



# *Appendices*



# *Draft Water Resources Element*

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## 19 Appendices

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- Appendix A = Carroll County Methodology to Estimate Future Commercial & Industrial Demand for Water & Sewer Service/Capacity
- Appendix B = Water Supply Capacity Management Plan Summary Worksheet
- Appendix C = Wastewater Capacity Management Plan Summary Worksheet
- Appendix D = MDE Documented TMDL Impairments for Carroll County, As of May 27, 2009
- Appendix E = State Agency WRE Checklist (working draft)

# Draft Water Resources Element

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## Appendix A Carroll County Methodology to Estimate Future Commercial & Industrial Demand For Water & Sewer Service/Capacity

For: Capacity Management Plan Worksheets for Water Resources Element

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### Purpose:

To estimate the future demand for public water and sewer service and capacity based on “available” acreage of commercial and industrial zoning for each public system within Carroll County.

### Factors Considered:

Since each commercial and industrial venture is uniquely different, an approach to identifying “available” or “buildable” land needs to be different than the process to estimate residential development potential. As with the residential estimates, each parcel zoned for commercial or industrial use was reviewed individually. The factors taken into consideration during the process included, but were not limited to the following:

- Parcel is within a planned water and/or sewer service area
- Size of parcel
- Vacant vs. non-vacant
- What type of use is currently on the property
- Location of building
- Environmental constraints:
  - ▶ Streams
  - ▶ Wetlands
  - ▶ Floodplains

### Process:

The shapefiles for zoning for the County and each municipality were displayed in ArcGIS with parcels, orthophotos, and roads layers. The following constraints were added: streams, wetlands, and floodplains. It should be noted that there are known errors in the floodplain layer. For the purpose of the capacity management plans, only the eight designated planned water and sewer service areas were reviewed.

For each parcel with commercial or industrial zoning, the following factors were considered, and the initial amount of land to include in “buildable” acreage was determined by adjusting from the gross acreage.

- Environmental Constraints: If there were any environmental constraints, those areas were not included in the acreage calculations.
- Size of Parcel: Typically, anything less than ¼-acre was not included in “buildable” acreage.
- Vacant vs. Non-Vacant Land & Location of Building: If there was a structure on the property, that area was removed from the acreage calculations.

## *Draft Water Resources Element*

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After the initial mapping of available areas, properties with a site plan in process were eliminated (using the “Site Plans in Process” layer).

The Comprehensive Planning staff then reviewed the maps to determine whether any areas were left out, needed to be removed, or if parcels already had site plans on them and were overlooked with the previous review. Maps were changed accordingly.

### Results:

For purposes of the CMP worksheets, the remaining “buildable” commercial and industrial acreage was divided in “infill” and “future” flow categories. The areas to be considered to calculate infill demand were those areas located within the Existing/Final Planning water or sewer service area (W-1 or S-1). The areas to be considered to estimate future flow demand were those in the Priority and Future Planning water or sewer service areas (W-3 and W-5 or S-3 and S-5) combined.

Total commercial acreages and total industrial acreages were summed by “Infill” or “Future” demand for each public system:

- Total County
- Freedom
- Hampstead
- Manchester
- Mount Airy
- New Windsor
- Taneytown
- Union Bridge
- Westminster

Maps were created showing the acreage considered “buildable,” for purposes of estimating demand, for each public system. Water and sewer service areas were separated onto different maps. The color used to show “buildable” acreage indicates the generalized zoning (commercial or industrial) for that parcel.

# Draft Water Resources Element

## Appendix B Water Supply Capacity Management Plan Worksheets Summary

### Water Supply Capacity Management Plan

#### Worksheets and Summary

#### System and Plan Submittal Information

Name of the water supply system  
Population served  
Number of connections  
Date of plan submittal to MDE

Freedom	Hampstead	Manchester	Mount Airy	New Windsor	Taneytown	Union Bridge	Westminster
23,588	8,400	4,628	-	1,414	-	1,600	37,682
8,193	2,141	1,585	-	525	-	396	9,157

