Smart Growth's Weak Link? :
An Analytical Evaluation of Water and Sewer Planning in Maryland

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(ABSTRACT)

Established low-density land use development patterns are characterized by expansive urbanization of the landscape. Concurrent effects associated with this present development pattern are declining existing urbanized areas, increasing conversion of open space, and high public service and infrastructure costs. Maryland's adoption of the Smart Growth legislative initiatives marks a potential advancement in the continuing evolution of government policies and programs designed to reduce inefficiencies by planning and managing growth at the state level. The Smart Growth programs are designed to augment, and work in concert with, previously implemented state growth management strategies, including local water and sewer and comprehensive planning. Maryland's ability to effectively direct and control growth in a desirable manner depends on the integrity and support of each of these planning program elements.

This thesis recognizes the considerable influence that the provision of water and sewer services exerts on developing urban growth patterns and the increased relevance of water and sewer planning with respect to Smart Growth legislation. Evaluative research, designed to measure water and sewer plan regulatory conformance, demonstrates that locally adopted water and sewer plans exhibit widespread deficiencies in terms of state agency regulatory requirements. The revealed extent and prevalence of water and sewer plan inadequacies indicate that these documents are incapable of providing state administrators the information necessary to accurately determine existing and planned municipal sewer service, as anticipated by the legislation.

The fact that legislation requires state agency approval of water and sewer plans prior to their adoption and that adopted plans exhibit deficiencies suggests problems associated with the current plan approval process. This thesis reviews the institutional procedures by which water and sewer plans are developed and approved in order to illustrate formal and informal organizational processes operable to water and sewer plan development. In addition, this thesis offers recommendations designed to enhance the current approval process, so as to lead to the development of effective water and sewer plans and facilitate successful implementation of related Smart Growth programs.

DEDICATION

To *Bandit*— Companion, playmate, counselor, and way-shower.

Beyond all ideas of right doing and wrong doing

There is a field…

I'll meet you there.

---Rumi

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Chapter 1.

Introduction:

Low-density, dispersed residential and commercial land conversion, commonly referred to as *urban sprawl*, has become a predominant development pattern throughout the United States (Benfield, 1999). Downs identifies ten traits that typify urban sprawl development. These are:

- Unlimited outward extension of new development;
- Low-density residential and commercial settlements, especially in new-growth areas;
- Leapfrog development jumping out beyond established settlements;
- Fragmentation of powers over land use among many small localities;
- Dominance of transportation by private automotive vehicles;
- Limited centralized planning or control of land uses;
- Widespread strip commercial development;
- Great fiscal disparities among localities;
- And, segregation of specialized types of land uses in different zones. (Downs, 1998).

Negative impacts associated with urban sprawl development are well documented in the literature and include:

- Increased traffic congestion, air pollution, and large-scale absorption of open space; Extensive and wasteful use of energy for transportation-related activities;
- Inability to provide adequate infrastructure to accommodate growth because of high costs;
- And, the gradual undermining of the existing infrastructure inventory and general decline of existing urban environments. (Benfield, 1999; Downs, 1998; Frank,1989; Astshuler,1977, and others).

Responding to the challenges presented by urban sprawl, professional planners and policymakers endeavor to redirect-- or at least moderate-- the occurrence and effects of

expansive urban development. As new growth management strategies are developed, those seeking to gain insight from these experiences closely observe the effects of new programs. Maryland's newly adopted legislative initiatives, known as Smart Growth, provide one such example of a program that is receiving close scrutiny.

The Maryland Office of Planning (MOP) reports that, since 1990 to the present, the population of Maryland has grown by 390,881 people, an 8.2 percent increase. From July 1998 to July 1999 alone, Maryland's population grew by 41,562, the largest increase for the State in five years (MOP, 2000). Analysis of demographic data shows that the highest rates of growth are being experienced in rural and semi-rural suburban counties, including Howard, Calvert, Queen Anne's, Charles, Cecil, and Frederick. These and other counties are depicted in the map of Maryland located in Appendix D.

According to MOP, "in general, growth in these jurisdictions is being fueled by net domestic migration coming from the older suburban jurisdictions" (MOP, 2000). In fact, census data demonstrate that Baltimore City, Maryland's most significant urbanized area, experienced a substantial decline in population of 12,983 (2.0%) from 1998 to 1999 (MOP, 2000). It is estimated that Baltimore City has now lost 103,333 people, or 14.0 percent, of its population since 1990. In reporting these figures, MOP states that "[Baltimore's] population decline during the 1990s has been discouraging, with the annual average decline of 1.65 percent greatly exceeding the annual average decline of 0.66 percent during the 1980s and 1.40 percent during the 1970s" (MOP, 2000).

As urbanized areas continue to lose residents, previously undeveloped land in rural counties is being increasingly converted to residential use. The Chesapeake Bay Foundation (CBF) reports that, "Maryland is losing nearly 30,000 acres of land each year to [development] and could lose 700,000 acres of valuable agricultural and forest land in the next 25 years" (CBF, 1999). The rate of land conversion is accelerated by the fact that much of the new development is characterized by low-density, dispersed residential construction. While the average size of Maryland households continues to decline, the average residential lot size is increasing (Benfield, 1999).

1.1 Introducing Maryland's Smart Growth Initiatives

Faced with declining urbanized areas, an increasing loss of open space, and the high costs associated with low-density development, the state of Maryland recently adopted a series of legislative initiatives collectively known as Smart Growth. Broadly stated, the goals of Smart Growth are to direct the majority of future growth into existing developed areas, facilitate the revitalization of urban centers, and minimize increased urbanization in rural areas. More specifically, the Smart Growth legislation provides the means for the State to target its programs and funding to support locally designated growth areas and allow for the protection of rural open space (MOP, 1999). These initiatives, demonstrate a continued commitment, at the state level, to persuade municipal governments to plan for the orderly and efficient growth of their communities.

The Maryland Smart Growth initiatives, discussed in greater detail in Chapter 3, represent a compilation of related growth management approaches. Although several of these policies correspond to traditional growth management strategies currently used by other states, Maryland's approach is significant for three reasons. First, Maryland has clearly declared its intention and willingness to provide leadership on the state level to actively address the challenges presented by urban growth. Second, the Smart Growth initiatives are designed to facilitate coordination between related growth management programs. This coordination may afford the opportunity for Maryland to achieve greater program benefits than in the case where such strategies have been implemented independently. Finally, the legislature's decision to employ the state's 'power of the purse' to carry out its efforts to manage growth is significant. Smart Growth restricts state financial assistance for many types of projects to legislatively prescribed, delineated growth areas.

1.2 Priority Funding Areas

In order to implement the Smart Growth initiatives effectively, the Maryland General Assembly established the concept of Priority Funding Areas. Under the Smart Growth Areas Act, only those districts designated Priority Funding Areas are eligible to receive state funding for projects related to water and sewer facilities, transportation, housing, and economic assistance. Local governments identify particular areas of their municipality as potential Priority Funding Areas. Final state agency approval for Priority Funding Area designation status is required. Approval is contingent on meeting requirements specified by state legislation (Md. Code § 5-7B-03 et. seq.). These requirements relate to the planned provision of water and sewer services, intended land use, and anticipated residential density. In addition, state statutes stipulate that in order to qualify as Priority Funding Areas "development of these areas shall also be consistent with the locality's comprehensive plan" (Md. Code § 5-7B-08, § 66B). The law anticipates that needed information pertaining to existing and planned water and sewer service will be provided via state-required local water and sewer plans (MOP representative, interview, July 1999).

By coupling state funding to infrastructure planning and land use, the General Assembly emphasizes the linkage that exists between the provision of public services and urban growth. Experience shows that the provision of water and sewer services often encourages development (Center for Urban Policy Research, 1997). In developing comprehensive plans, localities identify specific areas within their jurisdiction where growth is appropriate and desirable. Ideally, water and sewer plans would be designed so that services are enhanced in these areas. Conversely, restriction of the extension of water and sewer services often benefits areas that would be disrupted by ensuing development.

1.3 Research Statement and Significance

This thesis recognizes the considerable influence that the provision of water and sewer services exerts on developing urban growth patterns and the increased relevance of water and sewer planning with respect to Smart Growth legislation. The Maryland General Assembly has

passed legislation requiring counties develop and adopt water and sewer plans for their municipalities. This requirement seeks to ensure that services are provided in a manner supportive of adopted growth management strategies. The more recently adopted Smart Growth legislation relies on the adequacy of these water and sewer plans for successful implementation.

State planners, responsible for ensuring that county-designated Priority Funding Areas comply with legislative requirements, rely on information provided in locally adopted comprehensive plans, water and sewer plans, and direct communication with county representatives (Interview with MOP representative. July, 1999). County water and sewer plans provide the one source of information subject to a defined state agency approval process. Water and sewer plans developed in conformance to state described regulations would effectively provide state officials with much of the information necessary to confirm whether proposed Priority Funding Areas comply with state designation requirements. Conversely, deficient plans hinder state officials in their designation efforts and may lead to the approval of incorrectly sized or improperly located Priority Funding Areas.

Adopting an inductive approach, this thesis first investigates the current level to which water and sewer plans in Maryland comply with state requirements. Evaluative research demonstrates that locally adopted water and sewer plans exhibit widespread deficiencies in terms of state agency regulatory requirements. The revealed extent and prevalence of water and sewer plan inadequacies indicate that these documents are incapable of providing state administrators the information necessary to accurately determine existing and planned municipal sewer service, as anticipated by the legislation. The fact that water and sewer plans are required to receive state agency approval prior to their adoption and that adopted plans exhibit deficiencies suggest problems associated with the current plan approval process. This thesis reviews the institutional procedures by which water and sewer plans are developed and approved in order to illustrate formal and informal organizational processes operable to water and sewer plan development. In addition, this thesis offers recommendations designed to enhance the current approval process, so as to lead to the development of effective water and sewer plans.

1.4 Organization of Thesis

Chapter 2 reviews the literature concerning state-level growth management, discusses various growth management strategies, and introduces Maryland's Smart Growth legislation and water and sewer planning policy. Chapter 3 provides a more detailed description of planning in Maryland, presents the applicable legislative and regulatory measures related to water and sewer planning in Maryland, and introduces the organizational structures of involved state agencies. Chapter 4 discusses the methodology developed to evaluate Maryland county water and sewer plans, the results of the research, and explores organizational and institutional processes currently influencing the water and sewer planning process. Chapter 5 presents a discussion of the conclusions derived from the research findings, proposes recommendations for improving the current planning process, and describes additional research suggested by the thesis.

Chapter 2.

Growth Management, the States, and Maryland: A Review of the Literature:

2.1 The Call for Growth Management

Since World War II, the United States has experienced a rapid expansion in the amount of development occurring adjacent to and outside existing urbanized areas (Downs, 1994, p.8). Establishment of low-density, land consumptive suburban and exurban development characterizes this pattern of urban growth (Rusk [1993], Downs [1998], Benfield [1999], and others).

A review of the literature reveals that planners have been attempting to confront the challenges presented by escalating development for some time. Many authors contribute to the voluminous body of written work that addresses this issue. In their book, Once There Were Greenfields: How Urban Sprawl is Undermining America's Environment, Economy and Social Fabric, Benfield, Raimi, and Chen (1999) study this phenomenon of urban development and attempt to delineate a definition of *urban sprawl*, a descriptive term which has become closely associated with dispersed urban development. Rusk (1993), Calthorpe (1993), Downs (1994), Burchell (1997) and Weiwal (1999), among others, document observations regarding current and past urban growth patterns and evaluate the costs which have resulted from the current pattern of growth. The issues concerning the cost of growth have generally been defined in terms of economic, environmental, and quality-of-life factors and have been thoroughly investigated by various authors, including Altshuler (1977), Frank (1989), Burchell (1995), and Purcher (1995) and have been reviewed by Windsor (1979) and Kelly (1993).

The rapid urbanization of formerly undeveloped land areas, the concurrent decline of inner cities, and the associated effects of these processes spur the development of governmental measures devised to address these issues. Traditionally, the regulation of land use has been regarded as a local issue (Porter, 1997, p219). Consequently, legislative and procedural tools have been designed in order to provide local governments the means to manage and guide growth within their jurisdictions. These tools include locally adopted comprehensive plans, zoning

ordinances, and building permitting systems and are reviewed by Shiffman (1989), Porter (1997), Knapp (1992), Kelly (1993), Nelson (1995).

Many commentators demonstrate the shortcomings associated with growth management efforts restricted to the local level and emphasize the need for regional and state growth management programs (Kelly, 1993, Nelson, 1995), Porter, 1997, Catlin, 1997). While Moe and Hudgins (1997) offer an interesting representation of the opposing viewpoint regarding state involvement in growth management, the majority of the literature indicates that state participation is required in order to coordinate and implement effective growth management strategies. Roberts' (1994) discussion concerning regional sustainability and Atkinsen and Oleson's (1996) description of the path dependent processes associated with urban development both support the majority conclusion. DeGrove (1992), Nelson (1995), Stoel (1999), and Moe (1997) each also consider state involvement in growth management to be critical.

2.2 Growth Management and the States

According to Porter, the term growth management "encompasses public efforts to resolve issues and problems stemming from the changing character of communities… to retain valued qualities of community life" (Porter, 1997, p.vii). Communities practice growth management by "adopting and implementing policies and regulations to guide the location, quality, and timing of development" (Porter, 1997, p.vii). Efforts to develop effective state level growth management programs date from the early 1960's. Implemented programs include state comprehensive planning, consistency, concurrency, urban containment, designated growth areas, and infrastructure planning. The following sections briefly summarize several significant state growth management strategies.

Hawaii: State Comprehensive Planning-

Hawaii was the first state to adopt state-wide comprehensive planning. Initiated in 1961, this program establishes district boundaries throughout the state. Lands are designated as one of four types of land use districts. District designations included urban, rural, agricultural, and conservation districts. Under the plan, localities regulate development within urban districts while

the state defines and controls permitted uses in the remaining three. In addition, counties are required to adopt general plans. These plans must be consistent with the state plan and are subject to review by the Office of State Planning. District boundaries may be adjusted by means of a county approval process, but any adjustment over fifteen acres must be approved by the state Land Use Commission.

Vermont: Consistency-

In 1970, Vermont adopted the Land Use and Development Act. Under the Act, developers must obtain a permit from a state regulatory board prior to initiating construction projects that involve ten or more acres of land (Freilich, 1999). Before issuing permits, the state board considers possible adverse environmental and aesthetic impacts that could result from proposed projects. Projects must demonstrate consistency with state land use objectives described in the Act. The Act also requires a more stringent review of projects in areas where localities have not adopted zoning and subdivision laws. Prior to 1989, municipal plans were required to be consistent with the Act's planning goals. While no longer mandatory, adopted plans continue to be reviewed by regional planning commissions (Freilich, 1999).

Florida: Concurrency-

In developing a strategy to manage problems associated with increasing urbanization, Florida drew on the experiences of Hawaii and Vermont. Florida has both adopted a state plan and requires consistency between local, regional and state plans. In addition, Florida law requires that localities provide adequate public services and facilities sufficient to meet increased demands resulting from new development. Municipalities must demonstrate that adequate facilities and services are in place prior to the initiation of new development. This requirement to demonstrate concurrency between developmental impacts and the provision of services forces localities to plan for the provision of public services, enables localities to more effectively anticipate potential impacts resulting from development, and aims to lead to more efficient and economical land use and growth patterns across the state (Weitz, 1999).

