-2 | 312 S. Jefferson Street | 1 | 2.7 |
| R-2 | 316 S. Jefferson Street | 1 | 2.7 |
| R-3 | 116 East Main Street | 1 | 2.8 |
| TC | 406 West Green Street | 2 | 5.4 |
| Approved Site Plans | | | |
| TC | Memorial Hall Apts. | 15 | 42 |

| | | | |
|----------------|-------------------------------|------------|--------------|
| R-3 | Caroline's View Apts.(Horman) | 9 | 25.2 |
| R-3 | Franklin Commons Townhouses | 18 | 50.4 |
| Totals: | | 202 | 446.1 |

¹ Based on population projections of 2.0 for R-20 active-adult zoning, 2.7 for R1 and R2 zoning, 2.8 for R3 zoning and TC zoning districts.

Based on population projections through 2040 of 202 potential dwelling units, an additional 50,500 gpd of sewer capacity will be required. See Table 8-7.

IMPACTS OF TOWN INFILL/REDEVELOPMENT GROWTH

Table 8-7
Impacts of Town Infill/Redevelopment Growth on Public Facilities & Services
Based on Population Projections Through 2040

Commented [CS51]: Not necessary to repeat.

| Classification | Infill/Redevelopment Areas |
|--|----------------------------|
| Dwelling Units | 202 |
| Population | 446 |
| New Residential Water/Sewer Demand (gpd) ² | 50,500 |
| New Non-Residential Water/Sewer Demand (gpd) | ? |
| TOTAL | |
| New Residential/Non-Residential Water/Sewer Demand (gpd) | 50,500+ |

Stormwater Management Facilities -

Commented [SM52]: Maybe also reference info found in other sections like Chapter 4, "Natural Features & Sensitive Environmental Areas" and Chapter 8 "Sustainability" that touches on MS4 topics and SMW in general.

Background - Stormwater management facilities are located throughout the Town. These facilities vary in design complexity from the early days of stormwater management to integral bio-retention style stormwater management. Most of the facilities in the Town are owned and maintained by the Town. The rest are owned and maintained by private ownership or homeowner's associations. These facilities discharge to local streams in the areas including: Hollow Creek, Cone Branch Creek, Wiles Branch Creek, Tanners Run, and Catoctin Creek.

Commented [CS53]: This language is not really appropriate and should be replaced with something more detailed.

Commented [SM54]: Can we show major facilities on a map, and label each location or stream that receives a SWM discharge?

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Other Elements/Sections to be considered to the Water Resource Chapter

Commented [CS55]: I agree that further development of these ideas, including why they are recommended, should be presented in prior sections. Many of these things have not been discussed.

Drinking Water Action Items

1. Stage new development according to the availability, adequacy, and allocation of ground water.

2. Continue to replace aging water main lines and other aging water-related infrastructure.
3. Establish a water recharge easement program to increase the land area within the town limits for recharge purposes.
4. Coordinate with Frederick County on the feasibility of interconnections with the County distribution system for emergency situations.
5. Continue to enhance its water conservation education program for citizens and businesses in Middletown stressing summertime (peak) demand management and an overall household reduction in water use (in gpd).
6. Continue a water-resources-based GIS database for review of development plans and proposals.
7. Identify and advocate appropriate County protection measures in the Town's wellhead, springhead, and headwater areas that lie outside the town boundaries.
8. Require complete data regarding the availability and reliability of groundwater resources to assist in making land use decisions.
9. Continue coordination with the County to collect and share consistent drinking water data.

Commented [JF56]: Didn't we do this already?

Commented [CS57]: This implies that we do not do anything to protect these areas now. Is that true?

Commented [CS58]: What does this mean? Are we not sharing consistent data already?

#3 - Wastewater Policies

1. Stage development according to the availability and adequacy of wastewater service.
2. Consider the inclusion of adjacent properties on individual well and septic construction for future water/sewer service connection as part of the comprehensive planning process.
3. Continue to enhance its residential, commercial and industrial water conservation measures in order to reduce inflow to the wastewater treatment facilities.
4. Reduce inflow and infiltration into the wastewater collection system.
5. Reduce point source pollution that results from wastewater disposal.

Commented [JF59]: Didn't we decide not to do this?

Commented [DL60]: I agree this was dropped.

Commented [CS61]: This is a large topic that has not been discussed. Also need to identify the reduction that is required or targeted.

Wastewater Action Items

1. Complete additional I & I work over the next 10-20 years in the Capital Improvements Program budget.
2. Develop effective disposal of sludge removal.
3. Increase the East Waste Water Treatment Permit
4. Upgrade the West Waste Water Treatment Plant using Bay Restoration Fee grant.