Average Day Capacity Limitation (gpd)		(Note: FF = peaking factor)								
C-4	Total Permitted Annual Avg. Daily Appropriations	C-4	2,848,000	571,400	581,000	865,000	196,100	583,000	292,300	3,476,000
C-8	Well-field capacity during drought (1.3 to 1.5 PF)	C-8	-	635,815	618,400	704,667	78,462	563,846	49,846	1,223,077
C-9	Safe yield of the reservoir system	C-9	See note	0	n/a	-	-	n/a	-	1,050,000
C-10	Treatment capacity	C-10	3,500,000	826,560	n/a	1,524,800	282,000	-	504,000	2,750,000
C-11	Pump capacity	C-11	4,000,000	0	27 to 100 ppm	1,524,800	504,000	831,000	504,000	3,024,000
<b>Average Day Capacity Limitation</b> Of the five factors listed above, enter the most limiting factor (in gpd):		D-1	2,848,000	826,560	581,000	704,667	78,462	563,846	49,846	2,273,077
<b>Excess Average Day Capacity (gpd)</b>		D-1	2,848,000	826,560	581,000	704,667	78,462	563,846	49,846	2,273,077
A-3	Average Day Drought Demand	A-3	2,400,664	480,368	329,662	841,500	175,500	560,057	219,035	3,256,000
<b>Excess Average Day Capacity</b>		D-2	447,336	346,192	251,338	(136,833)	(97,098)	3,789	(169,189)	(982,923)
D-1 minus A-3										
<b>Average Daily - Maximum Month Capacity Limitation (gpd)</b>		(only for groundwater systems)								
C-6	Total permitted Avg. Day - Max Month Appropriations	C-6	721,000	743,000	886,200	1,267,000	282,000	813,000	84,000	1,840,000
C-8	Well-field capacity during drought	C-8	-	826,560	777,600	1,057,000	102,000	733,000	64,800	1,580,000
C-10	Treatment Capacity	C-10	3,500,000	826,560	n/a	1,524,800	282,000	-	504,000	2,750,000
C-11	Pump capacity	C-11	4,000,000	0	27 to 100 ppm	1,524,800	504,000	831,000	504,000	3,024,000
<b>Avg. Daily - Max. Month Capacity Limitation</b> Of the 4 factors listed above, enter the most limiting factor:		D-3	721,000	826,560	886,200	1,057,000	102,000	733,000	64,800	1,580,000
<b>Excess Avg. Daily - Maximum Month Capacity (gpd)</b>		D-3	721,000	826,560	886,200	1,057,000	102,000	733,000	64,800	1,580,000
D-3	Avg. Daily - Max Month Capacity Limitation	D-3	721,000	826,560	886,200	1,057,000	102,000	733,000	64,800	1,580,000
A-6	Avg. Daily - Max Month Drought Demand	A-6	2,709,123	522,500	357,880	915,873	209,000	670,610	47,300	3,688,100
<b>Excess Avg. Daily - Max Month Capacity</b>		D-4	(1,988,123)	304,060	528,321	141,427	(107,000)	62,390	17,500	(2,096,100)
D-3 minus A-6										
<b>Maximum Day Capacity Limitation (gpd)</b>		(only for surface water systems)								
C-5	Total permitted Max. Day Appropriations (only for surface water systems)	C-5	3,000,000	0	-	-	250,000	-	-	3,000,000
C-10	Treatment capacity	C-10	3,500,000	826,560	n/a	1,524,800	282,000	-	504,000	2,750,000
C-11	Pump capacity	C-11	4,000,000	0	27 to 100 ppm	1,524,800	504,000	831,000	504,000	3,024,000
<b>Max Day Capacity Limitation</b> Of the 3 factors listed above, enter the most limiting factor (in gpd):		D-5	3,000,000	826,560	-	1,524,800	250,000	831,000	504,000	2,750,000
<b>Excess Maximum Day Capacity (gpd)</b>		D-5	3,000,000	826,560	-	1,524,800	250,000	831,000	504,000	2,750,000
D-5	Max Day Capacity Limitation	D-5	3,000,000	826,560	-	1,524,800	250,000	831,000	504,000	2,750,000
A-8	Max Day Drought Demand	A-8	3,446,300	571,300	-	1,344,167	338,800	902,000	47,300	4,136,000
<b>Excess Maximum Day Capacity (gpd)</b>		D-6	(446,300)	295,260	-	180,633	(88,800)	(71,000)	456,700	(1,386,000)
D-5 minus A-8										
<b>Summary of Excess Capacity (gpd)</b>		(Copy the indicated items from the previous sections/pages.)								
D-2	Excess Average Day Capacity	D-2	447,336	346,192	251,338	(136,833)	(97,098)	3,789	(169,189)	(982,923)
D-4	Excess Average Daily - Maximum Month Capacity	D-4	(1,988,123)	304,060	528,321	141,427	(107,000)	62,390	17,500	(2,096,100)
D-6	Excess Maximum Day Capacity	D-6	(446,300)	295,260	-	180,633	(88,800)	(71,000)	456,700	(1,386,000)
<b>Summary of Potential Additional Demand (gpd) from Approved but Undeveloped Subdivisions and Building Permits</b>										
B-4	Potential Annual Average Daily Demand	B-4	1,353,840	50,750	189,360	501,770	284,700	1,275,930	639,540	307,960
B-5	Potential Avg. Daily Demand During the Max Month	B-5	1,759,992	65,975	246,168	652,301	370,227	1,658,709	831,402	400,348
B-6	Potential Maximum Day Demand	B-6	2,166,144	81,200	302,976	802,832	455,664	2,041,488	1,023,264	482,736
<b>Net Excess Capacity Available for Allocation to New Growth</b>										
The three net excess values calculated below indicate the approximate excess capacity (gpd) available for new growth. If an excess capacity value is a negative number, there is a capacity deficit for that demand category.										
<b>Annual Average Daily Capacity</b>										
D-2	Excess Average Day Capacity	D-2	447,336	346,192	251,338	(136,833)	(97,098)	3,789	(169,189)	(982,923)
B-4	Potential Annual Avg. Daily Demand (from approved but undeveloped subdivisions/permits)	B-4	1,353,840	50,750	189,360	501,770	284,700	1,275,930	639,540	307,960
<b>Net Excess (D-2 minus B-4)</b>		gpd	(906,504)	295,442	61,978	(638,603)	(381,898)	(1,272,141)	(808,729)	(1,290,883)
<b>Average Daily Capacity During the Max Month</b>										
D-4	Excess Avg. Daily - Max Month Capacity	D-4	(1,988,123)	304,060	528,321	141,427	(107,000)	62,390	17,500	(2,096,100)
B-5	Potential Avg. Daily Demand during Max Month (from approved but undeveloped subdivisions/permits)	B-5	1,759,992	65,975	246,168	652,301	370,227	1,658,709	831,402	400,348
<b>Net Excess (D-4 minus B-5)</b>		gpd	(3,748,115)	238,085	282,153	(510,874)	(477,227)	(1,596,319)	(813,902)	(2,496,448)
<b>Maximum Day Capacity</b>										
D-6	Excess Maximum Day Capacity	D-6	(446,300)	295,260	0	180,633	(88,800)	(71,000)	456,700	(1,386,000)
B-6	Potential Day Demand (from approved but undeveloped subdivisions/permits)	B-6	2,166,144	81,200	302,976	802,832	455,664	2,041,488	1,023,264	492,736
<b>Net Excess (D-6 minus B-6)</b>		gpd	(2,612,444)	214,060	(302,976)	(622,199)	(544,464)	(2,112,488)	(566,564)	(1,878,736)

