

A Collaborative Water Resources Element Process

*Presentation to the
Maryland Sustainable Growth Commission*

November 4, 2010

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HB 1141 “Land Use – Local Government Planning” (2006)

- Required Water Resources Element of Comprehensive Plan
- Purpose: To ensure local comprehensive plans reflect the opportunities and limitations of local and regional water resources
- Goal: To address relationship between planned growth and water resources

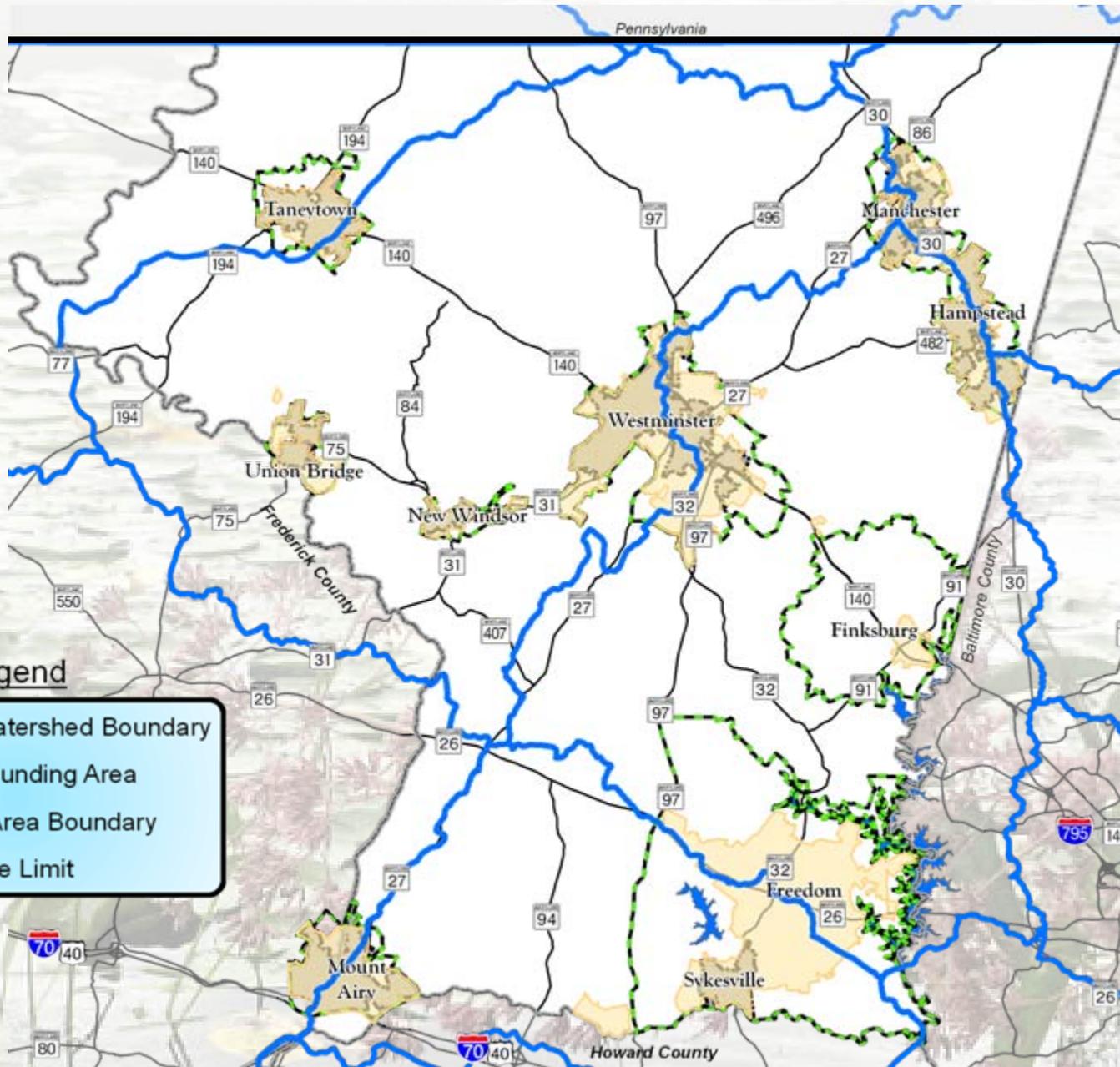
Some Factors to Consider

- Water Supply & Wastewater
 - Current & projected capacities
 - Projected demand
 - Limitations
 - Additional water supply & wastewater capacity options
- Impaired Waters
- TMDLs: Local & Bay
- Tier II Waters
- Existing and Projected Nutrient Loads
- *Chesapeake Bay Tributary Strategy Statewide Implementation Plan*
- Nutrient Caps on Wastewater
- Current & Projected Septics