Oregon: Urban containment-

Oregon is commonly regarded as a leading example of effective state-level growth management. A key component of the state's comprehensive management program consists of the utilization of Urban Growth Boundaries. Legislation directs cities to identify areas adjacent to current city limits that planners anticipate will be necessary to accommodate future growth. Cities work together with surrounding counties in the designation and administration of these "urbanizable" areas. In describing these areas, localities are required to consider seven factors related to "need" and "locational" suitability (Oregon Land Use Information Center, 2000). Population projections provide the basis for assessing future land use requirements. Once the Urban Growth Boundary is established, zoning and permitting systems are used to protect rural areas from urban encroachment. Proponents of the Oregon program assert that it has "helped to hold down the costs of public services and facilities; saved a great deal of farmland from urban sprawl; led to better coordination of city and county land-use planning; and brought greater certainty for those who own, use, or invest in land at the city's edge" (Oregon Land Use Information Center, 2000).

Washington: Designated Growth Areas-

Among the several strategies incorporated in Washington's Growth Management Act is a requirement that specific counties designate Urban Growth Areas within their jurisdictions. The legislation stipulates the types of areas that can be considered in the designation process. These include existing cities and land outside of a city that is "characterized by urban growth or is adjacent to territory characterized by urban growth" (Title 36, § 70A.110-1 [1999], Revised Code of Washington). In defining Urban Growth Areas, localities are instructed to describe areas large enough to accommodate twenty years of projected urban growth. Localities are to encourage urban growth within the designated areas and "prohibit [such growth]…outside of these areas" (Title 36, § 70A.110-3 [1999], Revised Code of Washington). In addition, the law directs localities to take measures to establish green belts, preserve open spaces, and protect

specific natural resources outside of designated Urban Growth Areas. While the Washington program resembles Oregon's strategy of urban containment, it differs significantly in that counties are given the primary responsibility for implementing program elements both inside and outside designated growth areas.

New Jersey: Infrastructure Planning-

Confronted with the accumulated pressures associated with extensive urban growth coupled with severe problems related to deteriorating infrastructure, New Jersey adopted a proactive approach with regard to land use and infrastructure planning. Pursuant to the State Planning Act of 1985, the Office of State Planning must prepare and adopt a long-term infrastructure needs assessment, which "provides information on present and prospective conditions, needs and costs with regard to State, county and municipal capital facilities" (Title 52, § 18A-196 et seq. [1985], New Jersey Statutes Annotated). Based on the information provided in the needs assessment, the Office of Planning develops a financial planning strategy for the provision and maintenance of public facilities and services throughout the state. The agency's actions serve to "link formerly separated planning and investment decisions of different levels of government and different agencies within one level of government…The Plan's strategic financial planning approach integrates capital investments with the general operations of government. It considers the life cycle (maintenance phases and replacement) of infrastructure, and links capital budgets to comprehensive and capital improvement plans, within and among levels of government" (New Jersey Office of State Planning, 2000). Adoption of this state-coordinated approach to infrastructure planning seeks to allow government agencies to provide adequate public services and facilities more effectively and efficiently.

While these examples help illustrate various state-level growth management approaches currently in use, it is important to point out that growth management is neither a static nor singular issue. Programs and strategies continue to evolve as states respond to the dilemmas posed by increased urbanization. In fact, each of these states currently use a combination of growth management techniques to implement planning programs.

2.3 Maryland's Smart Growth Program

The recent adoption of the "Smart Growth" initiatives, the roots of which can be traced to The Maryland Economic Growth, Resource Protection, and Planning Act of 1992 (House Bill 1195. Chapter 437 of the Laws of Maryland), focuses increasing attention on Maryland with regard to current state growth management efforts. Maryland's Smart Growth combines various growth management programs to provide the necessary framework for coordinated and effective statewide and local growth management. Components considered under Smart Growth include comprehensive land use planning, adequate facility and service provision, concurrency, regional review, urban containment, in-fill development and rural land preservation. In addition, the strong executive leadership exhibited by Gov. Glendening in gaining passage of the Smart Growth legislation and the linkage the initiatives create between state funding and program compliance constitute two additional elements of Maryland's growth management strategy considered vital, but often missing, in other state programs (Nelson, 1995, Porter, 1997, Stoel, 1999, Weiwal, 1999). The synthesis of these various planning elements into a coordinated state-directed program represents a potential alternative approach for other states currently grappling with growth-related issues. Therefore, it is imperative that the underpinnings of the Smart Growth initiatives be investigated in order to determine their ability to provide the support necessary for successful implementation.

2.4 The Smart Growth Area Act and Priority Funding Areas

The Smart Growth Area Act represents a principal component of Maryland's recently adopted growth management legislation. Under the Act, "the state is prohibited from contributing funds to growth related projects, such as highways, sewer and water construction, housing, and economic development assistance, except in Priority Funding Areas designated by county governments in accordance with the Act" (Benfield, 1999, p.155). By restricting state expenditures to these designated growth areas, Maryland attempts to use the "power of the purse" to encourage

and direct growth into areas deemed desirable. "[This] Smart Growth initiative allows the state the opportunity to influence, if not control, local land use decisions by directing…resources into priority and smart locations-- those in urbanized areas where adequate public facilities are prevalent or can be easily provided" (Frielich, 1999, p.231). Counties may still make investments in service systems located outside of designated Priority Funding Areas, but without state fiscal support.

2.5 Water and Sewer Planning in Maryland

One important component of Priority Funding Area designation eligibility concerns the planned provision of water and sewer services. In order to gain Priority Funding Area status, localities must demonstrate that adequate sewer service services presently exist or are planned for the proposed area. Since the early 1980's, Maryland counties have been required by state law to adopt comprehensive water and sewer plans. As the designated lead agency, The Maryland Department of the Environment (DE) is responsible for final approval of these plans. Under DE adopted regulations, the Maryland Office of Planning (MOP) is provided an opportunity to review submitted plans. DE regulations enumerate specific elements that must be included in each plan. Required elements relate to county growth predictions, anticipated demand levels, intended methods for providing adequate services, and the necessary financial support for present and future water and sewer facilities. In this respect, the Maryland requirements reflect the conventional approach of anticipating and meeting forecasted service demands adopted by many planners and engineers (Porter, 1997).

Inefficiencies related to the extension of public services to serve expansive development and the concurrent effect that the provision of services has on encouraging this type of development are becoming increasingly acknowledged (Porter, 1997). In addition, issues related to economic efficiency, environmental and human health, water quality, and federal regulatory compliance continue to substantiate the importance and necessity for the adequate planning of municipal water and sewer services. The specificity and extensiveness of Maryland's statutes related to required local adoption of comprehensive water and sewer plans, subject to state level review, marks a fairly

unique and potentially effective state approach for addressing these concerns that has been generally overlooked in the literature.

Moreover, Maryland state planning personnel intend to utilize information obtained from adopted county water and sewer plans when making Priority Funding Area suitability determinations (MOP representative, interview, July 1999). The increased standing being accorded county water and sewer plans in Maryland necessitates a comprehensive assessment of existing water and sewer plans. Stoel (1999) calls for the study of alternative state growth management programs and stresses the need to ask tough questions about the long-term sustainability of these programs. The Maryland Smart Growth initiatives represents one such program. In order to function effectively, the Smart Growth Area Act component of Maryland's Smart Growth Program requires that approved Priority Funding Areas be correctly sized and located. This thesis describes Maryland statutory and regulatory requirements related to local water and sewer planning, investigates current regulatory compliance of Maryland county water and sewer plans, determines whether current plans are capable of providing MOP the information required for the designation of appropriate Priority Funding Areas and counties with an effective tool for the provision of sewer services within their jurisdiction.

Chapter 3.

Planning in Maryland:

The recent adoption of the Smart Growth initiatives represents an evolution in Maryland's ongoing commitment to manage urban growth. The Smart Growth program builds upon earlier programs and uses existing statutory requirements to implement the new initiatives. For instance, in developing the Smart Growth Areas Act, legislators expect program administrators to make use of information contained in required, locally adopted comprehensive plans and water and sewer planning documents. In order to better understand Maryland's current Smart Growth management approach, this chapter provides a brief description of the history of planning in Maryland and introduces two state agencies closely involved in the planning process. In addition, the chapter provides a summary of applicable legislation and regulations regarding growth management and water and sewer planning in Maryland and describes the linkage between these two related programs. An expanded version of this chapter is provided in Appendix C.

3.1 The Maryland Office of Planning

Maryland has been actively engaged in state-level planning since 1933, when the General Assembly established the Maryland State Planning Commission. "The Commission was originally created to coordinate Federal depression era public works programs of the National Resources Planning Board and the Works Projects" (MOP, 1999). The original Planning Commission's staff was formalized as the State Planning Department in 1959, and again as a cabinet-level Department of State Planning in 1969 (Department of State Planning, 1983). The current Maryland Office of Planning (MOP) was created during reorganization efforts in 1988, and is headed by a director appointed by the governor (MOP, 1999). As such, MOP is considered an independent agency under the executive branch of the Maryland state government.

In passing Title 5, State Finance and Procurement Article (Code of Maryland), the General Assembly established the Office of Planning. This legislation describes MOP's mission, which is "to plan for the most effective development of the State of Maryland and all of its resources."

Accordingly, the Office's principal functions are to develop and coordinate plans for the overall growth and development of the State by both the public and private sectors and to monitor the implementation of those plans (MOP, 1999).

3.2 Organizational Structure of the Maryland Office of Planning

Figure 3.1 displays a graphical representation of the formal organizational structure of the Maryland Office of Planning. Typical of many state agencies, the MOP organizational structure is represented by a centralized, authoritatively descending, hierarchical arrangement of divisions, each responsible for a specific sphere of responsibilities. Span of control is demonstrated to be relatively wide while command linkages have been kept short.

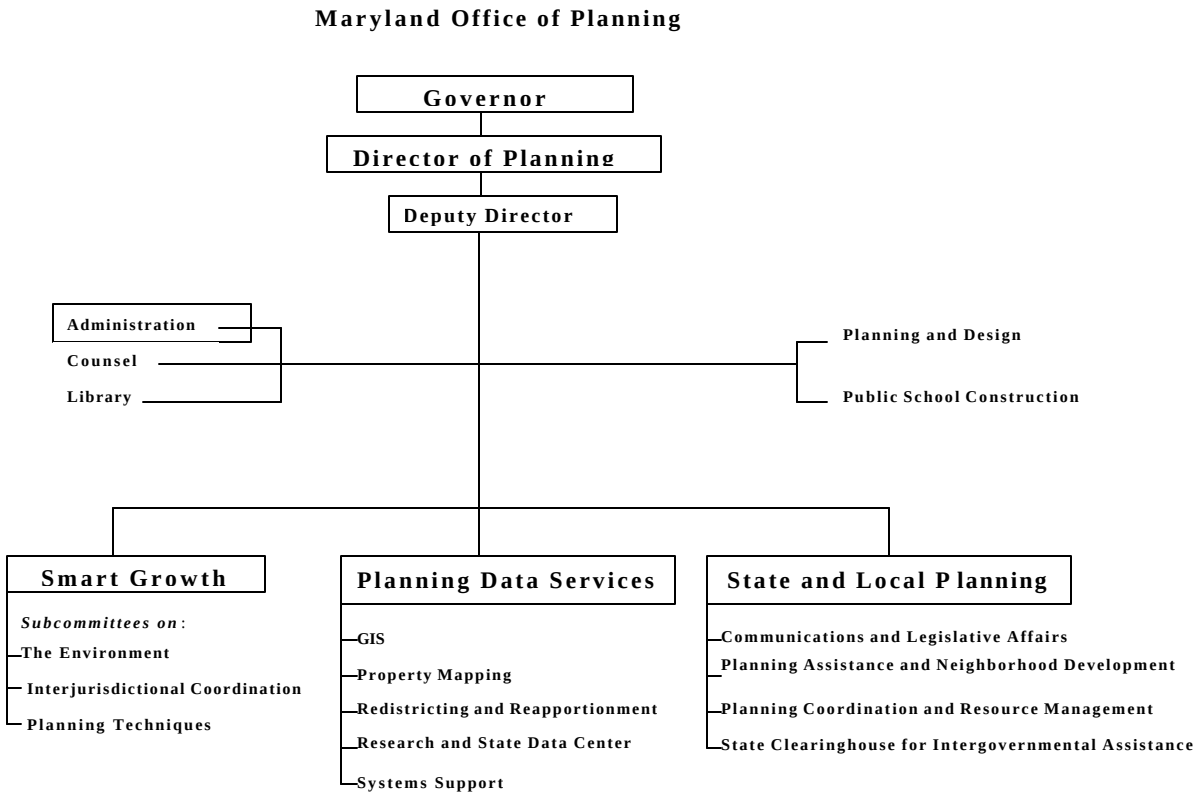


Figure 3. 1 Maryland Office of Planning Formal Organizational Structure

Source: **Maryland Office of Planning**

Discussions with agency personnel reveal that, while divisional responsibilities remain defined, informal organizational behavioral pathways are well established. Individual and divisional interaction is prevalent and considered essential in carrying out agency obligations.

In addition, MOP actively engages in collaborative work with many other departments and agencies at the state and local level. For instance, the Director of MOP currently serves as the chair of the Smart Growth and Neighborhood Conservation Sub-cabinet. This 'Sub-cabinet', established by executive order in 1998, consists of members from each of Maryland's cabinet-level departments. The Sub-cabinet recommends, to the Governor changes in State law, regulations, and procedures that are needed to support Maryland's Smart Growth policies (MOP, 1999). MOP's participatory efforts in the development and approval of county comprehensive plans and county water and sewer plans serve further demonstrate of the interactive nature of the agency's work and responsibilities.

In 1992, the General Assembly enacted the Maryland Economic Growth, Resource Protection and Planning Act. This legislation marked a significant advancement in terms of planning for the state. The 1992 Act was described as a method for "reshaping the way citizens, developers, the State, counties and towns addressed planning growth and resource protection. A premise of the Act is that the comprehensive plans prepared by counties and towns are the best place for local governments to establish priorities for growth and resource conservation, and that once those priorities are established, it is the State's responsibility to back them up" (MOP, 1999).

3.3 The Economic Growth, Resource Protection and Planning Act of 1992

The Economic Growth, Resource Protection and Planning Act of 1992, established seven land use 'visions' designed to promote orderly growth and economic development in Maryland while affording protection to the state's natural resources. The Act substantially amended Article 66B of the Code of Maryland, which relates to local governmental comprehensive planning. Municipal governments, engaged in planning for their localities, must incorporate these visions during formulation of their comprehensive plans. Adopted plans are to establish the means and methods whereby:

1.) Development is concentrated in suitable areas.
2.) Sensitive Areas are protected.
3.) Growth is directed to existing population centers and resource areas are protected in rural areas.
4.) Stewardship of the Chesapeake Bay and the land is a universal ethic.
5.) Conservation of resources, including a reduction in resource consumption, is practiced.
6.) Economic growth is encouraged and regulatory mechanisms are streamlined in order to assure the achievement of (1.) through (5.) above.
7.) Funding mechanisms are addressed to achieve these visions.

The legislation directs state agencies to consider these visions when engaged in policy and project evaluations. State funding may not be applied to projects that fail to incorporate the objectives of the visions or that are inconsistent with adopted local comprehensive plans drafted under these goals.

3.4 The Smart Growth Initiatives

In 1996, the General Assembly approved a collection of five new programs and policies collectively entitled "The 1997 Smart Growth and Neighborhood Conservation Initiatives." These recent legislative actions augment the visions and policies instituted by The Economic Growth, Resource Protection and Planning Act of 1992. The Smart Growth initiatives strive to "develop a coordinated strategy to better prepare for the growth of over one million people in the next twenty years and to preserve Maryland's desired quality of life for tomorrow's generations (Smart Growth and Neighborhood Conservation Initiatives, p.7). Maryland citizens currently experience the acute pressures brought about by inefficient sprawl-type development and an unprecedented loss of critical resource lands (Frielich, 1999, p.231). The Smart Growth initiatives represent a constructive attempt by the legislature to address these problems. The original five adopted Smart Growth strategies include:

1.) The Smart Growth Areas Act-- This program is considered the "key component" of the initiative package and is discussed later in this chapter.