	Average Day Net Excess	Max Day Net Excess	Additional Planned Growth Demand	Demand by DU & C&I AC	Average Day Difference	Max Day Difference	
Freedom	(906,504)	(2,612,444)	(1,293,820)	1650+223 DU + 81 C + 381	(2,200,324)	(3,906,264)	✓
Hampstead	295,442	214,060	(353,480)	0+8 DU + 0+14 B C + 378+50.91	(58,038)	(139,420)	✓
Manchester	61,978	(302,976)	(285,500)	157+389 DU + 0 C + 01	(223,522)	(588,476)	✓
Mount Airy	(638,603)	(622,199)	(1,000)	2+2 DU + 0 C + 01 0+8 DU + 0+ 8 C C +	(639,603)	(623,199)	✓
New Windsor	(381,888)	(544,464)	(3,800)	1.81	(385,688)	(548,264)	✓
Taneytown	(1,272,141)	(2,112,488)	(750)	2+1 DU + 0 C + 0.1 10+8 DU + 0 C + 45.61	(1,272,891)	(2,113,238)	✓
Union Bridge	(808,729)	(566,564)	(40,980)	606+224 DU + 11.7	(849,709)	(607,544)	✓
Westminster	(1,290,883)	(1,878,736)	(689,850)	C + 592.71	(1,980,733)	(2,568,586)	✓
<b>Totals</b>	<b>(4,941,329)</b>	<b>(6,425,811)</b>	<b>(2,668,180)</b>		<b>(7,610,509)</b>	<b>(11,094,997)</b>	