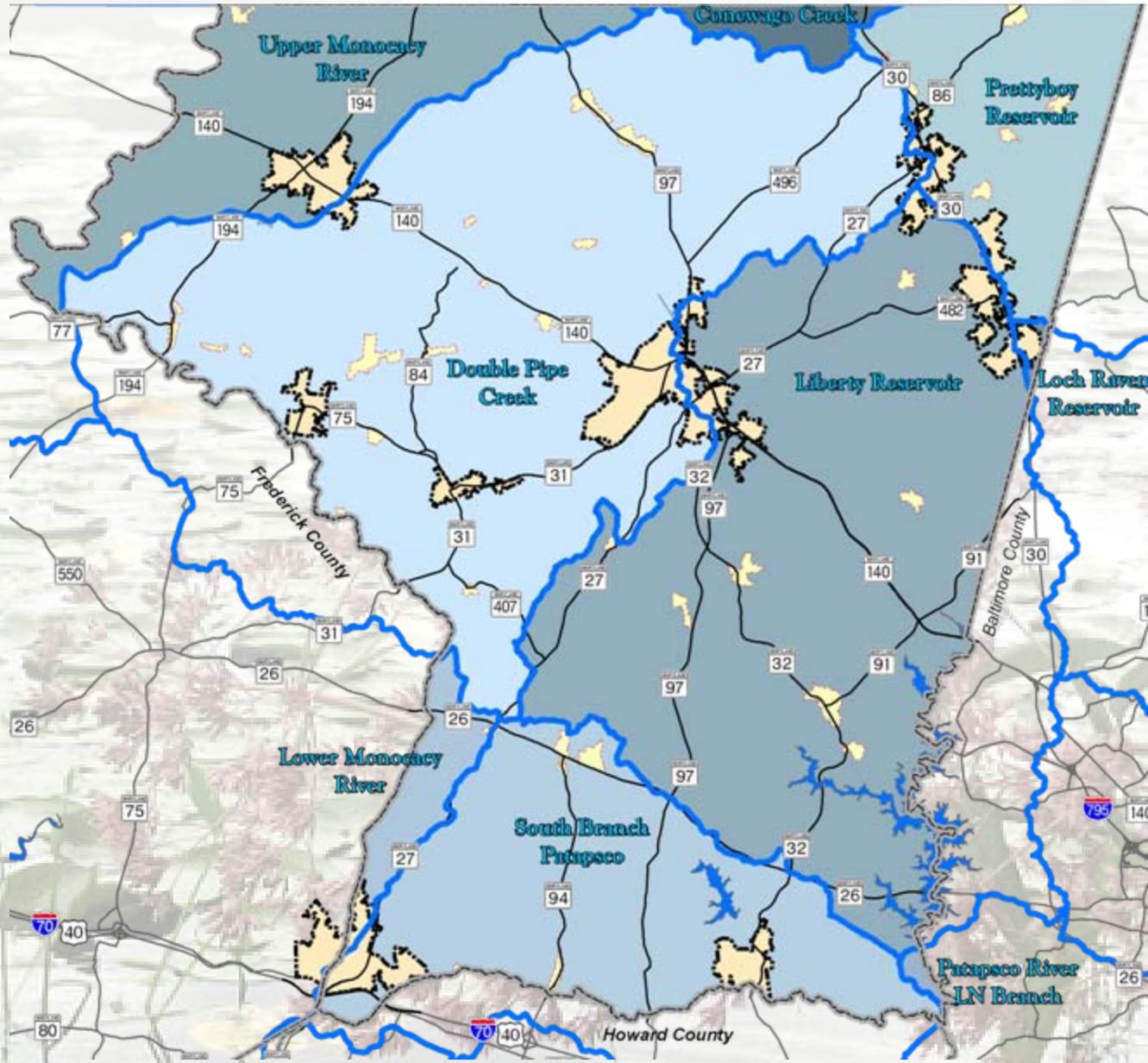
Background: Carroll County

- 8 (incorporated) municipalities
 - Most own & operate their own systems
 - 3 w/ Consent Agreements re: water supply
- 8 designated growth areas (DGAs)
 - 7 center around municipalities