2.) The Rural Legacy Program-- This program redirects existing State funds towards the purchase of conservation easements and fee interests in open spaces in areas that are experiencing development pressure. Under the program, localities are encouraged to

identify Rural Legacy Areas within their jurisdictions and apply for competitive grants to help conserve these areas.

3.) The Brownfields-- Voluntary Cleanup and Revitalization Incentive Program- This program limits liability of and offers monetary incentives to developers desiring to redevelop unused or abandoned urban properties that may be contaminated by hazardous materials.

4.) The Job Creation Tax Credit Program-- This program offers tax credits to small and midsize businesses that create jobs within Priority Funding Areas.

5.) The Live Near Your Work Demonstration Program-- This program allows employees of participating businesses and institutions to receive a minimum of $3,000 if they decide to purchase a home within state designated "Live Near Your Work" areas.

This series of initiatives seeks to coordinate a variety of planning methods that, together, are seek to revitalize declining urban areas, encourage in-fill development in these areas, stimulate sustainable behavior, and afford protection to rural areas. In addition, the legislation recognizes the important role that the provision of infrastructure and public services plays in impacting the direction, rate, and extent of growth that occurs within communities (Center for Urban Policy Research, 1997). Directly related to decisions affecting the State funding and support of municipal infrastructure, The Smart Growth Areas Act is of particular relevance in this regard.

3.5 The Smart Growth Areas Act

In passing the Smart Growth Areas Act, the General Assembly established that, henceforward, State funding would be directed to Priority Funding Areas. The Act recognizes that State spending considerably impacts local development decisions and attempts to provide support for projects that promote the seven visions put forward by The Economic Growth, Resource Protection and Planning Act of 1992. Designation procedures for identifying Priority Funding Areas are described in complementary legislation (Title 5, § 5-7B03-08 et seq. [1998], Code of Maryland). In addition to areas specifically identified by Maryland statutes, Priority

Funding Areas are determined by the governing body of a county under requirements outlined by State statutes.

Priority Funding Area Designation Requirements -

In order to gain approval under the legislation, a Priority Funding Area must meet certain stipulated requirements. These requirements are grouped by land use type into five categories. These categories include *industrial areas, employment areas, communities, areas other than communities, and rural villages*. The following provides a description of the legislatively described requirements developed to delineate each of these areas (emphasis related to water and sewer requirements added):

1.) Industrial areas-

- The area is zoned for industrial use prior to January 1, 1997, or
- The area is zoned for industrial use after January 1, 1997, the area is within a designated growth area, and the area is served by public water and sewer.

2.) Employment areas-

- The area is described in the county's comprehensive plan as a designated growth area, and
- The principal use of the area is for employment and is served by public or community sewer systems; or
- Public or community sewer systems are planned for in the approved 10-year water and sewer plan.

3.) Communities-

- The community is in existence prior to January 1, 1997, is within a designated growth area, is served by a public or community sewer system, is designated for residential use, and has an average existing or potential density of two units per acre, and
- The project being considered does not serve to increase the growth capacity of the community, except for limited peripheral or in-fill development, and
- The project being considered serves to maintain the character of the community.

4.) Areas other than communities-

- The area being considered lies within a designated growth area, and
- The approved 10-year water and sewer plan for the locality shows planned service to the area, and
- Designation of the area represents support of a policy promoting orderly expansion and the efficient use of land and public services, and
- Residential use within the designation area demonstrates an average density of at least 3.5 units per acre.

5.) Rural villages-

- The area is designated a rural village in the comprehensive plan by July 1, 1998, and
- The boundary of the priority funding area is the same as that of the village as of July 1, 1998, and
- The proposed project will maintain the character of the village and not extend the growth capacity of the area except for peripheral and in-fill development.

It is important to note that, with the exception of rural villages, eligibility for qualification as a Priority Funding Area in each category hinges upon the existence or planned provision of sewer services.

Priority Funding Area Designation Process -

In order for an area to be eligible for state funding of growth-related projects under the law, the local government must meet state criteria for Priority Funding Area approval. The approval process requires each county to:

- Submit a proposal for Priority Funding Area designation to the Maryland Office of Planning for public and agency review, comment, and assistance.

- Certify that the designation of the area is consistent with the comprehensive plan.

- Provide the Office of Planning information and maps necessary to demonstrate the precise location of the area, planning and zoning characteristics, and existing and planned water and sewer services.

Under the Smart Growth Areas Act, Maryland Office of Planning representatives review locally proposed Priority Funding Areas, verify that nominated areas comply with statutory

requirements, and award final approval for Priority Funding Area designation status. In addition, the Maryland Office of Planning is required to provide other state agencies, that fund growth-related projects, with copies of maps illustrating the Priority Funding Areas in each county and comments concerning these areas.

3.6 Water and Sewer Planning and Funding

In drafting the Smart Growth Areas Act legislation, the Maryland General Assembly linked legislation related to growth management to existing legislation regarding water and sewer planning. The provision of these public services facilitate the expansion of urban development. In addition, the installation and maintenance of related facilities and infrastructure involves substantial expenditures of public funds. The Department of the Environment is the designated lead agency responsible for overseeing water and sewer planning across the State.

3.7 Organizational Structure of the Maryland Department of the Environment

As stated, adopted legislation designates the Department of the Environment (DE) to be the lead state agency regarding county water and sewer planning (Title 9, § 9-218, 9-501-18 et seq. [1998], Code of Maryland). As expected, the formal organizational structure of DE, depicted in Figure 3.2, closely resembles that of MOP.

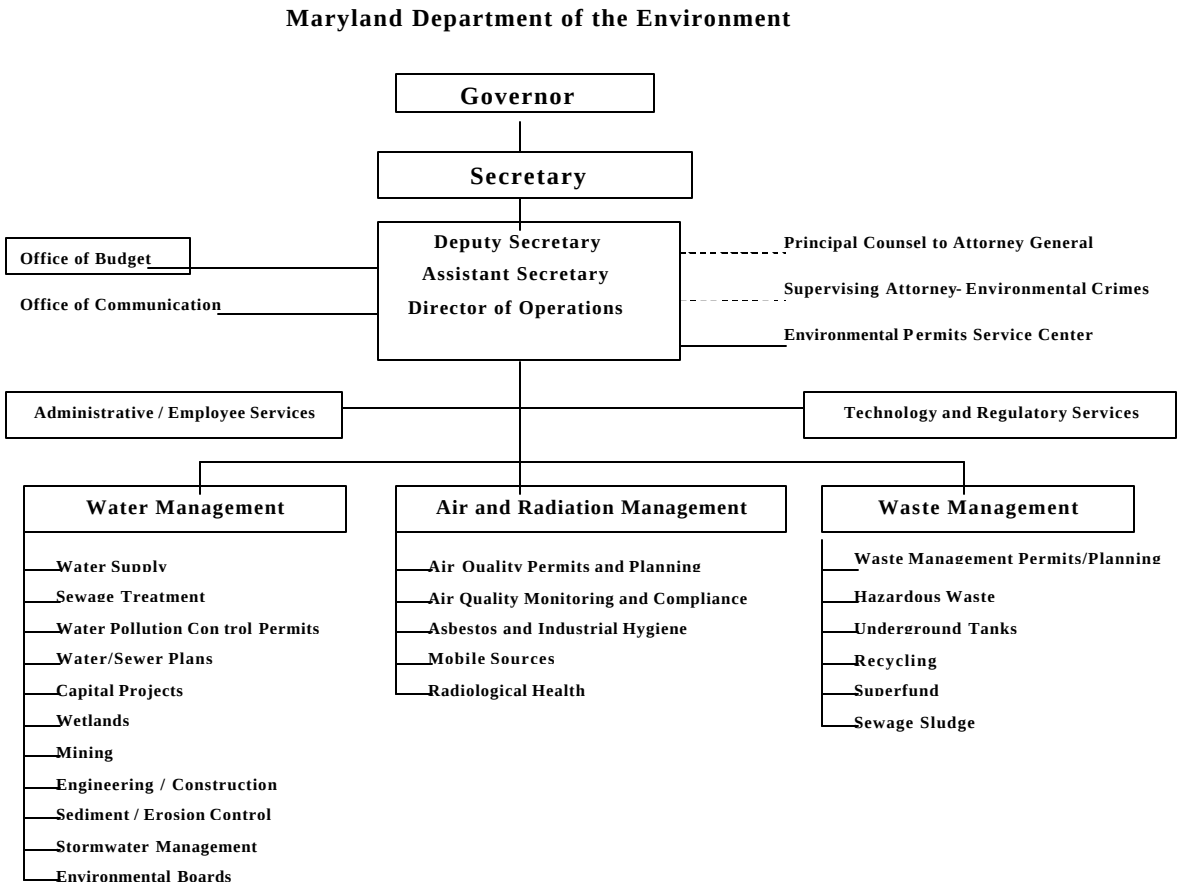


Figure 3. 2 Maryland Department of the Environment Formal Organizational Structure

Source: Maryland Department of the Environment

DE derives its authority from state statutes and maintains a predictable descending, hierarchical arrangement of divisions. However, unlike MOP, span of control is much more layered and command linkages are less direct. Discussions with agency personnel demonstrate that discretion is encouraged for individuals acting in certain decision-making capacities. Requisite knowledge, related to field specialization (engineering, biological science, chemistry, etc.), forces reliance to be placed on the professional experience and expertise of individual program administrators (Brooks, 1980, p.191). In addition, informal, "working" relationships have developed over time between agency program administrators and representatives from county governments. In terms of the water and sewer plan development and approval process, an

informal system of communication and negotiation between DE and local government representatives is well established. (Interview with DE representative. July, 1999). The implications of informal organizational processes-- and their consequent effects on water and sewer plan development-- are more fully addressed in Chapter 5 of this thesis.

In fulfillment of agency responsibilities, described by state statutes (Title 9, § 9-218, 9-501-18 et seq. [1998], Code of Maryland), DE has drafted specific regulations that direct localities engaged in the development of water and sewer plans. The following sections provide an abbreviated description of the applicable legislation and regulations pertaining to water and sewer planning in Maryland. A more thorough description of both the legislative and regulatory requirements concerning Maryland water and sewer planning is included in Appendix C. A review of these requirements readily demonstrates the State's intention to provide for specific, consistent, and effectivel water and sewer planning throughout Maryland.

3.8 Water and Sewer Planning Legislation

Legislation passed by the General Assembly requires that each of Maryland's twenty-three counties and the City of Baltimore develop plans that describe the present and future provision of water supply and sewer service systems for its locality (Title 9, § 9-218, 9-501-18 et seq. [1998], Code of Maryland). Hereafter, references to counties include the City of Baltimore. The water and sewer planning legislation states that each county plan should provide for facilities adequate to prevent the discharge of inadequately treated sewage. In addition, each plan must encompass a ten-year period, demonstrate consistency with all local and county comprehensive plans, and receive Department of the Environment (DE) agency approval.

The legislation mandates the planning processes to be employed during plan development, including those that relate to public participation, revision, and amendment schedules. In addition, the legislation stipulates specific policies and component elements that each plan is to include.

- Plans are to include information concerning:
    1. Capacity of present systems.
    2. Present level of usage.
    3. Projection for use of capacity based on:

- ❖ outstanding building permits and,
- ❖ subdivision plats or zoning commitments.

- Plans should take into account all relevant planning, zoning, population, engineering, and economic information and all State, regional, municipal, and local plans and show:
  - Those areas that can reasonably expect sewer service within the next ten years.
  - Procedures for identifying and acquiring, on a time schedule supporting the ten-year projections, the necessary rights-of-way and easements.
  - Those areas where it is not foreseeable that service will be provided in the next ten years.
  - Time schedule and method for financing the construction and operation of community and multiuse systems.
  - Estimated costs for construction and operation of any planned systems.
  - Quantity and quality of waste to be discharged into state waters.
  - Differentiate areas of the county that:
    - ❖ Must be serviced by community sewerage systems,
    - ❖ May be serviced by multiuse sewerage systems,
    - ❖ Interim individual sewerage systems are permitted until community service is provided.
  - Each publicly owned community sewerage system is to be treated as a separate entity for fiscal purposes.

- Plans must demonstrate conformance to the county comprehensive plan and water supply and sewer systems are not to be installed or extended unless they conform to the county plan.

(Title 9, § 9-218, 9-501-18 et seq. [1998], Code of Maryland)

3.9 Water and Sewer Planning Regulations

Acting in its lead agency capacity, DE has drafted and adopted regulations counties are to follow in developing water and sewer plans. In addition to providing general guidance policies counties are to consider in the formulation of water and sewer plans, Code of Maryland Agency Regulations (COMAR) stipulate the format counties are to use and specific elements to be included in the construction of water and sewer plans. The following provides an abridged description of these requirements with particular emphasis on sewer planning requirements.

- All county plans are to contain an introduction and four chapters as described in the following:

  Introduction-
  - Statement certifying official adoption.
  - Statement certifying submittal to DE and other operational planning agencies.
  - Statement certifying that the engineering aspects of the plan have been prepared and reviewed by a licensed engineer.
  - A letter of approval from DE.

  Chapter 1-
  - A statement of goals consistent with county comprehensive planning.
  - An organizational chart and discussion relating to county management of water supply and sewer facilities.

  Chapter 2-
  - General background information related to water and sewer planning including the maps, charts and tables described below:

    Physical-

    a.) Maps showing aquifers, soil drainage characteristics, topography, ground and surface water patterns.
    b.) A map or table showing water quality criteria.

    Population-

    a.) Map showing present and projected population and density.
    b.) "Table no. 1," indicating county populations projections.

    Land use-

    a.) Maps showing existing land use, zoning, and the adopted comprehensive development plan for the county.
    b.) "Table no. 2" reflecting existing and zoned land use in acres.
    c.) A map showing existing and proposed major public institutions (i.e. schools, hospitals, correctional, government complexes).
    d.) A table showing the approximate populations of these institutional facilities.

Chapter 3-

- Information relating to water supplies, sources of pollution, and environmental impact of developing future proposed water supply sources.

Chapter 4-

- Information describing the existing and planned community and multi-use sewerage systems.

- Tables, maps, charts, graphs, descriptive information and all other matters regarding multi-use sewerage systems.

- An indication of the locations of proposed points of waste discharges.

- A demonstration that existing facilities meet effluent limitations specified by Department of the Environment, COMAR 26.08.03.01.

- A demonstration that programmed (planned) facilities will meet these same limitation standards.

- A summary of each available point of discharge evaluation, specifically those parts pertaining to protected water uses.

- A discussion demonstrating the rational for selecting the planned alternative for any proposed treatment facility, pumping station, or interceptor.

- For every service area and community system, the following should be discussed:
  - Operating agency.
  - Design average and peak flows.
  - Whether combined or separate collection systems.
  - Level and type of treatment.
  - Sludge disposal plans.
  - Condition of treatment and transmission facilities.
  - Operation and maintenance costs.
  - Proposed means of financing improvements.

- Minimum requirements for tables and maps-
  - Population projections and present and expected demands and capacities by sewerage service area (Table 9).
  - Inventory of existing sewage treatment plants (Table 10).
  - Inventory of problem areas, including inadequate portions of community systems and areas where individual systems are experiencing difficulty (Table 11).