# Draft Water Resources Element

## Appendix C

### Wastewater Supply Capacity Management Plan Worksheets Summary

#### Wastewater Treatment Capacity

Facility...	Freedom	Hampstead	Manchester	Mount Airy	New Windsor	Towertown	Union Bridge	Westminster
	A. Calculations (gpd)							
	B. Values (gpd)							
1 National Pollutant Discharge Elimination System (NPDES) Permitted Flow (list in column B1)	3,500,000	900,000	500,000	1,200,000	94,000	1,100,000	200,000	5,000,000
2 2003 Daily Average Flow of Wastewater (list in column A1)	2,710,000	736,000	250,568	916,000	92,000	950,000	146,100	4,824,000
3 2002 Daily Average Flow of Wastewater (list in column A1)	2,080,000	595,000	237,718	679,000	67,000	605,000	95,500	3,081,000
4 Estimated Inflow and Infiltration Flow impacting the Wastewater Treatment Facility (subtract line 3 from line 2, report in A4 and B4).	300,000	231,000	-	237,000	-	351,000	50,600	-
5 Remaining capacity for existing and future wastewater flow (subtract B4 from B1, report in column B5)	2,970,000	669,000	477,750	963,000	69,000	749,000	149,400	3,257,000
6 Existing (Current flow without I&I) S-1 Flow (use Planning Sheet provided as Figure 1 to calculate)	1,530,000	307,000	270,269	659,000	22,716	502,333	127,367	2,887,000
7 Estimated encumbered flow approved S-7 building permits not connected (if of EDUs X flow rate per EDU)	21,488	19,932	41,250	66,500	7,250	32,750	7,000	139,825
8 Add additional large commercial and/or industrial flow (use Planning Sheet provided as Figure 1 to calculate)	472,635	18,924	39,270	46,230	14,700	38,170	94,900	257,470
9 Allocated Capacity for Existing and Potential Inflow (Total S-1 Flow less I&I, and report in A9 and B9)	2,024,123	435,856	350,789	770,730	44,666	571,253	220,267	3,084,295
10 Subtract B8 from B5, and report current remaining capacity in B10.	845,877	233,144	126,961	192,270	24,334	177,747	79,807	172,705
11 Estimated future flows from S-3 and S-5 classified areas (if of EDUs X flow rate per EDU)	1,077,130	259,011	94,250	390,170	232,000	821,450	609,640	264,770
12 Add A9 + A11, report in A12.	3,101,253	694,867	445,039	1,160,900	276,666	1,392,703	838,007	3,289,065
13 Estimated I&I Flow or I&I Analysis Value (report value provided from B4)	630,000	231,000	22,250	237,000	25,000	351,000	50,600	1,743,000
14 Determine Future Capacity Needs. Add A12 and A13. (if value exceeds B1, report over-allocation in B14)	3,731,253	925,867	467,289	1,397,900	301,666	1,743,703	888,507	5,032,065
15 Report Available Capacity. Subtract A14 from B1. (if A14 exceeds B1, report 0 in B15 and see notification below.)	(231,253)	(25,867)	32,711	(197,900)	(207,666)	(643,703)	(688,507)	(32,065)
Report Over-Allocation (Suffix: A14 from B1)								

Note: If there is a reported negative value for the remaining capacity allocation, please contact MDE for assistance.