 - 1 unincorporated but includes a municipality
- Growth focused in municipalities/DGAs
- Strong agricultural land preservation program outside DGAs
- Located at headwaters for many streams

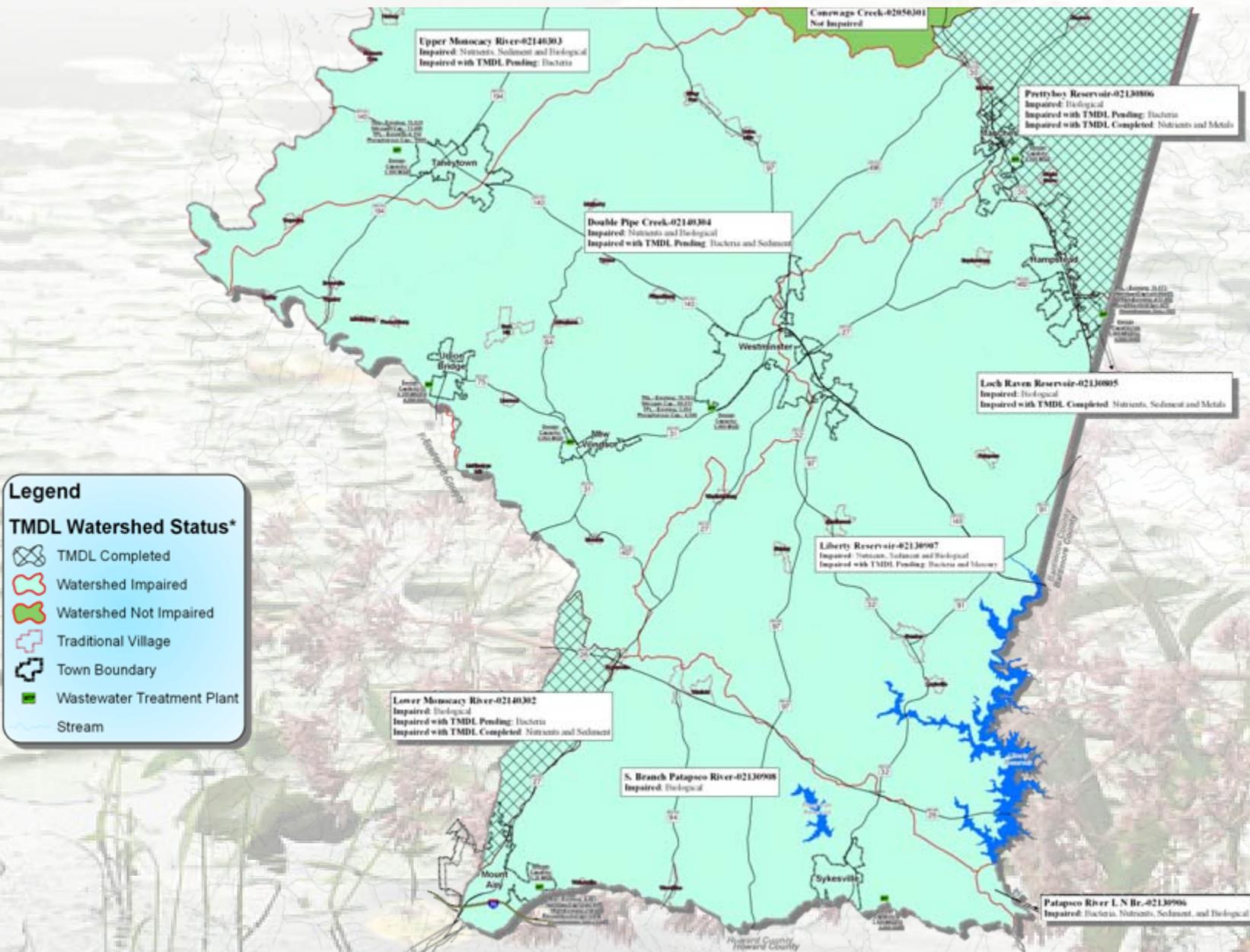
Municipalities & Designated Growth Areas