- Identify by service area water quality problems due to storm drain outfall and to non-point sources (Table 12).
- Immediate, 5-, and 10-year priorities for sewer system development (table 13).
- Maps meeting the technical requirements outlined in §26.03.01.04.G, of the regulations.

- The plan should include an inventory of problem marinas and include basic concepts for sanitary facilities at all marinas.

- Technical requirements for data presentation are described in §26.03.01.04,G.

- In addition to other requirements, planning maps are to show the following delineations:
  - Existing or proposed and planned community and multi-use water and sewer facilities and their respective sizes and capacities.
  - S-1 areas- served by systems currently existing or under construction.
  - S-2 areas- to be served by extensions of systems and are in final planning stage.
  - S-3 areas- where improvements to or construction of systems are to be given immediate priority.
  - S-4 areas- where systems are programmed for the 3- to 5/6- year period.
  - S-5 areas- where systems are programmed for the 6/7- to 10-year period.
  - S-6 areas- where no service is planned.

- Flow data for all sewerage facilities are to be presented in Table no. 15 for wastewater treatment plants and 15A for all principal collector sewers, interceptors, pumping stations, and associated force mains. Data from tables 9 and 10 may be omitted from table 15.

- Demonstration that plan complies with the Maryland Water Conservation Plumbing Fixtures Act (Article 56, §455, Annotated Code of Maryland). (Title 26, subtitle 03, chapter 01 (26.03.01.01-.08 et seq. COMAR)

In order to gain final DE approval, each county plan must also include a financial management plan for all publicly owned community sewerage systems. Regulations stipulate that:

- Each plan should include:
  - A narrative describing the financial roles and relationships of all public entities involved with providing service.

- A completed Financial Statistics Schedule for each self-contained, publicly owned system. This schedule should demonstrate that adequate fiscal resources are or will be available for the operation, maintenance, and repair of existing and future systems.

- Before any issuance of permits for new systems will occur the following should requirements should be met:
  - The financial management plan described previously should have been adopted as part of the county plan and approved by DE.
  - The proposed system should have been described with narrative text, revised tables, maps, etc., as part of an approved update or amendment to the county plan.

- All new financial plans are to be submitted no later than 7/1/1989.
  Note: The regulations do not describe specific procedures for updating the financial management portion of the water and sewer plan.
  (Title 26, subtitle 03, chapter 01 (26.03.01.01-.08 et seq. COMAR)

In addition to identifying the specific format and component elements water and sewer plans are to include, DE regulations describe the procedural requirements to be followed in order to gain agency approval for the plan (Title 26, subtitle 03, chapter 01 (26.03.01.01-.08 et seq. COMAR). Under agency regulations, localities are directed to draft and submit a preliminary plan with maps to multi-county or regional comprehensive planning agencies. Copies are to be provided to DE, the Maryland Office of Planning (MOP), and the Department of Natural Resources (DNR). Next, DE reviews the submitted palns and receives comments from MOP. DE considers MOP comments, develops a response to the proposed plan and returns these comments to the locality. Negotiations then ensue between the locality and DE until a final version of the plan is agreed upon. The counties are then directed to hold a public hearing and formally adopt the water and sewer plan. Once the final plan is adopted, localities are directed to prepare a final format of the plan as set forth in Regulation §26.03.01.04 (COMAR) and submit four copies to DE for review. DE is directed to forward a copy to MOP and DNR for comment. DE is responsible for awarding final approval of the adopted plan. After final approval, the county is to print 50 copies and send four to DE and four to DNR.

3.10 Comparison of Water and Sewer Planning Legislation and Regulations

A comparison between the adopted water and sewer planning legislation and subsequent agency regulations shows them to be generally consistent. Primary elements common to both the legislation and regulations are stipulated requirements that all water and sewer plans:

- Demonstrate consistency with local comprehensive plans.
- Consider a ten-year timeframe.
- Show differentiation of areas by service type.
- Enumerate capacity and flow rate estimates and projections.
- Identify anticipated needs.
- Include a financial planning element.

Some discrepancies do exist between the legislation and regulations. These concern:

- Review period-
  - Legislation stipulates that localities review plans every three years.
  - Regulations stipulate an annual review.

- Rights-of way, easements-
  - Legislation stipulates that procedures for identifying and acquiring necessary rights-of-way for the ten-year period demonstrated by the plan.
  - Regulations do not address this factor.

- Financial planning-
  - Legislation states that each plan should set forth the estimated cost of constructing and operating each planned community and multi-use system.
  - Regulations are only concerned with publicly owned systems.

- Comprehensive plan conformance-
  - Legislation states that sewerage systems are not to be installed or extended unless they conform to the county comprehensive plan.
  - Regulations state conformance requirement but allow for wide discretion on the part of DE.

3.11 Maryland Planning Chapter Summary

Increases in population and growth will continue to present Maryland with the various challenges represented by escalating development. The series of growth related legislation adopted over the last decade clearly reflects the legislature's ongoing commitment to provide for orderly and efficient growth within the state. In-depth review of these initiatives reveals that the statutes create a close association between the planned provision of water and sewer services and the designed methods to direct growth (see Appendix C). State planners are expected to use information provided in local water and sewer plans to determine the present and future location of services. In creating this linkage, the General Assembly builds upon previous legislation that directs county governments to draft and implement comprehensive water and sewer plans. The viability and effectiveness of the various growth management strategies rely on the strength and validity of these associated planning efforts.

Maryland's adopted legislation and regulations, pertaining to local water and sewer planning, offer specific and comprehensive guidelines for those charged with the responsibility of managing the provision of these services. Plans drafted in conformance with these standards would give local decision-makers an effective means by which to plan for the provision of these services throughout their community. Information derived from the planning process would also prove useful in additional applications. In fact, a compilation of such plans, if current and complete, would provide state level administrators an effective means to determine likely growth rates throughout the state, anticipated demands resulting from this growth, and a possible means to influence the direction of such growth. This same information would allow planners to accurately determine areas most suitable for Priority Funding Area designation The relevance of these plans becomes readily apparent when viewed in this light.

Having completed a review of the legislation and regulations related to growth management and water and sewer planning in Maryland, the following chapter describes the methodology employed to evaluate specific local governmental responses to these guidelines. Following this description, the results of the research project are presented.

Chapter 4.

Research Methodology and Results of Water and Sewer Plan Evaluation:

This chapter describes the methods developed for conducting the research that forms the basis for this thesis. Included are statements regarding the selected research site, a description of the evaluation instrument constructed to review the various planning documents, and the processes employed to conduct the actual research. The actual evaluation instrument and the data produced are included in Appendix A and Appendix B respectively. Following the methods section, the results of the research are presented.

4.1 Methodology

Purpose -

Research was conducted in order to determine the current level of state regulatory requirement compliance exhibited by Maryland county water and sewer plans. This thesis assumes that the measured degree of plan element conformance indicates the relative ability of these plans to provide informational support necessary for the viable delineation of Priority Funding Areas (see Chapter 3).

Site -

The Maryland Office of Planning was determined the appropriate site to conduct the water and sewer plan evaluation portion of the research project. This location was selected since it offers the opportunity to review county comprehensive plans and water and sewer plans for each locality simultaneously. The Maryland Office of Planning library is the state-designated repository for these documents.

Instrument -

In order to construct the evaluation instrument used in the review of county water and sewer plans, relevant legislation and agency regulations were rigorously examined (see Appendix

C). Questions were then developed to test qualitatively whether county water and sewer plans exhibited compliance with stipulations described by the Department of the Environment in the Code of Maryland Agency Regulations (COMAR 26.03.01-08). Additional questions were devised to allow the reviewer the opportunity to record evaluations regarding the completeness, relevance and accuracy of individual plans. A complete description of the individual questions contained in the evaluation instrument is located in Appendix A. The format developed for recording the results of the water and sewer plan evaluation and the data resulting from the analysis is provided in Appendix B.

Research Process -

Original data collection occurred during a two-week period in July of 1999. Potential observer variability bias was reduced by limiting data collection responsibilities to one individual (the author) and by constricting the duration of the study to a limited time interval. Data collection was sponsored by the Chesapeake Bay Foundation and preliminary results of the research were presented at the *Fall 1999 Smart Growth Conference*, held in Baltimore, Maryland and included in the publication *Maryland's Next Steps: Making Smart Growth Smarter* (Maurer, 1999). The study reviewed adopted plans from all twenty-three Maryland counties and the City of Baltimore.

Review of Comprehensive Plans:

In the course of the research, each of Maryland's twenty-four county's comprehensive plans were examined to determine each locality's goals and objectives in terms of growth and the provision of public services. Particular attention was paid to current and projected land use, designated growth areas, population trends, community character, described facilities and services, and stated visions regarding the desired direction for the municipality. The purpose of these examinations was not to evaluate the county comprehensive plans themselves. Rather, these document reviews afforded the researcher the opportunity to answer questions regarding consistency between county comprehensive plans and county water and sewer plans. For

example, by reviewing both county plans, one could answer questions such as: "Are population projections contained in the comprehensive plan the same as those used to develop capacity projections in the service plans?"

Review of County Water and Sewer Plans:

Following the comprehensive plan review, the author examined each locality's adopted water and sewer plan. Using applicable regulatory requirements, indicators were developed to evaluate the adequacy, conformance, and completeness of the water and sewer plans. Indicators were derived by the formulation of questions designed to test plan compliance to regulatory provisions. An example of the evaluation instrument is provided in Appendix A. This instrument was used to establish and record initial findings. Additional qualitative descriptive comments pertaining to each plan were recorded in order to provide the reviewer with a clearer understanding as to the nature of individual planning documents and processes.

Compilation of Data:

Immediately following the original data collection process, recorded answers were reviewed for accuracy and consistency. Validation of responses was substantiated through random verification using source documents. Responses were then examined to establish the combined frequency and proportion of answers to individual evaluation questions. Preliminary results were aggregated by categorical headings relating to time of adoption, date of most recent revision, certification requirements, spatial and demographic elements, use of staging designations, existing and projected flow estimates, and financial management.

Post Plan Evaluation Interviews:

Implementation of the evaluation research process demonstrated various degrees of inconsistency and deficiencies related to county plan development and content. These findings are presented in the following section of this chapter. The demonstrated variability between examined water and sewer plans suggests a disruption of state agency organizational processes designed to

ensure adequate water and sewer planning. Post-evaluative interviews were conducted with local and state agency representatives involved in the plan development and approval process. The purpose of these interviews was to identify possible procedural processes and institutional barriers that are limiting or interfering with current planning processes. Results of these interviews were utilized in developing the conclusions presented in Chapter 5. The author wishes to clarify that answers obtained from these interviews may "reflect [the respondents] own wishes and their relationship to those inquiring rather than the actual reality of the situation"(Bedeian, 1980, p.29). In order to encourage open and candid responses, the decision was made to maintain the confidentiality of interview participants.

Reliability and Validity of Research:

The choice to use a single interviewer in conducting the investigative portion of the research process eliminated the potential for perceptual variability in the recording of responses. Reliability of the research is further substantiated by the fact that the results of the study are reproducible. Internal consistency was increased by the inclusion of several questions related to each categorical aspect examined. Potential historical and maturational threats, related to single group internal validity, were avoided by restricting the data collection period to a two-week interval. The data collection consisted of a one-time examination of county water and sewer plans. Therefore, internal validity threats related to testing, instrumentation, mortality, and regression were not present. The decision to review plans from all twenty-four Maryland localities eliminates considerations related to external validity.

This thesis discusses specific state agency organizational processes related to water and sewer plan approval. Inferences are restricted to these particular processes and are not intended to be extended to additional agency organizational processes. Thorough review of the examined water and sewer plans, using multiple categorical evaluation questions, insures construct validity in terms of measuring plan adequacy. The demonstrated level of plan adequacy indicates potential, rather than actual, difficulties associated with the appropriate delineation of effective Priority Funding Areas and successful implementation of Smart Growth policies.

Potential Research Problems and Limitations-

Primary research and data collection related to county water and sewer plan evaluations was conducted at the Maryland Office of Planning library. The Office of Planning is the lead agency regarding Priority Funding Area designation and participates in the water and sewer plan review process. As a designated state repository, this site offered the researcher the opportunity to view county comprehensive plans and water and sewer plans at one central location and provided access to the experience of state planning professionals well versed in the relevant proceedings. In order to complete the water and sewer planning research, it was necessary to rely on the available documents. Despite legislative requirements, the possibility exists that a particular record located at this facility may not be the most recently adopted document or that particular elements of individual plans may have become misplaced.

In two instances, authors of county plans specifically stated that required water and sewer plan elements were consciously excluded from planning documents deposited at the MOP library. Officials directed interested parties, wishing to view these materials, to visit local county offices. Such cases were isolated rather than widespread and only pertained to specific elements within the particular plan. For the purposes of this study, only materials deposited at the MOP library were considered as included in the adopted local water and sewer plan.

Finally, the researcher acknowledges the limitations presented by human observer and measurement processes. Despite comprehensive screening, the possibility exists that isolated inaccuracies resulting from the mishandling or misinterpretation of data remain. Various attributes of water and sewer plan elements were concurrently examined to reduce the probability of any significant impact resulting from the introduction of this type of human-induced error.

4.2 Research Findings

This section details the specific findings resulting from the water and sewer planning research project. These findings were derived from data collected through implementation of the described evaluation process and are grouped categorically.

Staging designations -

The staging designations described in the COMAR regulations constitute the planning element of water and sewer plans (See Appendix C). The system of "S" designations described by the regulations was devised so localities could plan for the orderly and efficient provision of facilities and services in a manner that would complement the comprehensive plan. In addition, staging of services allows officials to anticipate growth within their community and devise the means to provide for this growth in a responsible and economically efficient manner. The staging element or "S" designations that localities are to use in drafting their water and sewer plans are defined in the regulations in the following manner.

- S-1 = areas served by systems currently existing or under construction.
- S-2 = areas to be served by extensions of systems and are in final planning stage.
- S-3 = areas where improvements to or construction of systems are to be given immediate priority.
- S-4 = areas where systems are programmed for the 3- to 5/6-year period.
- S-5 = areas where systems are programmed for the 6/7- to 10-year period.
- S-6 = areas where no service is planned. .

Regulations direct county planners to use these designations when describing the existing and planned services in their area and include them on water and sewer maps drafted as part of the final water and sewer plan. Review of county water and sewer plans show that use of these staging descriptions is neither uniform nor universal. First, not all water and sewer plans contain this vital planning element. In addition, many of the counties have developed their own definitions for use with the "S" designations. Confusion naturally results from the various interpretations. The fact that the Maryland Office of Planning, charged with the responsibility of reviewing water and

sewer plans, has been forced to develop a key that is used to interpret the various county designation systems highlights this problem (Interview with MOP representative. August, 1999). The findings presented in Table 4.1 can be summarized as follows:

- While seventy-five percent of the localities describe staging or "S" designations in their water and sewer plans, only thirty-three percent reflect the same definitions described by COMAR.
- Further, forty-two percent of the plans fail to include these designations on the water and sewer maps developed to illustrate existing and future provision of services.