Facility	Current remaining capacity	Additional Planned Growth Demand	Demand Allowed	Capacity Available for Future & Planned Growth
Freedom	845,877	(23,253)	1,883,360	(1,894,643)
Hampstead	233,144	(25,867)	(628,970)	(622,693)
Manchester	126,961	32,711	(370,520)	(337,809)
Mount Airy	192,270	(167,500)	(1,000)	(195,900)
New Windsor	24,334	(207,666)	(3,800)	(211,466)
Towertown	177,747	(643,703)	(750)	(644,450)
Union Bridge	(79,807)	(688,507)	(38,490)	(727,987)
Westminster	172,705	(57,065)	(673,840)	(705,905)
<b>Totals</b>	<b>1,683,171</b>	<b>(1,995,250)</b>	<b>(3,378,760)</b>	<b>(6,374,010)</b>

POWER 11/16/2019 @ 2:30PM

AE 07/16/12/20

Draft for Official 60-Day Review by State Agencies and for Adjoining Jurisdictions, & Public

# Draft Water Resources Element

## Appendix D MDE Documented TMDL Impairments for Carroll County As of May 27, 2009

Basin Name	DNR 8-Digit Basin Number	Impairment	Under Development	Notice of Intent to Develop a TMDL	Notice of Intent for Review and Comment	Submitted to EPA	EPA Approved
Double Pipe Creek	02140304	Fecal Bacteria				09/21/07	
Double Pipe Creek	02140304	Sediments	_____	_____	8/15/07	09/12/08	02/20/09
Double Pipe Creek	02140304	Nutrients	2009-2010				
Double Pipe Creek	02140304	Phosphorus	2009-2010	05/08/09		Projected September, 2009	
Liberty Reservoir	02130907	Mercury (4)	03/14/02	10/10/02	11/21/02	12/31/02	
Liberty Reservoir	02130907	Fecal Bacteria		03/28/08	07/25/08	09/26/08	
Liberty Reservoir	02130907	Chromium & Lead (WQAs)	_____	01/31/03	06/04/03	_____	11/10/03
Loch Raven Reservoir	02130805	Fecal Bacteria	2009-2010	11/12/08	04/05/2009 & 5/7/09 must be received by 6/9/09	Projected Summer of 2009	
Loch Raven Reservoir	02130805	Mercury	09/24/02	10/23/02	11/21/02	01/06/03	08/16/04
Loch Raven Reservoir	02130805	Nutrients and Sediments	_____	_____	_____	_____	03/27/07
Loch Raven Reservoir	02130805	Heavy Metals (WQA)	_____	_____	_____	_____	11/10/03
Lower North Branch Patapsco River	02130906	Metals (WQA)	_____	10/08	08/27/04	09/29/04	01/18/05
Lower North Branch Patapsco River	02130906	Eutrophication Sediments (WQA)		5/09	06/19/09	Fecal to EPA in 2009	
Piney Run Reservoir	02130908	Sediments (WQA)	01/24/08	02/11/02	_____	_____	12/18/03

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## Appendix D MDE Documented TMDL Impairments for Carroll County As of May 27, 2009

Basin Name	DNR 8-Digit Basin Number	Impairment	Under Development	Notice of Intent to Develop a TMDL	Notice of Intent for Review and Comment	Submitted to EPA	EPA Approved
Piney Run Reservoir	02130908	Phosphorus <sup>2</sup> (WQA)	-----	-----	-----	-----	01/20/05
Piney Run Reservoir	02130908	Eutrophication (WQA)	If Watershed Protection Plan is developed, no TMDL will be needed	-----	09/30/04	-----	01/20/05 - EPA concurrence of MDE's findings
Prettyboy Reservoir	02130806	Mercury	09/27/02	-----	11/21/02	12/31/02	08/16/04
Prettyboy Reservoir	02130806	Nutrients	-----	-----	-----	-----	03/27/07
Prettyboy Reservoir	02130806	Heavy Metals (WQA)	01/31/03	-----	-----	-----	11/10/03
Prettyboy Reservoir	02130806	Fecal Bacteria		03/28/08	04/03/08	8/26/08	
Upper Monocacy River	02140303	Bacteria				09/27/07	
Upper Monocacy River	02140303	Nutrients	2009-2010				
Upper Monocacy River	02140303	Sediments	07/11/07		07/07/08	09/16/08	
Lower Monocacy River	02140302	Sediments	-----	-----	07/23/08	09/29/08	03/17/09
Lower Monocacy River	02140302	Non-Tidal Bacteria				09/27/07	
Lower Monocacy River	02140302	Nutrients	2009-2010				

