

WATER RESOURCES AND THE ANNE ARUNDEL COUNTY 2009 GDP

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Chapter 10 of the 2009 GDP (General Development Plan) is devoted to Water Resources and the means to insure their adequacy over the duration of the GDP. The items usually involved when referring to the term Water Resources are:

1. A safe and **ample supply of drinking water** for *existing and future development*;
2. **Adequate treatment of wastewater** for *existing and future development*; and
3. Minimized **nutrient loading from wastewater treatment plants, septic systems and storm-water runoff** for *existing and future development*.

Water Resources is one topic that will play a very important role in the 2040 GDP (Plan2040) as it did in the 2009 GDP. Maryland requires a Water Resource Element (WRE) to be included into each county's GDP to insure that water resources will meet planned growth. The writers of the 2009 GDP pointed out the advances that Anne Arundel County (AAC) had made since the 1997 GDP. The 2009 GDP provided a summary of the County's water supply and wastewater treatment capacities, septic systems, and storm-water management capacity.

A preliminary draft of Plan2040 is scheduled for the Citizens Advisory Committee (CAC) review in April, and for public comments in May or June 2019. The CAC will be using several references or input documents, such as the 2009 GDP, Master Plan for Water Supply and Sewerage Systems (2018) and the Water Resources Background Report for 2040.

ADVANCES CITED IN THE 2009 GDP

The next 3 sections highlight some of advances cited in the 2009 GDP that were made over the previous 10 years.

1. Watershed Protection and Stormwater Runoff (Nonpoint Source Runoff)

Pollutant loadings from nonpoint source runoff were estimated by the County for use in preparing its Watershed Management Plans and Nutrient Reduction Implementation Plans based on current and future land use plans. The pollutant loading analysis utilized data layers such as landcover, the Land Use Plan, stormwater management coverage, impervious coverage, soil infiltration rates, rainfall, and pollutant event mean concentration, among others.

The nitrogen and phosphorus loads for the 2004 and 2009 Land Use Plans were estimated for three watershed areas in the County. The nutrient loads in these watersheds experienced little change between the 2004 and the 2009 Land Use Plan, thus implying the adequacy of their planning model.

2. Water Supply

The 2009 GDP points out that the existing water supply primarily comes from groundwater supplied by the confined Patuxent, Patapsco, Magothy and Aquia aquifers; however, some of the water that serves residents in the North County area is purchased from Baltimore City and comes from surface water sources. Although the groundwater supply is not very vulnerable to decline due to drought, water levels in all of the confined aquifers supplying the County have been declining for several decades due to population growth and increased use. Continued water level declines could affect the long-term sustainability of ground-water resources, particularly in areas projected for heavy growth. However, a Maryland Geological Study (MGS) study has concluded that sufficient groundwater is available to supply the projected demand through the year 2040.

In regard to future growth, the potential constraints for the water supply are the ability to continue to purchase water from the City of Baltimore, and the adequacy of groundwater resources to serve additional growth in southern AA County, which is part of the County's designated Rural Area, and where large-scale or high-density development projects are not planned. Still, there may be additional low-density development that would be served by private individual wells. The County continues to participate in regional planning efforts to monitor and protect groundwater resources.

3. Septic Systems (On Site Sewage Disposal Systems (OSDS))

The 2009 GDP points out that there are approximately 40,700 individual septic systems in the County. A little more than half of these are located in an area designated for no public sewer service. The remaining systems are located in an area ultimately to be served by a public sewer service.

The County contracted for a study to evaluate available options to improve service for those properties with an OSDS. The study recommended four possible treatment approaches:

- a) Sewer System extensions with treatment at existing centralized wastewater reclamation facilities upgraded for enhanced nutrient removal (ENR),
- b) Cluster wastewater treatment facilities,

- c) Upgrade each individual OSDS to include ENR, and
- d) No near-term action, since low-density results in low-nitrogen delivery with onsite systems.

MITIGATION PLANS

The next four sections discuss the mitigation plans contained in the 2009 GDP.

1. Water Supply

A pilot study conducted for Southern Maryland recommended:

- a) A regional, multi-aquifer groundwater flow model to assess water supply and impact of future withdrawals;
- b) Additional monitoring of wells near large pumping centers to verify model predictability;
- c) Developing standard methods of data collection, storage and transfer for domestic wells; and
- d) Evaluating the appropriateness of the 80% management level in aquifers close to recharge areas.

2. Water Reclamation Facilities

In order to provide improved wastewater treatment facilities, the 2009 GDP proposed the following goal:

Goal: Provide the highest level of wastewater treatment capabilities economically achievable in order to reduce pollutant loads to area tributaries.

This is to be achieved through the following **actions**:

- a) Complete ENR upgrades at Water Reclamation Facilities per agreement with MDE;
- b) Determine the ability to increase treatment capacities at Water Reclamation Facilities using the “bubble permit” concept (establish limit for overall pollution rather than for individual pollutants); and
- c) Identify weaknesses in pipe infrastructure and explore the development of a more reliable power back-up solution for pumping stations.