Table 4. 1 Staging Designation Results

Staging Designation Results			
Evaluation Inquiry	**Yes**	**No**	**Partially**
Does the water and sewer plan use staging designations?	58%	25%	17%
Are designations used in the manner described in COMAR regulations?	33%	63%	4%
Are designations used on the provided water and sewer plan map?	54%	38%	8%

N = 24

Required Physical Elements -

State regulations mandate the inclusion of a variety of maps and information relating to the physical characteristics of the locality in the water and sewer plan. Examples include maps depicting existing land use, zoning, and the adopted comprehensive development plan for the county. These elements must be available to those involved in the drafting and plan approval process if they are to make intelligent decisions regarding a particular water and sewer plan. Table 4.2 displays the results of the inspection of water and sewer planning documents on file and shows that:

- Fifty percent of the water and sewer plans contain a complete compilation of the physical maps required by regulations. This category includes instances where the Department of the Environment has exercised its right to waive these requirements if "a county has previously developed alternative methods for presenting this data."
- Forty-two percent of the water and sewer plans lack the requisite "table or map describing water quality criteria" for the county. Water quality criteria refer to the stream classification system used to identify critical tributaries throughout the state of Maryland.
- Twenty-five percent of the filed water and sewer plans lack local land use projections or contain severely outdated projections.

Table 4. 2 Required Physical Elements Results

Required Physical Elements Results				
	Physical Characteristic Maps	**Comprehensive Plan Map**	**Water Quality Criteria**	**Projected Land Use**
Included	50%	38%	58%	75%
Absent	12 %	38%	42%	12.5%
Incomplete	38%	24%	0%	12.5%

N = 24

Required Public Facilities Element -

Agency regulations require that water and sewer plans include information and maps showing existing and anticipated public facilities and institutions (e.g. schools, correctional facilities). The maps also must show population estimates for identified facilities. The presence of these facilities and institutions often constitute a significant demand for services. The majority of the water and sewer plans reviewed provided incomplete information regarding these elements. Table 4.3 describes these findings.

Table 4. 3 Required Public Facilities Information Results

Required Public Facilities Information Results				
	Existing Facilities		***Proposed Facilities***	
	Map	**Population Information**	**Map**	**Population Information**
Included	46%	36%	9%	0%
Absent	41%	64%	86%	100%
Incomplete	13%	0%	5%	0%

N = 24

Demographic Data -

Water and sewer planning enables localities to plan for the provision of these services to its citizens in an efficient, economical and orderly manner. Population projections play an intrinsic role with respect to sewer and water planning. This data is readily attainable from a variety of local, state, and federal sources. Review of the water and sewer plans show that population projections, described as *Table 1* under COMAR 26.03.01.04, were provided in most cases but these figures often have not been kept current. For instance, the Washington County plan provides data from 1991, while the Caroline County plan describes “projections” through 1995.

Capacity, Demand, and Flow Rate Descriptions -

In planning for the provision of water and sewer services, planners first determine the current capacity of their existing systems and compare these figures to the current demand being placed on these systems. Using projected population figures, growth trends, and available development potential, planners attempt to determine the future demands on the systems. Then, taking into account scheduled projects, planners anticipate future capacity of the various water and sewer systems within their locality. When these calculations are performed appropriately, the results allow officials to determine the adequacy of their present water and sewer facilities and their ability to meet future needs. In addition, analysis demonstrates situations where overcapacity exists or where the provision of services may be overextended.

Unfortunately, the information (or lack thereof) contained in many of the county water and sewer plans precludes accurate analysis or prediction of water and sewer system demand and capacity. The regulations describe a series of tables to be used to properly present capacity, demand, and flow-rate information. These tables allow the planner to quickly and accurately review the necessary information from which to make determinations and decisions. In addition, regulations require the inclusion of a description of each community and multi-use sewerage service system. Individual county responses to these requirements vary widely, as demonstrated by Table 4.4.

Table 4. 4 Required Sewer Service Information Results

Required Sewer Service System Information Results			
	Capacity and Demand	**Flow Rates**	**Systems Description**
Included	46%	25%	70%
Absent	----	33%	13%
Incomplete/Outdated	54%	42%	17%

N = 24

Specifically, examination of the county water and sewer plans reveals that:

Capacity/Demand

- Critical data relating to projected sewerage demand and capacity (as described by Table 9 in COMAR 26.03.01.04) was incomplete or severely outdated in fifty-four percent of the water and sewer plans.
- In thirty-three percent of the plans it was impossible to determine how present demand related to capacity.
- In fifty percent of the plans, it was impossible to determine how projected demand related to projected capacity.
- These results are primarily due to the fact that the data provided has lost its relevance over time.

Flow rates

- The plans are even more deficient with regard to flow data. Required information was either absent (33%) or outdated (42%) in a total of seventy-five percent of the cases.

Sewer system descriptions

- Only seventy percent of the sewer and water plans contained a complete description of the community and multi-use sewerage service systems operating in their locality as required by agency regulations.

Financial Management -

Water and Sewer planning regulations specifically require counties to include financial management plans for the service systems and facilities located in their region. The purpose for the inclusion of this financial management element is to insure that necessary funding is available to support these vital services. Counties must demonstrate through the financial management plan that adequate fiscal resources are available to support the operation, maintenance, and repair of existing and planned service systems.

Many of the water and sewer plans fail to include the financial management component in their respective water and sewer plan. Fewer still include the financial schedule (F/S) required by the regulations. Where fiscal particulars are provided, figures are often outdated. Tables 4.5 and 4.6 present the results of the evaluative questions that pertain to the financial management component of county water and sewer plans. These statistics demonstrate that:

- Fifty-eight percent of the water and sewer plans contain financial management plans as described by COMAR 26.03.01.08.
- Forty-six percent of the plans demonstrate that counties have the adequate fiscal resources to support the operation, maintenance, and repair of their current systems.
- Twenty-five percent of the plans demonstrate the resources necessary to support, maintain, and repair their systems in the future. (Additional localities may possess adequate fiscal resources, but filed plans fail to disclose the information necessary to make this determination.)

Results of Financial Management Plan Evaluation Questions

Table 4. 5 Completeness of Financial Management Component Results

Completeness of Financial Management Component of Water and Sewer Plan		
Evaluation Inquiry	**Included**	**Absent**
Is a financial management component included in the water and sewer plan?	58%	42%
Are financial statistic (F/S) schedules included for each self-contained public system?	54%	46%

N = 24

Table 4. 6 Adequacy of Financial Management Component of Water and Sewer Plan Results

Adequacy of Financial Management Component of Water and Sewer Plan		
Evaluation Inquiry	**Yes**	**No**
Does each F/S demonstrate adequate fiscal resources are available for existing systems?	46%	54%
Does each F/S demonstrate adequate resources are available for planned systems?	25%	75%

N = 24

Water Problem identification -

Water and sewer planning regulations require planners to identify problems related to water quality. Review of the county water and sewer plans reveals that failing septic systems are prevalent throughout Maryland. The majority of the plans fail to address water quality issues associated with nonpoint sources of pollution and storm water management. Few of the plans consider solutions for any of these problems. Table 4.7 illustrates the findings associated with problem identification in the county water and sewer plans.

- Fifty-eight percent of the plans do not include a description of storm water and nonpoint source pollution problems, despite the fact that the National Pollutant Discharge Elimination System (NPDES) permitting program provides an available means for identifying these types of problems.
- Seventy-nine percent of the plans identify failing septic system problems.
- Thirty-three percent of the counties suggest methods for addressing failing septic system problems.

Table 4. 7 Identification of Water Pollution Problems Results

Identification of Water Pollution / Water Quality: Problems and Solutions						
	Storm Water		***Nonpoint Source***		***Failing Septic Systems***	
	Problem	**Solution**	**Problem**	**Solution**	**Problem**	**Solution**
Included	42%	----	42%	----	79%	33%
Absent	58%	96%	58%	92%	21%	67%
Incomplete	----	4%	----	8%	----	----

N = 24

Adoption dates -

State statutes require that all counties draft and adopt water and sewer plans that conform to regulatory requirements and the locally adopted comprehensive plan. In addition, counties are instructed to review their sewer and water plan every three years. Adoption dates provide an indication of how current the information contained in the plan may be. Under ideal circumstances, plan information would be updated during any plan review process. The recorded plan adoption date typically reflects the general timeframe from which the data was gathered in order to produce the most current plan. However, investigation reveals that the data used to formulate the most recently adopted water and sewer plan is often appropriated from even earlier planning efforts. The following provides a summary of significant findings related to plan adoption dates.

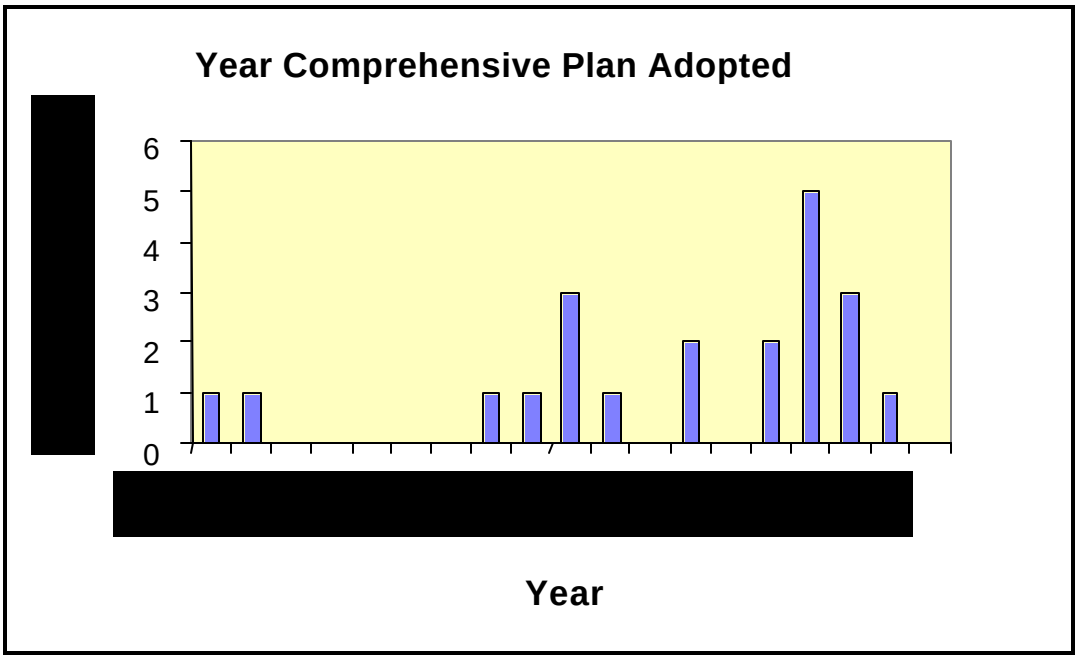
- The average adoption date for local comprehensive plans is 1992.
- Nine out of twenty-four counties adopted their latest comprehensive plan prior to 1993.

The average adoption date for local water and sewer plans is 1993.

- Adoption dates for water and sewer plans range from 1989 through 1997.
- Over one-third of the localities are not in compliance with the required three-year review schedule of water and sewer plans as described by state statutes (Maryland Code, § 9-503).
- In twelve localities, the latest water and sewer plan adoption date precedes the comprehensive plan adoption date. This finding raises questions as to how effectively individual water and sewer plans conform to and support respective comprehensive plans.

Comprehensive Plan adoption date-

Nine local comprehensive plans show adoption dates prior to 1992 even though counties are legally mandated to re-adopt plans every six years. Figure 4.1 displays the distribution of county comprehensive plan adoption dates.

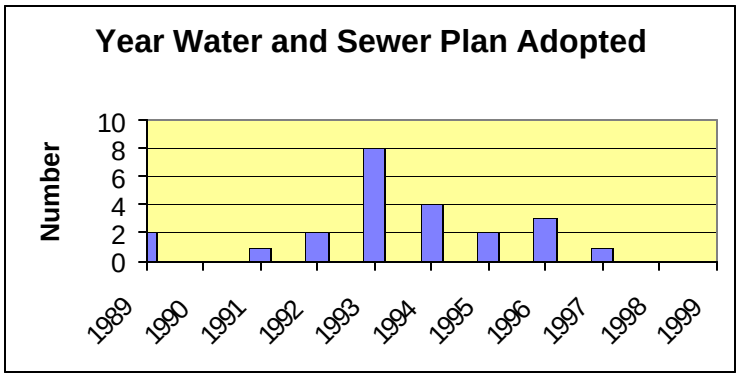


Range:	1981- 1998
Average:	1992
Total:	24

Figure 4. 1 Comprehensive Plan Adoption Results

Water and Sewer Plan adoption date-

Twelve local water and sewer plan adoption dates precede comprehensive plan adoption dates. Regulations require water and sewer plans conform to adopted comprehensive plans. Conformity is jeopardized in cases where significant changes to the comprehensive plan are not addressed in (previously) adopted water and sewer plans. Figure 4.2 displays the distribution of county water and sewer plan adoption dates.



Range:	1989-1997
Average:	1993
Total:	24

Figure 4. 2 Water and Sewer Plan Adoption Results

Water and Sewer Plan Revision date-

State law requires that local water and sewer plans undergo a review process every three years. The purpose of this process is to insure updated plans reflective of change occurring within the locality and supportive of county comprehensive plan objectives. Nine local water and sewer plans were last reviewed prior to 1996, violating the regulatory mandate to update plans every three years.

In addition, most water and sewer plans fail to reflect the incremental changes brought about by the annual amendment and revision process. While counties submit these revisions for state agency review and approval, the existing system lacks any means for recording and tracking these changes (Interview with MOP representative. July, 1999). The present system makes it difficult to determine whether particular water and sewer plans are being implemented as intended

and whether adopted amendments are in conformance with comprehensive plans and growth management goals. This becomes particularly relevant in regard to the delegated role that the planned provision of water and sewer services plays in determining Priority Funding Area designation eligibility.

Required certification documents -

State regulations require certification of water and sewer plans by licensed engineers and local planning officials. In addition, localities must certify, in writing, that proper public hearings have been held and that the water and sewer plan conforms to the locally adopted comprehensive plan. The number and percentage of county water and sewer plans that contain the required certification documents is displayed in Table 4.8.

Table 4. 8 Required Certification Documents Results

Presence of Required Certification Documents				
	Engineer	**Planner**	**Conformance statement**	**Public hearing**
Included	58%	67%	63%	50%
Absent/Unavailable	42%	33%	37%	50%

N = 24

These results demonstrate that:

- Thirty percent of the water and sewer plans lack the required documentation certifying planner and engineer approval.
- Thirty-seven percent of the water and sewer plans lack the required statement describing comprehensive plan conformity.
- Fifty percent of the water and sewer plans lack the required statement that documents appropriate public participation in the planning process.

4.3 Summary of Findings

Review of the data yielded by research efforts demonstrate the following generalizations regarding county water and sewer planning in Maryland:

- Despite specific regulatory guidelines, individual county water and sewer plans vary widely in terms of content, format and relevance.
- Adopted plans often lack critical plan elements.
- Descriptive and statistical information provided is frequently outdated.
- The lack of current, viable information makes it impossible to definitively determine whether the size of the planned sewer area relates well to population projections, density requirements, and the county comprehensive plan.
- Staging designations, as described by agency regulations, constitute the critical planning component for water and sewer plans. Staging designations describe the planned implementation of sewer services. County water and sewer plans frequently do not conform to state regulations defining staging designations.
- Variability among county definitions regarding staging designations is inefficient, unnecessary, and opposes agency regulations.
- In particular instances, there is a lack of consistency between individual county staging definitions and their internal usage within water and sewer plans.
- The current agency procedures, designed to implement an effective revision/review process, are not resulting in adequate water and sewer plans.

Having presented the findings resulting from the water and sewer plan evaluation research, the following chapter explores state agency organizational relationships influencing the current plan approval process.

Chapter 5.