**Notes:**

1. Documented impairments and TMDLs do not need to be issued on a body of water within the political boundaries of Carroll County to result in impact. Downstream impairments may impact up-stream land use and other activities that may contribute to the impaired condition;
2. WQA - Water Quality Analysis, determines whether TMDL is needed;
3. TMDL - TMDLs are either Under Development, issued as draft or are final with US EPA approval;
4. The mercury TMDLs are predominately associated with atmospheric depositions as a source;
5. Piney Run Lake - impairment was considered marginal resulting TMDL not being warranted. Carroll County committed to a Water Quality Management Plan (WQMP) in lieu of the issuance of a TMDL.

**Green = taken from MDE's website**

**Black bold = taken from file information and/or from website**

Word: OEC/TMDL/TMDL chart by status

Update location: <http://www.mde.maryland.gov/Programs/WaterPrograms/TMDL/submittals/>

## Appendix E

### WORKING DRAFT

### STATE AGENCY WRE CHECKLIST

The Purpose of the Water Resources Element (WRE) is to ensure that future county and municipal comprehensive plans reflect the opportunities and limitations presented by local and regional water resources. WREs are intended to improve local jurisdictions' contribution to the protection of state land and water resources; to the protection of public health, safety and welfare; and to meeting local and state smart growth policies.

The adopted WRE in the comprehensive plan on or by October 1, 2009, should answer the following questions for a county or municipality:

- Is there adequate water supply to meet current and future needs?
- Is there adequate wastewater and septic supply to meet current and future needs?
- What impact will meeting these needs have on water resources?

The WRE should outline the adequacy of water and wastewater resources with respect to present conditions and future growth to the year 2030. The WRE should act as an early warning system to determine if water resources will be adequate to support growth in a jurisdiction. Also, the WRE must identify suitable receiving waters and land areas to meet the stormwater management and wastewater treatment and disposal needs of existing and future development proposed.

*The following is a checklist for review of required WRE items. Check boxes for submitted data. [Page numbers referencing location of checklist items are provided in brackets after the applicable items].*

### **REVIEW CRITERIA FOR DRINKING WATER – Does the WRE:**

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**Show or refer to the boundaries of relevant areas used for planning, include:**

- jurisdictional boundaries, [19, 21, 36-44]
- designated growth areas, [26, 36-44]
- watersheds, [21, 36-44]
- Priority Funding Areas, and [26, 36-44]
- other relevant geographies. [29, 36-44, 137]

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### **Describe the types of assessments undertaken and the methods used: [69-71]**

- note that population projections for sub-county areas bear a reasonable relationship to the latest countywide cooperative forecasting projection by MDP [33-35]
- if an alternative method of forecasting population is used, describe the information and methodology used for the analysis. [33-35]

### **Describe the available permitted capacity of:**

- existing community water systems, [88-90]
- specifics about the sources of raw water and each source maximum reservoir, [66-69]
- uses according to WSCMP guidelines, [72-73]
- the current water demand to the size of the population being served, [72-73, 88-90]
- operational details about the supply and delivery of drinking water. [See Carroll County Water & Sewerage Master Plan]

### **Estimate the future demand for water for:**

- population projections, [73]
- commercial projections, [73]
- industrial projections, [73]
- agricultural projections, [72]
- development capacity of existing community service areas, [88-90]
- development capacity of planned community service areas, [88-90]
- rural areas, [71-72, 89]
- future waters supply demand for Annexation Areas required if served, or if they are already being served. [72-74, 88-89]

### **Estimate the potential water supply of:**

- surface water sources not yet permitted for withdrawal [74-86]
- groundwater resources not yet permitted for withdrawal. [74-86]

### **...that can then be used to develop an estimate of the approximate number or range of additional:**

- households, [71-86, 88-90]
- commercial, [72-86]
- industrial, [72-86]
- agricultural water demand, that can potentially be supported in the planning area. [72, 86, 89-90]

### **Identify strategies to meet future water quality needs:**

- including alternative water sources, [155-160, 176-177, 186-188, 196-197, 204-205, 211-212, 222-223, 223-229, 239-241]