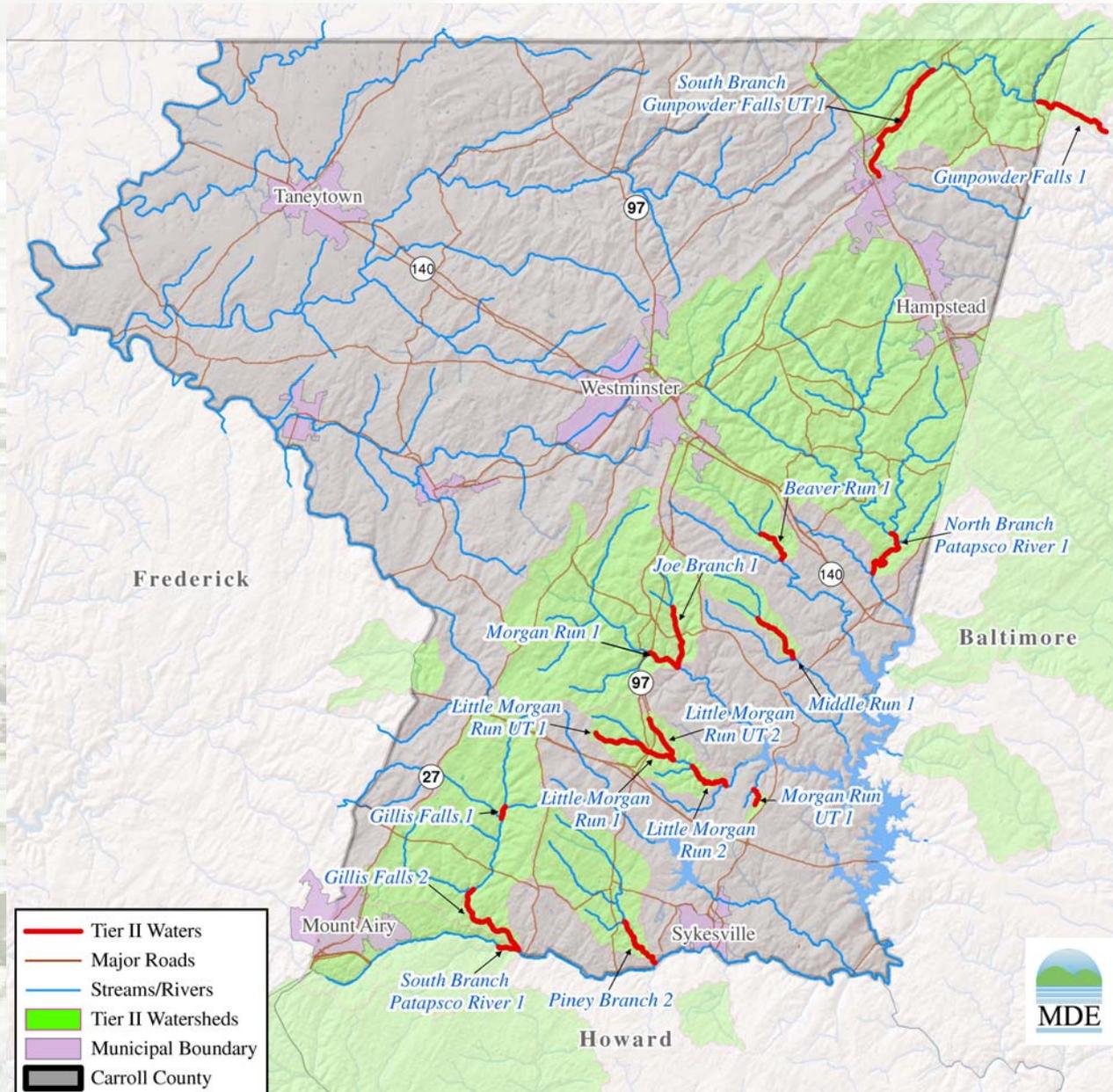
6- & 8-Digit Watershed Boundaries



Watershed TMDL Status



Tier II Stream Segments & Watersheds



- Tier II Waters
- Major Roads
- Streams/Rivers
- Tier II Watersheds
- Municipal Boundary
- Carroll County

Maryland Department of the Environment
Science Services Administration
Montgomery Park Business Center
1800 Washington Boulevard
Baltimore, Maryland 21230-1718
Date Map Prepared: May 2009

Process & Method Concerns

- Cross-jurisdictional/watershed boundaries
 - Watersheds in more than 1 jurisdiction
 - Jurisdictions in more than 1 watershed
- Majority of development occurs in municipalities
 - 62% of residential
 - 75% of commercial/industrial
- 9 jurisdictions – each required to develop a WRE
- County Plan to focus growth in municipalities; cooperation to implement
- Productive effort & usable product

Collaborative Solution

- Water Resources Coordination Council as forum for collaboration; official group formed by resolution
 - County (facilitators)
 - Each municipality
 - Health Department
- One common document
- Technical assessments – countywide; inclusive of municipalities
- Countywide & regional strategies

Process to Develop/Collaborate:

- Monthly meetings (open to public)
- Joint review & comment on technical assessments & plan document; process & strategies by consensus
- Facilitation by County
 - To complete Capacity Management Plan worksheets
 - To manage consultant interaction
 - To produce plan document
- Guidance by and periodic meetings w/ reps from MDE, MDP, & DNR

Methods to Assess:

- Water & wastewater demand & capacity
- Water supply availability
- Wastewater limitations
- Nonpoint source loads

Guidance Documents & Input

- State Models & Guidelines No. 26: Water Resources Element (*MDP, MDE, DNR*)
- Capacity Management Plan Guidance Documents (*MDE*)
- *MDE/MDP/DNR* Guidance Team Input
- Draft State WRE Checklist (*MDE, MDP, DNR*)
- Nonpoint Source Spreadsheet/State modeling & data (*MDP, MDE*)

Water & Wastewater Demand

Development capacity analysis

- Based on [10] adopted plans
- Using future land use (plan designations)
- For [8] public water & sewer service areas
- Plus land in future annexation areas but currently not planned for service
 - *GIS Based*
 - *Calculations for each individual system*

Water & Wastewater Capacity

*Water Supply Capacity Management Plan
Worksheets*

&

Wastewater Capacity Management Plan Worksheets

- Used worksheet in MDE guidance documents to determine existing capacity in service areas
- Provided capacity estimate using consistent format & based on State methodology