Water and Sewer Plan Approval Process:

Adopted county water and sewer plans can be viewed as the final product (or outcome) resulting from a series of organizational decision making processes involving several participants. The plan approval process, as originally designed and expressed in regulations, is as follows:

- Water and sewer plans are first developed at the local level.
- Local plans are then submitted to DE for review.
- DE forwards the plans to MOP for comments.
- DE receives comments from MOP.
- DE returns the plans to the locality with attendant comments and suggestions.
- Localities revise and resubmit plans.
- Process is repeated until a final plan is approved.
- Locality adopts final water and sewer plan.

Following the adoption of the final plan, regulations require localities to revise their plans every three years. In addition, localities may amend their plans annually.

Thus, the water and sewer plan approval process involves three principal players: DE, MOP, and the individual locality. Decisions made by individuals engaged in the planning process from each of these organizations are influenced by organizationally related environmental forces (Carlisle, 1979, p.59). Operable internal and external environmental variables commonly considered in organizational analysis are those related to economic, technological, political, and socio-cultural conditions.

5.1 Operational Variables Influencing the Water and Sewer Plan Approval Process

Economic -

Localities and state agencies are subject to budgetary restraints. Allocation of resources, in terms of time, money and manpower, is predicated by the availability of financial support. When localities were first required to carry out water and sewer planning, state funding was made

available to assist them in their efforts. While state agency representatives still serve in a consultative capacity, state financing of local water and sewer planning is no longer offered. While engaged in a discussion regarding the inadequacy of current planning efforts, a spokesperson from MOP acknowledged that "localities view water and sewer planning requirements as another unfunded (state) mandate" (Interview with MOP representative. August, 1999). One local government representative inferred, however, that "the problem was more a question of time rather than money" (Interview with [unspecified] county engineer. December, 1999). In either case, resource scarcity was often cited as a contributing factor leading to plan deficiencies.

Technical Expertise and Data Availability-

Water and sewer planning involves the application of scientific data and knowledge to produce an efficient, workable system for providing essential services to clients. In order to be effective, this process requires that an extensive amount of data be collected and processed by professionals representing various fields of expertise. Optimally, the final planning document represents the combined contributions of planners, engineers, and economic managers.

One individual at DE opined that "localities lack the necessary expertise to implement effective water and sewer service planning" (Interview with DE representative. July, 1999). In support of this assertion, the DE spokesperson described how "the 'more rural counties' encounter greater trouble in developing (satisfactory) plans." Analysis of the results of the water and sewer plan evaluation failed to indicate that plan deficiencies are limited to rural localities within the state. Inquiries did reveal that DE agency personnel are available to consult with localities engaged in water and sewer planning. However, the focus of advice is generally limited to the engineering aspects of water and sewer services (Interviews with DE and local representatives. July and December, 1999, respectively).

Representatives from MOP, who are in an excellent position to offer guidance, find themselves mostly removed from the actual planning process (Interview with MOP representative. July, 1999). Input from MOP is, for the most part, restricted to the limited opportunity presented during the plan review period. State planners are given thirty days to

review submitted plans and offer comments to DE. Even then, MOP comments are considered only as suggestions (confirmed by DE and MOP representatives).

In addition to the missed opportunities related to planning expertise, localities would benefit greatly from consultation with MOP concerning the production of required maps. MOP possesses a comprehensive Geographic Information System (GIS) and is willing to share this information with local governments (Interview with MOP representative. August, 1999). This situation presents an opportunity to promote the adoption of a standardized GIS across the state. Such a system would facilitate the collection and distribution of important information and prove valuable to both state and local officials under a wide variety of applications.

Political-

The legislative requirement for Maryland localities to adopt water and sewer plans is, naturally, a result of a series of political decisions. As White contends, "[plans] are proposed, defined, debated, enacted, and funded through political processes, and in implementation they remain subject to pressures-- both supportive and hostile-- that arise out of the play of politics" (White, 1975, p.211). Plan developers, operating within this volatile environment, perform their functions and expect that their actions will be reviewed, and critiqued, by persons inside and outside their organization. Often, plan developers perceive that it is in their best interest to make decisions that reflect the views of their immediate supervisors or that of the prevailing political climate (Nigro, 1984, p.121). The assumption is that local planners will develop plans designed to satisfy the parochial interests of local administrators, who will, in turn, be eager to please constituent interests. Alternatively, state workers would be expected to advance decisions that further the objectives of their agency as described by legislative mandate.

Interviews demonstrated that those involved in the planning process frequently ascribe this type of self-seeking behavior to participants external to their own organization. However, in describing their own actions, respondents did not consider personal gain to be a motivating factor. For instance, state agency personnel were questioned regarding the recurring deficiencies exhibited in approved water and sewer plans. While declining to cite specific examples, a DE

spokesperson explained that, "[local] politics is one of the major reasons counties are resistant to water and sewer planning" (Interview with DE representative. July, 1999). A representative from MOP went further, stating that, "In addition to not having enough resources to conduct [satisfactory] planning, local governments do not really want the state too closely involved in their affairs" (Interview with MOP representative. July, 1999). Localities, on the other hand, expressed frustration with state agencies, claiming that administrators "are not concerned about the constraints they [are] under" and that current regulations "do not allow [counties] enough flexibility" (Interview with [unspecified] county employee. November, 1999).

Evidently, this institutional perception is present within individual organizational arrangements as well. During the course of the study, the author was contacted directly by a newly elected member of a county council. The relevant county was proposing to adopt a revised water and sewer plan, and this person was experiencing difficulty deciphering the document. In addition to seeking assistance, the council member expressed frustration and offered the following unsolicited comments:

> "I can't make heads or tails out of this plan. I have never seen anything so confusing. I don't think they want us to be able to understand it!"

When asked who was meant by 'they' and why these individuals might wish to confuse readers, the council member responded:

> "Everyone…, the county engineers, the planners, and probably some of the other people on the [county] council. I think it is what the developers want. If no one can understand what the (plan) says, they won't be able to object to anything in it."

These remarks illustrate, albeit colorfully, the readiness people have to characterize the intentions of others. Mistrust, arising from this type of suspicion, can negatively affect organizational communication pathways necessary for effectual planning.

Socio-cultural-

Over time, attitudes are adopted and relationships develop among individuals functioning within organizations. In these situations, "shared norms, values, beliefs, and assumptions…[are developed]… including understanding about the nature and identity of the organization, the way work is done, the value and possibility of changing or innovating, relations between lower- and higher- ranking members, and the nature of the environment" (Harrison, 1999, p.46). During the course of the water and sewer analysis project, the author interviewed MOP and DE personnel on several occasions. Discussions with state agency representatives indicate that recognizable relationships and attitudes have emerged with respect to the participants in the water and sewer plan approval process.

DE is the designated lead agency with respect to county water and sewer plan approval. It is the legislative responsibility of this agency to:

- Coordinate with local representatives in the development of county water and sewer plans.
- Receive and review submitted plans, updated (revised) plans, and annual amendments to water and sewer plans.
- Forward submitted plans, updated plans, and plan amendments to MOP for review.
- Receive comments on submitted plans, updated plans, and plan amendments from MOP.
- Incorporate DE and MOP comments and suggestions and construct recommendations for counties to address through plan revisions.
- Present final approval for county water and sewer plans, updated plans, and plan amendments.

In addition, counties must apply for a permit from DE before constructing or substantially altering sewer service facilities or discharge rates. Counties also seek agency support when requesting state funding for capital improvements.

Acting in their role as lead agency, DE staff members work closely with county employees in the development and approval of water and sewer plans. Consequently, relationships have developed between agency representatives and county employees. Conceivably, these

relationships form the basis for the conciliatory tone that DE representatives demonstrate when questioned about deficiencies exhibited by current county water and sewer plans. Initially, DE respondents listed the difficulties encountered by localities engaged in the planning process (i.e. lack of funding, time, expertise). When asked directly about the current state of water and sewer plans and DE's responsibility with regard to these plans, the representative being addressed shifted the conversation to the methods presently employed by the agency to affect the planning process.

> "We see the [COMAR] regulations more as guidelines than regulations to be followed. When counties request a permit we encourage them to do [water and sewer] planning and then make a determination...also, as they do capital improvement planning we encourage them to do water and sewer planning." (Interview with DE representative. August, 1999)

Further conversations with DE personnel focused on the water and sewer plan update process and annual plan amendment procedures. One DE representative related that some counties had updated their plans but "[these] updates were not necessarily on the books yet." Regarding the amendment process, another representative volunteered that "the state reviews annual [plan] updates and this gives [DE] and MOP a chance to provide input at this time" (Interviews with DE representative. August, 1999).

When follow-up questions were presented, it became clear that the legislative and regulatory requirements related to the timely updates of water and sewer plans are generally being disregarded. No agency mechanism tracks when county plans are due for revision. Under the current system, no consequences ensue if counties fail to revise their water and sewer plans as required by COMAR.

State regulations afford counties the opportunity to amend their water and sewer plans on an annual basis. This option serves a dual purpose. First, localities are allowed the flexibility of making changes and additions to their plans as necessary. Second, the amendment process permits state agencies the opportunity to review and stay abreast of proposed changes and

additions to county plans. Interviews with DE personnel suggest limitations connected with this process as currently implemented. At present, DE is sent a copy of the water and sewer plan amendments following adoption by the county. Obviously, this scenario provides little opportunity for meaningful involvement by state agencies. Moreover, amendments are generally written descriptions of proposed changes. It is up to state agency personnel to relate these amendments to the respective county water and sewer plans and plan maps. DE keeps a record of adopted county amendments on file. However, apparently no effort is made to track these changes and verify consistency between amendments and adopted county water and sewer plans (Information obtained through interviews with DE representatives. August, 1999).

Interviews conducted with MOP officials, regarding county water and sewer planning, revealed significantly different attitudes from those held by DE representatives. Agency representatives were quick to point out what they perceived to be problems with the current plan development and approval process. In addition to citing specific examples of plan deficiencies, agency personnel expressed frustration that "required plan updates are not being completed" (Interview with MOP representative. August, 1999). MOP representatives also cited lack of coherent staging elements as particularly problematic. One representative related the following experience:

> "We [MOP] decided to do our own internal audit of the [county] water and sewer plans…we wanted to compare DE's flow allocation tables to the sewer plans to see what might be needed. We found the plans [to be] way out of date…we couldn't make a relationship between the plans and the reports…we couldn't determine what the counties were intending to do." (Interview with MOP representative. August, 1999)

Another MOP official opinion centered on the Priority Funding Area designation process:

> "Priority Funding Areas are required to be in [county] certified Designated Growth Areas and either have [sewer] service or plans to provide

> service. Since the [water and sewer] plans were never updated we couldn't analyze if there was a need for sewer service in the [proposed] area or if it met the Priority Funding Area requirements." (Interview with MOP representative. August, 1999).

Another MOP official decried the fact that "the time frame (described in county plans) is ignored…facilities are built and services are extended as a result of development funding and not the plan. We have discovered projects completed that are said to be planned and have seen projects proposed that are not even on the plan" (Interview with MOP representative. August, 1999). When asked about the opportunity presented by the capital improvement process, one agency interviewee responded that, "there is no financial estimate in the [current] plans…they are not connected to the capital improvement plan" "(Interview with MOP representative. August, 1999).

Additional comments from MOP representatives indicated that the present condition of county water and sewer plans inhibits them from efficiently performing their duties with regard to the water and sewer plan approval process. These officials clearly stated that they would welcome changes to the current process. When engaged in informal conversation, agency representatives indicated that they feel excluded and/or unable to access the water and sewer planning process properly. "We offer our comments on the [submitted] plans when we get a chance to, but there is no requirement for DE to follow them" "(Informal conversation with MOP representative. July, 1999). While some personnel expressed resignation, agency representatives did state that they hoped for a change in the current process. However, they were unsure of how or when that change might come about.

The following chapter describes the conclusions and recommendations developed in response to the conducted research project.

Chapter 6.

Conclusions and Recommendations:

The effectiveness of county designated Smart Growth Priority Funding Areas depends directly on the adequacy of county water and sewer plans. Well-planned availability and expansion of sewer service helps ensure that county Priority Funding Areas are the appropriate size, are located properly, and represent an orderly expansion of growth within the locality. The importance of public sewer service not only holds true for the initial county designation of Priority Funding Areas, but also for the future expansion of these areas. The expansion of sewer service largely determines where and when Priority Funding Areas expand and whether these extensions represent an orderly expansion of growth (Maurer et al, 1999, p.9).

At the time of their original development, county water and sewer plans clearly marked a major step forward in terms of community planning in Maryland. Strong support, in the form of state funding and agency expertise, helped insure the formulation of high-quality plans that reflected consistency with regulatory requirements (Interview with DE representative. August, 1999). Given that the original impetus for initiating water and sewer planning was to insure adequate provision of services, it is not surprising that regulatory requirements reflect an emphasis on engineering and financial aspects of planning rather than growth management. Nevertheless, various elements, including designation of potential problem areas, comprehensive plan conformance requirements, and requisite local planner and public participation indicate an original intent by regulators to use water and sewer planning as a tool for the promotion of orderly growth for localities across the state. Indeed, the stated goals, as described in the majority of the water and sewer plans, convey the intention of county planners to direct growth in a manner that would be generally consistent with current Smart Growth policies. However, the breadth and prevalence of deficiencies exhibited by the water and sewer plans argue against the capability of these plans to promote Smart Growth.

This chapter examines the regulatory requirement deficiencies revealed by the water and sewer plan evaluation study and recommends improvements to the current plan approval process.

6.1 Water and Sewer Plan Evaluation Conclusions

Adequacy of Maryland Water and Sewer Planning Agency Regulations -

A comprehensive review of the current COMAR requirements related to local water and sewer planning demonstrates that these regulations do provide the necessary basic elements by which counties may engage in effective and satisfactory water and sewer planning (see Appendix C). Regulatory requirements address a broad range of relevant factors and provide for coherent assessments of (present and future) service capacity and demand. In addition, plans meeting these requirements enable localities to relate these requirements to existing and planned provision of services. Regulations requiring that water and sewer plans demonstrate conformity with county comprehensive plan objectives offer the potential for these documents to support the Smart Growth initiatives.

Regulatory Consistency of Adopted County Water and Sewer Plans -

The results of the water and sewer plan evaluation study demonstrate that individual county water and sewer plans vary widely in terms of form, substantive content, and relevant value. Further, the research reveals a demonstrable lack of consistency between agency requirements and county water and sewer planning documents. For instance, COMAR requirements describe a specific format to be used in the development of water and sewer plans. Chapters to be included and the contents of each chapter are explicitly defined. If uniformly followed, agency regulations would provide planners and administrators a useful and coherent document with which to plan for the provision of services. In addition, resulting plans would be easier to review and offer greater accessibility to citizens. Examination of the water and sewer plans confirms these assertions. The water and sewer plans for Charles and Carroll counties adhere closely to the mandated format. The plans, drafted in a manner closely conforming with regulatory requirements, convey required information to the reader in an effective and consistent manner. Relationships between water and sewer planning and comprehensive planning are easily discernible. The planned provision of services readily relates to predicted demand. The reader is

able to quickly locate desired information. Conversely, the Frederick County plan demonstrates the problems presented to readers confronted with a disordered document. Lacking even a table of contents, it proved difficult and time consuming to verify whether required information had been included in the plan. It is readily apparent that disorganization causes plans to become severely limited in terms of their ability to function as useful planning documents.

Demonstrated inconsistencies between COMAR requirements and individual planning documents are by no means restricted to isolated examples. Rather, variance from regulations is a recurrent feature exhibited throughout the plans. As the water and sewer plan evaluation results show, critical elements related to demographic information, maps, flow projections, and financial management strategies are repeatedly omitted from adopted planning documents.