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- demand reductions, [144-145, 163, 177, 188, 197, 205, 212, 223, 228-229, 241]
- land use/zoning modifications, [142-143, 162-162, 176, 186-187, 196, 203-204, 211, 216, 228, 239-240]
- water supply issues and system management that anticipated growth plans might cause. [135-138, 142-145, 161-163, 176-177, 186-188, 196-197, 203-205, 211-212, 222-223, 228-229, 239-241]

### **Identify planning strategies to protect:**

- current sources, [142, 161, 176, 186-187, 196, 203-204, 211, 215-216, 222-223, 228, 239]
- future sources, [143-144, 161-163, 176-177, 187-188, 196-197, 204-205, 211-212, 222-223, 228-229, 239-241]
- from pollution, [146-152, 164-168, 242]
- over allocation. [143-144, 161-163, 176-177, 187-188, 196-197, 204-205, 211-212, 215-216, 220-223, 228-229, 237-241]

### **Evaluate the capacity of rural areas:**

- to support uses in those areas, [71-72, 74-86]
- individual systems, [71-72, 74-86]
- agricultural irrigation, [72, 74-86]
- other possible users. [74-86]

### **Provide policies that set forth the general goals of the jurisdiction with respect to:**

- management and use of its water supply resources, [135-138, 142-152, 155-160, 161-169, 176-178, 186-189, 196-197, 203-206, 211-213, 216, 228-230, 239-242]
- describe water conservation plans or emergency supply plans that might be implemented, [143-144]
- how those goals guide the action sections of the WRE. 142-152, 161-169, 176-178, 186-189, 196-197, 203-206, 211-213, 216, 228-230, 239-242]

### **Describe the actions planned for implementation to ensure that:**

- water supplies are adequate, [143-144, 161-163, 176-177, 187-188, 196-197, 204-205, 211-212, 215-216, 220-223, 228-229, 237-241]
- and safe to meet future needs. [146-152, 164-168, 242]

### **If necessary, do the actions:**

- identify lead agencies,
- estimate budget needs, [155-160]
- establish a project timeline. [142-152, 155-160, 161-169, 176-178, 186-189, 196-197, 203-206, 211-213, 216, 228-230, 239-242]

# Draft Water Resources Element

## REVIEW CRITERIA FOR WASTEWATER – Does the WRE:

Show or refer to the boundaries of all areas used for planning, including:

- jurisdictional boundaries [19, 21, 36-44]
- designated growth areas [26, 36-44]
- sewer planning areas [30]
- failing septic system areas [data not available]
- current wastewater service areas [30]
- watersheds [21, 36-44]
- Priority Funding Areas [26,36-44]
- other relevant geographies [29, 30, 36-44, 105]
  
- Describe the types of assessments undertaken and the methods used: [93-98]
  
- Discuss information about inter-jurisdiction agreements, if applicable: [57-59]
  
- Describe specifics about management and operation of the wastewater collection system: [See Carroll County Water & Sewerage Master Plan]
  
- Show locations and types of systems being used for treatment: [30, See Carroll County Water & Sewerage Master Plan]
  
- Show the Total Maximum Daily Loads (TMDLs), if applicable: [48-49]
  
- Show the Chesapeake Bay Tributary Strategic point source caps for the discharge: [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
  
- Discuss I&I issues within the wastewater system: [94, 96-102, 139, 145, 173-174, 177, 183-184, 189, 193-194, 197, 201, 205, 208-210, 213, 219, 223, 226-227, 230, 234-235, 241]
  
- Discuss combined sewer systems and CSOs, if applicable: [not applicable]
  
- Show number of failing septic systems and locations of areas: [data not available]
  
- Show the available capacity of existing WWTPs: [97, 99, 174, 181, 194, 201, 208, 219, 226, 235]

Show the estimated additional capacity that could be achieved by:

- higher levels of treatment [99-103, 176, 185, 195, 202, 211, 220, 228, 236]
- beneficial wastewater reuse such as spray irrigation [138-139]
- nutrient offsets [140-141]

## Draft Water Resources Element

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Show the estimate of the approximate number or range of: [See WWCMPs, data embedded within demand calculations]

- additional households [33, 36-44]
- available household wastewater capacity potential
- available commercial wastewater capacity potential
- available industrial wastewater capacity potential

...to support this additional growth in the planning area.