3. Septic Systems

In order to provide increased reductions in nutrients, the 2009 GDP proposed the following goal:

Goal: Achieve significant reductions in nutrient loads from OSDSs (*with particular emphasis on reduction in the Severn River, South River, Magothy River and Bodkin Creek watersheds where nutrient loads are the most significant*).

This is to be achieved through the following **actions**:

- a) Develop a short and long-term strategic plan for implementing the recommendations from the OSDS Study to address problem septic areas, based on the priorities identified in that study. This will require feasibility and engineering studies, public outreach, and potentially other planning studies for the OSDS management areas, as well as funding strategies.
- b) In conjunction with the above, apply for funding through the State’s Chesapeake Bay Restoration Fund program to implement the OSDS strategies
- c) Update the map of Onsite Wastewater Management Problem Areas in the Water and Sewer Master Plan.
- d) Explore additional funding techniques that can be used for community connections to public sewer or installation of private community systems in known problem septic areas.
- e) Communities served by OSDSs that are identified as problem septic areas should be planned for public sewer if feasible, or community treatment systems should be installed, regardless of the Land Use Plan and zoning. Extension of public sewer in such cases will not be considered justification for changing the Land Use Plan or zoning, and should not be considered as inconsistent with the GDP.
- f) Where extension of public sewer is the most feasible alternative for a problem septic area, determine whether denied access sewer lines are warranted.
- g) In addition, add these communities to the Priority Funding Area where possible so they will be eligible for Bay Restoration Fund grants for public sewers.
- h) Provide information to homeowners and business owners regarding the importance of regular maintenance to septic systems.
- i) Develop a more streamlined petition process for community connections to public sewer.
- j) Evaluate the feasibility of code revisions to require all new or replacement private septic systems to utilize the latest standards for denitrification. Currently this requirement applies only within the Critical Area.

4. Nonpoint Source Loads (Stormwater Runoff)

In order to provide improved handling of Stormwater Runoff procedures, the 2009 GDP proposed the following goal:

Goal: Improve stormwater management practices throughout the County to reduce nonpoint source pollutant loads and achieve water quality standards.

This is to be achieved through the following **actions**:

- a) Develop additional data layers and input needed to model and assess the effectiveness of existing and future stormwater management practices in reducing nonpoint source pollutant loads.
- b) Complete and maintain an accurate database of all privately and publicly owned and maintained stormwater management facilities in the County.
- c) Conduct field monitoring to assess the effectiveness of current stormwater management practices. Report findings to the facility owner and the watershed assessment and planning program for retrofit action recommendations, prioritization, and implementation.
- d) Evaluate alternatives for improving, enforcing, and funding long-term inspection and maintenance programs of both private and public stormwater management facilities.
- e) Work with the Departments of Inspections and Permits and Public Works to secure condition assessment data and maintenance schedules for all privately and publicly owned stormwater practices. Incorporate the data within the Watershed Management Tool to assess the effectiveness, prioritize retrofit actions, and develop retrofit implementation plans.
- f) Update standards and specifications for innovative stormwater management practices based on lessons learned from inspection, maintenance, and monitoring.
- g) Revise the County's Stormwater Practices and Procedures Manual to address new requirements of the State's 2007 Stormwater Management Act and to incorporate specific criteria for environmentally sensitive site design.
- h) Develop strategies to promote greater use of Green Buildings by developers as well as individual homeowners. Evaluate the Code to make sure that Green Building technologies are not impeded by existing code requirements.
- i) Provide incentives to promote the use of permeable paving surfaces
- j) Explore the possibility of increasing the requirement from 20% to 50% for treatment of impervious area on redevelopment sites.
- k) Develop design guidelines and specifications for the Regenerative Coastal Plain Outfall and Wetland Seepage system. Incorporate the information into the County's Stormwater Design Manual.
- l) Consider tax credits to encourage soft tidal edge erosion control techniques such as marsh planting.
- m) Explore the use of a stormwater utility fee on impervious surface areas.

LOOKING AHEAD

The AA County Department of Planning and Zoning has recently prepared a "background report" on water resources to be considered in developing Plan2040:

(<https://www.aacounty.org/departments/planning-and-zoning/long-range-planning/general-development-plan/plan2040-background-reports/reports/water-resources-report.pdf>).

It notes that the existing public sewer system is sized and was constructed based on the planned land use and zoning in the 2009 GDP. Upgrades to pipes and facilities will be required to accommodate new development in certain areas. It also lists the following key needs the County should focus on in Plan2040:

1. Complete ENR upgrades at Water Reclamation Facilities per Memorandum of Understanding agreement with MDE,
2. Determine the ability to increase treatment capacities at Water Reclamation Facilities using the "bubble permit" concept,
3. Develop a short and long-term strategic plan for implementing the recommendations from the OSDS Study to address problem septic areas. This will require feasibility and engineering studies, public outreach, potentially other planning studies, and funding strategies to implement the projects.
4. In conjunction with the above, apply for funding through the State's Chesapeake Bay Restoration Fund program to implement the OSDS strategies,
5. Develop a more streamlined petition process for community connections to public sewer.
6. Continue to model and assess the effect of various load reduction alternatives on non-point source pollutant loads and tributary assimilative capacities for all watersheds in the County,
7. Play an active role in regional planning efforts to optimize and most efficiently use regional water supplies.