Another troubling finding is that much of the information provided in submitted planning documents is severely outdated. For example, Anne Arundel and Caroline county plans include projection figures "forecasting" conditions in 1995. This is despite the fact that both plans were adopted after 1996. The Somerset County plan, although re-adopted in 1989-1990, is essentially the same plan that was adopted in 1986. Information contained in the plan offers little value to planners today, other than providing a source of historical data and perspective. Interestingly, a statement included in the Somerset County Comprehensive Plan declares that, "the current [county] water and sewer plan should either be replaced with a more workable plan or…its recommendations should be actively followed."

Another significant pattern of inconsistency demonstrated by the county water and sewer plans relates to the use of staging ("S") designations. As previously discussed in Chapter 4, the "S" designation system is the method planners are instructed to use in describing the existing and anticipated provision of services within the water and sewer planning document. Failure to adhere to the described system causes difficulties for state agency personnel charged with the responsibility of interpreting various county designation adaptations. State agency representatives describe how they have been forced to develop a "key" which allows them to decipher the assorted designation methods employed by different county planners. These representatives state that failure to utilize this simple classification system in a consistent manner has been a source of

continuing frustration, confusion, and inefficiency (Interview with MOP representative. August, 1999).

To summarize, examination of currently adopted county water and sewer plans demonstrates the presence of recurring deficiencies. These include:

- A failure on the part of planners to comply with specific COMAR requirements,
- A lack of vital required elements necessary for effective planning and plan evaluation,
- Frequent reliance upon outdated information,
- Inconsistent use of uniform and coherent staging designations by which the projected provision of services may be anticipated,
- The absence of current financial management strategies for the provision of services.

These findings suggest that, in general, current county water and sewer plans are incapable of functioning as effective planning tools. These plans fail to serve localities engaged in planning for uniform and efficient growth within their communities or provide state agencies an effective means for assisting counties in their endeavor to realize the concepts and visions embodied by adopted Smart Growth legislation. Further, lack of complete and adequate information may lead to the nomination and approval of inappropriately sized Priority Funding Areas. At the least, inefficiency and frustration will likely mark the designation and approval process as program participants attempt to assess the accuracy, relevancy, and significance of provided data. State agency representatives and local planners will both benefit if regulatory requirements are adhered to in future plan development.

6.2 Recommendations for Improving the Current Water and Sewer Planning Process

The following recommendations are intended to suggest methods that may improve the current water and sewer planning process.

Agency Processes and COMAR Regulations –

Current agency regulations provide a basis from which to develop an effectual planning process. Water and sewer planning efforts will prove much more useful and efficient if the following suggestions are implemented.

- Procedures for agency review and approval should be strengthened to insure so that resultant water and sewer plans are consistent, coherent, complete, and remain viable over time.
- In order to gain approval, water and sewer plans should be required to demonstrate compliance with requirements as set forth by current regulations.
- Current COMAR regulations should be reviewed and individual elements updated as necessary.
- Enforcement mechanisms, including specified penalties for failure to adhere to regulations, should be clearly defined.
- Priority Funding Area designation approval within localities should be contingent on the adoption of a regulatory compliant water and sewer plan.
- Provisions should be made within agency regulations to explicitly define update strategy requirements. The current system allows water and sewer plans to become outdated and irrelevant over a relatively short period of time.
- A coherent system for tracking changes that result from amendments and updates should be developed. This will allow those participating in the planning process to discern whether individual actions and incremental decisions are providing support to the original goals and intentions of the water and sewer plan.
- A uniform method for the recording and displaying of spatial information should be developed and implemented by the Maryland Office of Planning and adopted as part of water and sewer planning regulations.

- An emphasis should be placed on the planning aspects provided by water and sewer service planning. The Maryland Office of Planning should become the lead agency in this regard. The Department of the Environment would insure that water and sewer plans continue to meet service capacity requirements.
- Procedures that foster interagency cooperation should be implemented.
- Methods to insure agency accountability, in regard to legislative duties and responsibilities, should be instituted.

County Water and Sewer Plans

- All county water and sewer plans should undergo a thorough and comprehensive revision process. Supported in earlier efforts by agency funding and expertise, counties now have the experience by which to conduct competent water and sewer planning. Agency support should continue to be extended to the counties as they engage in this plan modification process.
- In particular instances, counties have developed excellent water and sewer plans (e.g. Howard, Charles, Wicomico). These examples should be updated immediately. These plans could serve as models or templates for the remaining counties, fostering consistency and conformance among the various county water and sewer plans.
- Plans containing individual county interpretations of staging designations should no longer be approved. Conformity among the various water and sewer plans in this respect is critical. Priority Funding Area approval should be contingent on the use of regulatory described staging designations both in county water and sewer plans and maps.
- The current use of GIS technology has advanced to the stage where congruity between systems is vital. Methods by which maps illustrating existing and planned water and sewer systems for the various counties should be digitally recorded in a uniform manner. This will enable each county to stay abreast of its present circumstances and track changes as they occur within the locality.

6.3 Recommended Additional Research

The thesis uncovers the need for additional research concerning Maryland water and sewer planning processes and legislation. Recommended research topics and projects include:

1.) A comprehensive review of the current water and sewer regulations should be made. The study would examine adopted agency regulations in order to determine the presence of omissions or deficiencies and establish conformance levels to newly adopted growth management legislation.

2.) A determination should be made as to whether the most recent locally adopted water and sewer plans are concurrently deposited at the Maryland Office of Planning library. It is essential that this state repository's holdings reflect the most current version of all planning documents so that interested parties have facilitated access to current documents.

3.) An analytical investigation of the current water and sewer plan review, update, and adoption process should be conducted. Actual organizational and administrative practices and procedures currently employed to coordinate this process would be examined for adequacy and potential enhancement so that the development and adoption of adequate water and sewer plans results.

4.) A project examining the status of the information and mapping program being implemented by the Maryland Office of Planning should be undertaken. Particularly relevant points to be considered would include:

- Does the system result in statewide consistency of information?
- Does the system compatibly and effectively incorporate water and sewer planning information?
- Has a strategy been developed to ensure that various changes, revisions and adopted amendments will be included in resulting databases?

5.) A final suggested project is one that would track the various amendments and revisions that have been attached to individual county water and sewer plans in order to determine whether these changes reflect the described goals and intentions of adopted comprehensive plans and water and sewer plans.

6.4 Conclusion

The recent adoption of the Smart Growth legislative initiatives demonstrates Maryland's continued commitment to actively engage in growth management at the state level. The Smart Growth programs are designed to augment, and work in concert with, previously implemented growth management strategies, including local water and sewer and comprehensive planning. Maryland's ability to effectively direct and control growth in a desirable manner will depend on the integrity and support of each of these planning program elements.

The Smart Growth Areas Act represents the cornerstone of the newly adopted initiatives. Successful implementation of this program is dependant on the appropriate delineation of Priority Funding Areas. Priority Funding Areas that are incorrectly sized or improperly located could facilitate state funding of undesirable urban expansion. Effective implementation of the Smart Growth Areas Act and Priority Funding Area designation depends, in part, on planners obtaining accurate information from county water and sewer plans. Agency regulations currently describe requirements that, if followed, would lead to the development of adequate planning documents. However, the present plan approval process is resulting in the adoption of deficient plans. The current situation indicates that a thorough review of the water and sewer plan approval process is warranted. It is essential that adjustments to the current approval process be implemented so as to ensure the formulation of water and sewer plans of a quality sufficient to enable localities to plan for the provision of adequate, efficient, and economical services and capable of supporting the Smart Growth initiatives.

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Appendix A

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Instrument

Appendix A

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Instrument

Item- Field/Attribute list for: Water and Sewer Plan Evaluation and Spreadsheet

This product represents the field evaluation instrument used for the collection of data for the thesis project and is designed to be used in conjunction with a pre-formatted Excel spreadsheet. Questions are grouped categorically within the evaluation instrument. These same groups are reflected in the "results" section of the thesis and are identified by underlined script. Independent variable names and identification numbers are provided in smaller bolded font, followed by the respective evaluative question posed and a listing of potential responses. Appropriate explanations of potential response categories are provided as "notes" throughout the instrument. Data collected from the implementation of the evaluation instrument is recorded in Appendix B.

County Identification-

01.) County
Name of County (Attribute: Text)

Planning Status-

02.) Comp
Is there an adopted comprehensive plan completed for the county?
1= Yes 0= No

03.) Compdate
Date of comprehensive plan adoption.
4-digit year, 0000= N/A (no plan)

04.) Wsplan
Is there an adopted water supply and sewerage plan (W/S plan)?
1= Yes 0= No

05.) Adopt
Date of W/S plan adoption.
4-digit year, 0000= N/A (no plan)

Procedures-

Note: *An "Undetermined" response registered for evaluation questions in this category indicates that the required document is referred to in the plan but not present or included document lacks required signatures.*

06.) Pub
Does the plan demonstrate that adequate public hearings were conducted prior to adoption of the most recent version?
1= Yes 0= No 2= undetermined 3=N/A

07.) Eng
Is engineering approval of the plan documented?
1= Yes 0= No 2= undetermined 3=N/A

08.) Plnr

Is local planner approval of the plan documented?

1= Yes 0= No 2= undetermined 3=N/A

09.) Confstat

Is there a statement confirming that the plan conforms to the comprehensive plan?

1= Yes 0= No 2= undetermined 3=N/A

Revision Dates-

10.) Rev98

Has a revision or amendment been completed for 1998?

1= Yes 0= No 2= undetermined 3=N/A

11.) Revdate

What is the last date a revision/ amendment has been completed?

4 digit year, 0000= N/A 2= undetermined

Required Physical Maps-

12.) Phymap

Are maps present showing aquifers, soil drainage, topography, ground and surface water patterns?

1= Yes 0= No 2= incomplete

13.) Potprob

Are potential problem characteristics present?

1= Yes 0= No 2= undetermined

14.) Watqual

Is a map or table showing water quality criteria provided?

1= Yes 0= No

15.) Popdens

Is a map showing projected population density and distribution provided?

1= Yes 0= No

16.) Compmap

Is a map showing existing land use, zoning, and adopted comprehensive development plan presented?

1= Yes 0= No 2= incomplete

Required Public Facilities Elements-

Note: *For questions 18 thru 20, a potential response category "N/A" was introduced. This allowed the interviewer to acknowledge and record instances where negative responses to associated preceding questions dictate a negative response to the ancillary question.*

17.) Facmap

Is a map showing existing public facilities and institutions presented?

1= Yes 0= No 2= incomplete

18.) Facpop

Does this map show approximate populations of these facilities?

1= Yes 0= No 2= incomplete 3= N/A

19.) Propfac

Does the same map show proposed facilities?

1= Yes 0= No 2= incomplete 3= N/A

20.) Proppop

Does the same map show approximate populations for proposed facilities?

1= Yes 0= No 2= incomplete 3= N/A

21.) Servfut

Is a map showing county's "areas to be served by the community facilities" included?

1= Yes 0= No 2= incomplete

Demographic Data-

22.) Tab1

Is Table No.1 (Population Projections) as described by regulations provided?

1= Yes 0= No 2= incomplete

23.) Tab2

Is Table No. 2 (Land in County) as described by regulations provided?

1= Yes 0= No 2= incomplete

Capacity, Demand, and Flow Rate Descriptions–

Note: *For questions 27, 30, 33, and 36 a potential response category "N/A" was introduced. This allowed the interviewer to acknowledge and record instances where negative responses to associated preceding questions dictate a negative response to the ancillary question.*

24.) Comar

Does the plan demonstrate how sewerage facilities will or does provide for conformance with effluent limitation standards specified under COMAR 26.08.03.01 DE.

1= Yes 0= No 2= incomplete

25.) Sewdisc

Is a description of the existing and planned community and multi-use sewerage systems provided?

1= Yes 0= No 2= incomplete

26.) Tab9

Is Table 9 (Projected sewerage demand and planned capacity) provided?

1= Yes 0= No 2= incomplete

27.) Demex

Are present demands exceeding present capacity at any public sewer system?

1= Yes 0= No 2= undetermined 3= N/A

28.) Demexno

How many systems are experiencing exceeded demands?

Note: *Recorded value equals number of instances. No value is recorded if answer is undetermined or not applicable*. (Attribute: 2 digit general number)

29.) Shorttot

Total amount of demonstrated shortfall for all systems.

Note: *Answer is in millions of gallons per day (MGD). No value is recorded if answer is undetermined or not applicable*. (Attribute : 6 digit decimal number)

30.) Capex

Does present capacity exceed present demands?

1= Yes 0= No 2= undetermined 3= N/A

31.) Capexno

Number of systems where capacity exceeds demands?

Note: *Recorded value equals number of instances. No value is recorded if answer is undetermined or not applicable*. (Attribute: 2 digit general number)

32.) Overtot

Total amount of demonstrated overage.

Note*: Answer is in millions of gallons per day (MGD). No value is recorded if answer is undetermined or not applicable*. (Attribute : 6 digit decimal number)

33.) Prodemex

Do projected demands exceed projected capacity?

1= Yes 0= No 2= undetermined 3= N/A

34.) Prodemno

Number of systems that demand is anticipated to exceed capacity.

Note: *Recorded value equals number of instances. No value is recorded if answer is undetermined or not applicable*. (Attribute: 2 digit general number)

35.) Prodemtot

Total amount of anticipated shortfall?

Note: *Answer is in millions of gallons per day (MGD). No value is recorded if answer is undetermined or not applicable*. (Attribute : 6 digit decimal number)

36.) Procapex

Does projected capacity exceed projected demand?

1= Yes 0= No 2= undetermined 3= N/A

37.) Procapno

Number of systems where capacity is anticipated to exceed demand.

Note: *Recorded value equals number of instances. No value is recorded if answer is undetermined or not applicable*. (Attribute: 2 digit general number)

38.) Procaptot

Total amount of exceeded capacity.

Note: *Answer is in millions of gallons per day (MGD). No value is recorded if answer is undetermined or not applicable*. (Attribute : 6 digit decimal number)

Problem Identification–

Note: *Questions 43 and 44 record qualitative evaluations made by the reviewer.*

39.) Storm

Are water quality problems due to storm outfall identified?

1= Yes 0= No 2= incomplete

40.) Nps

Are water quality problems due to non-point sources identified?

1= Yes 0= No 2= incomplete

41.) Probid

Are problem areas identified?

1= Yes 0= No 2= incomplete

42.) Priority

Are immediate, five-year, and ten-year priorities for sewage system development described?

1= Yes 0= No 2= incomplete 3= N/A

43.) Pcompga

Do the priorities identified compare well with growth areas?

Scale of 1-5, 1 = compares very well. 0= N/A 6= can't determine.

44.) Pcomppa

Do the priorities identified compare well with problem areas?

Scale of 1-5, 1 = compares very well. 0= N/A 6= can't determine.

Marina Inventory–

Note: *Information derived from questions in this category is not considered by the present study.*

45.) Marina

Are basic planning concepts for marinas presented?

1= Yes 0= No 3= N/A

46.) Marinv

Is an inventory for problem marinas provided?

1= Yes 0= No 2= incomplete 3= N/A

Staging ("S") Designations-

Note: *For questions 48 thru 53 a potential response category "N/A" was introduced. This allowed the interviewer to acknowledge and record instances where negative responses to associated preceding questions dictate a negative response to the ancillary question. Further, questions 51 thru 53 introduce an ascending scalar system of measurement used by the reviewer to make qualitative evaluations.*

47.) Sused

Are "S" designations used in the plan?

1= Yes 0= No 2= incomplete

48.) Ssame

Are "S" designations used in the same manner as described by COMAR?

1= Yes 0= No 2= incomplete 3= N/A

49.) Smap

Are "S" designations present on the map?

1= Yes 0= No 2= incomplete 3= N/A

50.) Symb14

Does the map reflect the table 14 symbols?