Estimate:

- additional capacity needed to serve designated growth areas [97, 99, 174, 181, 194, 201, 208, 219, 226, 235]
- additional capacity needed to serve infill areas [97, 99, 174, 181, 194, 201, 208, 219, 226, 235]
- other projected development outside of these areas [97, 99, 174, 181, 194, 201, 208, 219, 226, 235]

Estimate:

- current pollution impacts [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- future pollution impacts from the projected development and [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- compare this to nutrient caps and the water body assimilative capacity [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- Describe the current quality of the treated effluent in terms of nitrogen (N) and phosphorus (P) loading and any other contaminant that may be of concern to the watershed: [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- Describe the future N and P loading that each new area of service would contribute: [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- Describe the current estimation of all nonpoint source N and P loading (septic, stormwater, agricultural lands, etc.) and the future loading that the identified growth areas would contribute: [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]
- While not required but necessary to manage growth and environmental stewardship, show the Public Facilities and Community Services capital projects that are funded and those that may be needed to address the growth demands outlined in the Plan, including those that will serve to minimize pollution loading, both point and nonpoint sources: [See Carroll County Water & Sewerage Master Plan]

## Draft Water Resources Element

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**Summarize the results of all:**

- assessments and [93-103]
- limiting wastewater resource findings [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]

**Provide policies that set forth the general goals of the jurisdiction with respect to its:**

- protection of water quality [145-152, 163-169, 177-178, 189, 197, 205-206, 213, 223, 229, 214-242]
- ability to meet regulatory requirements that are reflected in planned implementation actions

**Describe the actions planned for implementation measures to:**

- ensure that wastewater capacity is adequate [145-146, 163-164, 177-178, 189, 197, 205-206, 213, 223, 229-230, 241-242]
- pollutant loadings are safe to meet future needs [54, 99-101, 175-176, 184-185, 194-195, 202, 210-211, 219-220, 227-228, 235-236]

**Planned actions (if necessary) that:**

- identify lead agencies
- estimate budget needs, [155-160]
- establish a project timeline. [142-152, 155-160, 161-169, 176-178, 186-189, 196-197, 203-206, 211-213, 216, 228-230, 239-242]

### REVIEW CRITERIA FOR STORMWATER MANAGEMENT – Does the WRE:

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**For Stormwater Management, does the WRE:**

**Show or refer to the boundaries of the relevant areas used for planning:**

- jurisdictional boundaries [19, 21, 36-44]
- designated growth areas [26, 36-44]
- sewer and water service areas [29, 30]
- watersheds [21, 36-44]
- Priority Funding Areas [26, 36-44]
- other relevant geographies [116]

## Draft Water Resources Element

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**Recommend the adoption of the latest model ordinance for stormwater management:** [148, 168]

- emphasize the use of nonstructural best management practices (BMPs) [56, 109-115]
- and/or better site design techniques to the maximum extent practicable [151, 109-110]
- Recommend the modification of local building codes and/or planning/zoning requirements as deemed necessary to minimize impediments to the use of nonstructural BMPs:** [56, 146-152, 167-168]

**For Nonpoint Source Loading, does the WRE:** [115-132]

- include the nonpoint source loading analyses conducted in support of the WRE
- provide a preliminary assessment of potential changes in nonpoint source loads due to land use planning decisions
- make general findings for alternative land use options
- inform the land use element and other elements of the comprehensive plan [152]
- describe the alternative future development options for which nonpoint source and point source loading estimates were performed
- Note any alternatives that affect the number of development units and different usage of sewer versus septic systems
- Make findings that address estimated changes in both point and nonpoint nutrient loads [the WRE should discuss trade-offs in competing objectives that are revealed by the analyses, e.g., preservation of cropland that may result in higher nutrient loads than alternative land use options that consume more cropland, which at the same time would limit the amount of impervious surface and habitat fragmentation]
- provide reasonable justification with supporting documentation for any alternative analytical tools, parameters or assumptions that were used
- provide all existing procedures and/or recommendations for new procedures to ensure that future nonpoint source and point source loading analyses are instituted within local government planning and decision-making processes [151-152, 168-169]