Wastewater Capacity Management Plan Worksheet

Wastewater Treatment Capacity

Facility...	Freedom		Hampstead		Manchester		Mount Airy		New Windsor		Taneytown		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		259,568		916,000		92,000		956,000		146,100		4,824,000	
3 2002 Daily Average Flow of Wastewater (list in column A1)	2,080,000		505,000		237,318		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). Or the I&I analysis from in-pipe monitoring and hydraulic modeling.	300,000	630,000	231,000	231,000	-	22,250	-	237,000	-	25,000		351,000	50,600	50,600	-	1,743,000
5 Remaining capacity for existing and future wastewater flow. (subtract B4 from B1; report in column B5)		2,870,000		669,000		477,750		963,000		69,000		749,000		149,400		3,257,000
Calculating Existing and Encumbered S-1 Infill Flow																
6 Existing (current flow without I&I) S-1 Flow (use Planning Sheet provided as Figure 1 to calculate)	1,530,000		397,000		270,269		659,000		22,716		502,333		127,367		2,687,000	
7 Estimated encumbered flow approved S-1 building permits not connected. (# of EDUs X flow rate per EDU) Add additional large commercial and/or industrial flow. (use Planning Sheet provided as Figure 1 to calculate)	21,488		19,932		41,250		65,500		7,250		32,750		7,000		139,825	
8 Estimated encumbered flow approved S-1 record plats for Infill Lots having no building permits. (# of EDUs X flow rate per EDU) 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		36,170		94,900		257,470	
9 Allocated Capacity for Existing and Potential Infill Flow (Total S-1 Flow less I&I, and report in A9 and B9)	2,024,123	2,024,123	435,856	435,856	350,789	350,789	770,730	770,730	44,666	44,666	571,253	571,253	229,267	229,267	3,084,295	3,084,295
10 Subtract B9 from B5, and report current remaining capacity in B10.		845,877		233,144		126,961		192,270		24,334		177,747		(79,867)		172,705
Estimating Future S-2 and S-3 Flow																
11 Estimated future flows from S-2 and S-3 classified areas. (# of EDUs X flow rate per EDU) Add additional large commercial and/or industrial flow. (use Planning Sheet provided as Figure 1 to calculate)	1,077,130		259,011		94,250		390,170		232,000		821,450		609,640		204,770	
12 Add A9 + A11; report in A12.	3,101,253		694,867		445,039		1,160,900		276,666		1,392,703		838,907		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		889,507		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)		(689,507)		(32,065)	
Report Over-Allocation (Subtract A14 from B1)																

Water Supply Availability

- Water balance assessment
- Started w/ Catoctin Creek Watershed methodology (MDE)
- Modified to fit Carroll County and to capture returns
- Identified available (unallocated) groundwater and surface water by MDE 8-digit watershed

Wastewater Limitations

- Current caps
- Capacity available to meet projected demand
- Additional capacity that could be added without going over caps
- Other limitations to expanding capacity or serving projected demand

Nonpoint Source Loading Analysis

Nonpoint Source Spreadsheets

- Loading analysis model
- Nitrogen & phosphorus
- Developed by MDP & MDE
- Analysis provided in cooperation w/ MDP & MDE
- 6-digit & 8-digit watersheds

Bottom Line Results

- Water Supply
 - ample groundwater countywide
 - some watersheds more & some less
 - issue: how to get it from where it is to where it's needed
- Wastewater
 - address nutrient caps
 - increase design capacity
 - balance with projected demand

Bottom Line Results *continued*

- Nonpoint Source

- nitrogen & phosphorus loads – project negligible change based on adopted plans
- loads still needed to below reduced to achieve levels expected with Bay & local TMDLs

Countywide/Regional Solutions

- Strategies
 - strategies for all to do or for all to work together
 - additional strategies applicable to individual systems (municipalities) but not all
- Water Supply
 - regional supplies
 - sharing supplies
 - sharing recharge credits

Countywide/Regional Solutions

continued

- Wastewater
 - Coordinated alternatives (ex. spray irrigation)
- Nonpoint Source
 - Trading & offsets
 - Bubble permits
 - Land use designation changes
 - NPDES permits
 - Etc.

Note: Solutions represent examples of shared solutions, not all strategies & solutions included in plan.

For More Information...

Visit the website:

<http://ccgovernment.carr.org/ccg/compplan/WRE/default.asp>

Call or Email:

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