1= Yes 0= No 2= incomplete 3= N/A

51.) Sgrwth

Do the "S" designations reflect the comprehensive plan growth development areas?

Scale of 1-5, 1 = compares very well. 0= N/A 6= can't determine

52.) Scapac

How well do "S" designations correspond with capacity projections?

Scale of 1-5, 1 = compares very well. 0= N/A 6= can't determine

53.) Sprob

How well do "S" designations correspond with problem areas identified?

Scale of 1-5, 1 = compares very well. 0= N/A 6= can't determine

Comparison Queries-

Note: Q*uestions 54 thru 56 introduce a scalar system of measurement used by the reviewer to make qualitative evaluations. The system is self-explanatory by the range of answers provided. A recorder response of N/A indicates insufficient data resources for evaluation determination.*

54.) Pclrcomp

Does the plan clearly relate to the comprehensive plan?

1= Yes 2= Somewhat 0= No 3=N/A

55.) Pclrpop

Does the plan make it clear whether sewer service area correlates with population growth?

1= Yes 2= Somewhat 0= No 3=N/A

56.) Sewsize

Considering land use, zoning, population projections, etc., as best that can be determined, are designated sewer areas too big or too small?

1= Adequate 2= Over expansive 3= Inadequate 4= Undetermined

Non-interim water/sewer systems (.05)-

Note: *Information derived from questions in this category is not considered by the present study.*

57.) NonIn6

Are non-interim individual sewer systems allowed in S-6 areas?

1= Yes 0= No 2= undetermined 3=N/A

Note: *No would signify greater restrictions then required by DE.*

58.) NonIn5

Are non-interim individual sewer systems allowed in S-5 areas?

1= Yes 0= No 3=N/A

59.) NonLow

Are non-interim individual sewer systems allowed in lower scaled areas?

1= Yes 0= No 3=N/A

Note: *Yes would signify a violation of regulations.*

60.) Intpln

Note: Evaluation question rejected.

Septic Systems-

Note: *Information derived from these questions are reported under the problem identification category in the results section of the thesis..*

61.) Failsep

Are failing septic systems noted?

1= Yes 0= No 3=N/A

62.) Failsol

If the answer to question 61 is yes, are these problems addressed?

1= Yes 0= No 3=N/A

Financial Management-

Note: *For questions 65 and 66 a potential response category "N/A" was introduced. This allowed the interviewer to acknowledge and record instances where negative responses to associated preceding questions dictate a negative response to the ancillary question. IN addition, a recorded response of "cannot be determined" signifies that while information related to financial management is provided, it is either inadequate or too far out of date to make a reliable determination.*

63.) Finpln

Is a financial management plan for the sewerage system included in the document?

1= Yes 0= No

64.) Finspec

Is there a financial schedule (F/S) for each self-contained, publicly owned sewer system?

1= Yes 0= No

65.) Finadqp

Does each F/S demonstrate adequate fiscal resources are available to support the operation, maintenance and repair of each system?

1= Yes 0= No 2= cannot be determined 3=N/A

66.) Finadqf

Does each F/S demonstrate adequate fiscal resources are available to support the operation, maintenance and repair of future systems?

1= Yes 0= No 2= cannot be determined 3=N/A

Flow Data-

67.) Tab15

Is the necessary flow data presented in Table 15 (if not included in Tables 9 and 10), as required under COMAR?

1= Yes 0= No 2= cannot be determined 3=N/A

68.) Tab15a

Is the necessary flow data presented in Table 15a (if not included in Tables 9 and 10), as required under COMAR?

1= Yes 0= No 2= cannot be determined 3=N/A

Appendix B

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Adoption				Required Certification				Revision Date	
1	2	3	4	5	6	7	8	9	10	11
County	Comp	Compdate	Wsplan	Adopt	Pub	Eng	Plnr	Confstat	Rev98	Revdate
Allegany	1	1995	1	1993	2	0	0	1	0	2
Anne Arundel	1	1997	1	1996	1	1	1	1	0	2
Baltimore City	0	0	1	1995	0	1	2	0	0	1995
Baltimore County	1	1990	1	1997	2	0	1	0	0	1997
Calvert	1	1997	1	1993	1	1	1	0	0	1993
Caroline	1	1991	1	1992	0	0	1	1	0	1992
Carroll	1	1989	1	1994	1	1	1	1	0	1994
Cecil	1	1990	1	1993	1	0	0	0	0	2
Charles	1	1997	1	1994	2	2	1	1	0	1994
Dorchester	1	1996	1	1994	1	1	1	1	0	1997
Frederick	1	1998	1	1995	0	0	0	0	1	1998
Garrett	1	1995	1	1992	1	1	1	1	0	1997
Harford	1	1996	1	1996	1	1	1	1	1	1998
Howard	1	1990	1	1993	1	1	1	1	1	1998
Kent	1	1996	1	1993	0	1	1	1	0	1993
Montgomery	1	1993	1	1989	0	1	0	0	0	1986
Prince George's	1	1982	1	1994	0	0	0	0	0	1994
Queen Anne's	1	1993	1	1996	0	1	1	1	0	1997
St. Mary's	1	1988	1	1993	0	0	0	0	0	1997
Somerset	1	1996	1	1989	0	1	0	0	0	2
Talbot	1	1996	1	1993	1	1	1	1	0	2
Washington	1	1981	1	1991	1	0	1	1	0	1994
Wicomico	1	1982	1	1993	1	1	1	1	1	1998
Worcester	1	1998	1	1994	1	0	1	1	1	1998

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Required Map Elements					Required Public Facilities Elements				
1	12	13	14	15	16	17	18	19	20	21
County	Phymap	Potprob	Watqual	Popdens	Compmap	Facmap	Facpop	Propfac	Proppop	Servfut
Allegany	2	2	0	1	2	0	0	0	0	1
Anne Arundel	1	1	1	0	2	1	0	1	0	0
Baltimore City	2	3	1	1	2	2	0	0	0	1
Baltimore County	1	1	0	0	2	2	3	2	3	2
Calvert	1	0	1	0	0	0	3	3	3	1
Caroline	2	1	1	0	1	0	3	3	0	1
Carroll	2	0	0	1	2	1	0	0	0	0
Cecil	1	1	0	0	1	1	0	0	3	1
Charles	2	2	0	1	0	0	3	0	3	0
Dorchester	0	1	1	0	0	0	3	0	3	1
Frederick	2	1	0	0	2	1	0	0	3	1
Garrett	1	1	1	0	1	1	0	0	3	1
Harford	0	2	1	0	0	1	0	1	3	1
Howard	1	1	1	1	1	1	1	0	3	1
Kent	2	1	0	0	0	0	3	0	3	0
Montgomery	1	1	1	1	0	0	3	0	3	0
Prince George's	1	1	1	1	0	0	3	0	3	0
Queen Anne's	1	1	0	1	1	1	1	0	3	1
St. Mary's	1	1	0	0	1	1	1	0	3	1
Somerset	2	1	1	0	1	2	0	0	0	1
Talbot	0	1	0	0	0	0	3	0	3	1
Washington	1	0	1	0	0	1	1	0	3	1
Wicomico	1	1	1	1	1	1	1	0	3	1
Worcester	2	1	1	1	1	0	3	0	3	1

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Demographic Data		Capacity, Demand, and Flow Rate Descriptions								
1	22	23	24	25	26	27	28	29	30	31	32
County	Tab1	Tab2	Comar	Sewdisc	Tab9	Demex	Demexno	Shorttot	Capex	Capexno	Overtot
Allegany	1	0	0	1	1	0	0	0	1	4	10.82
Anne Arundel	1	1	1	1	2	3			3		
Baltimore City	1	1	2	0	1	3			3		
Baltimore County	1	2	0	2	1	3			3		
Calvert	0	1	0	1	1	0			1	9	0.84
Caroline	1	1	0	1	2	0			1	1	0.013
Carroll	1	1	1	1	1	0			1	8	3.76
Cecil	1	1	1	1	2	1	1	0.43	1	11	4.584
Charles	1	1	1	1	2	0			1	8	10.66
Dorchester	1	1	1	1	2	1			1		
Frederick	1	1	0	1	1	1	2	0.441	1	14	7.095
Garrett	1	1	1	1	1	2			2		
Harford	1	0	1	1	1	1	1	0.03	1	4	4
Howard	1	1	1	1	1	0			1	2	4.64
Kent	1	1	0	2	2	0			1	9	0.59
Montgomery	2	2	1	2	2	2			2		
Prince George's	1	0	1	0	2	0			1	4	28.75
Queen Anne's	1	1	1	1	2	2			3		
St. Mary's	1	1	1	1	2	3			3		
Somerset	1	1	1	1	2	3			3		
Talbot	1	2	2	2	2	0			1	5	0.219
Washington	1	1	2	1	1	0			1	12	6.013
Wicomico	1	1	2	0	2	0			1	5	1.74
Worcester	1	1	1	1	1	0			1	5	2.222

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Capacity, Demand, and Flow Rate Descriptions continued						Problem Identification			
1	33	34	35	36	37	38	39	40	41	42
County	Propdemex	Propdemno	Propdemtot	Procapex	Procapno	Procaptot	Storm	Nps	Probid	Priority
Allegany	1	1	0.05	1	7	9.95	0	0	0	1
Anne Arundel	3			3			0	9	1	0
Baltimore City	3			3			1	2	1	0
Baltimore County	3			3			1	0	1	2
Calvert	0			1	9	1.273	0	0	1	1
Caroline	3			3			0	0	1	1
Carroll	3			3			0	0	1	1
Cecil	3			3			1	1	1	2
Charles	0			1	5	6.57	0	0	1	2
Dorchester	3			3			1	1	1	1
Frederick	1	10	2.71	1	5	1.318	0	0	1	2
Garrett	2			2			1	1	1	1
Harford	0			1	3	8.22	0	0	0	1
Howard	0			1	2	3.24	0	0	1	1
Kent	1	1	0.01	1	8	0.27	0	0	1	1
Montgomery	0			0			1	1	1	2
Prince George's	0			0			0	0	0	0
Queen Anne's	3			3			0	0	1	0
St. Mary's	3			3			0	1	1	0
Somerset	3			3			1	1	1	2
Talbot	3			3			1	1	1	1
Washington	0			1	12	5.012	0	0	1	1
Wicomico	0			1	4	1.08	1	1	1	1
Worcester	1	1	0.01	1	4	1.973	1	1	1	1

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Problem Id continued		Marina Inventory		Staging ("S") Designations						
1	43	44	45	46	47	48	49	50	51	52	53
County	Pcompga	Pcomppa	Marina	Marinv	Sused	Ssame	Smap	Symb14	Sgrwth	Scapac	Sprob
Allegany	6	6	3	3	1	1	0	2	6	6	6
Anne Arundel	6	1	0	0	1	0	0	6	6	6	6
Baltimore City	0	0	0	1	0	0	0	1	0	0	0
Baltimore County	6	6	0	0	0	3	3	1	3	3	3
Calvert	3	1	1	0	0	3	3	1	0	0	0
Caroline	1	5	1	1	1	1	1	1	1	0	5
Carroll	1	1	0	0	1	1	1	1	1	1	2
Cecil	2	4	0	1	0	3	1	1	2	6	4
Charles	6	6	1	1	2	3	3	3	3	3	3
Dorchester	1	1	1	1	1	1	1	1	1	1	1
Frederick	6	6	0	1	1	1	1	1	6	6	6
Garrett	1	1	3	3	1	1	1	1	1	1	3
Harford	1	3	0	0	1	0	1	1	2	2	6
Howard	1	2	0	3	1	0	3	1	0	1	1
Kent	1	3	1	0	0	0	0	0	3	3	3
Montgomery	0	0	0	0	2	3	3	3	6	6	6
Prince George's	0	0	0	0	0	0	0	0	0	0	0
Queen Anne's	0	0	1	0	1	1	1	1	1	2	2
St. Mary's	0	0	1	1	2	0	1	1	6	6	6
Somerset	1	1	1	1	1	1	1	1	1	1	1
Talbot	2	3	1	1	2	0	2	0	3	3	3
Washington	1	1	3	3	1	0	1	1	1	1	1
Wicomico	1	1	3	3	1	2	1	1	1	1	2
Worcester	2	2	1	1	1	0	1	1	2	2	2

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Comparison Queries			Non-interim Systems			Septic Systems	
1	54	55	56	57	58	59	61	62
County	Pclrcomp	Pclrpop	Sewsize	Nonln6	Nonln5	Nonlow	Failsep	Failsol
Allegany	2	0	2	2	2	2	1	2
Anne Arundel	0	0	4	2	2	2	1	0
Baltimore City	3	3	4	3	3	3	0	3
Baltimore County	3	0	3	3	3	3	1	0
Calvert	1	2	4	1	3	0	1	1
Caroline	2	0	3	1	1	0	1	0
Carroll	1	2	1	3	3	3	1	0
Cecil	2	1	4	1	1	3	1	0
Charles	2	2	4	1	1	0	1	0
Dorchester	1	1	3	1	1	0	1	0
Frederick	0	0	4	0	1	1	0	1
Garrett	2	2	3	1	1	0	0	1
Harford	2	2	1	1	1	0	1	0
Howard	1	1	1	2	3	0	0	0
Kent	2	2	1	3	3	3	1	0
Montgomery	3	3	4	2	2	2	1	1
Prince George's	3	3	4	3	3	3	0	3
Queen Anne's	1	1	3	1	2	0	1	1
St. Mary's	2	0	4	1	2	2	1	0
Somerset	2	2	3	1	0	0	1	0
Talbot	2	2	3	2	2	2	1	1
Washington	1	2	1	1	1	0	1	1
Wicomico	1	2	1	1	1	1	1	0
Worcester	3	2	1	2	2	2	1	0

Maryland County Water Supply and Sewerage Planning and Funding Evaluation Data

ID	Financial Management Components				Flow Data	
1	63	64	65	66	67	68
County	Finpln	Finspec	Finadqp	Finadqf	Tab15	Tab15a
Allegany	0	0	3	3	2	2
Anne Arundel	1	0	2	2	2	2
Baltimore City	1	0	2	2	2	2
Baltimore County	1	0	2	2	2	2
Calvert	1	1	1	1	2	2
Caroline	0	0	2	2	1	1
Carroll	1	1	1	1	1	1
Cecil	1	1	1	2	1	1
Charles	1	0	1	0	0	0
Dorchester	1	1	1	1	1	1
Frederick	0	0	2	2	2	2
Garrett	0	0	0	0	0	0
Harford	1	1	2	2	0	0
Howard	1	1	1	1	1	1
Kent	2	1	1	2	0	0
Montgomery	1	1	1	2	0	0
Prince George's	0	0	3	3	0	0
Queen Anne's	1	1	1	1	2	2
St. Mary's	1	1	1	1	0	0
Somerset	0	0	2	2	0	0
Talbot	0	1	2	2	2	2
Washington	0	1	1	0	2	2
Wicomico	0	1	2	2	2	2
Worcester	0	0	2	2	1	1

Appendix C

Summary of: Maryland Planning Legislation and Associated Code of Maryland Agency Regulations

Appendix C

Summary of Maryland Planning Legislation

This appendix represents an expanded version of the legislative overview provided in Chapter 3 and includes a comprehensive summary of applicable legislation and regulations regarding growth management and water and sewer planning in the state of Maryland. The layout of this appendix is as follows: first, the seven land use visions included in *The Economic Growth, Resource Protection and Planning Act of 1992* are presented, followed by a description of the local comprehensive planning requirements as outlined by *Code of Maryland, Article 66B*. Next, a brief description of both the *Maryland Smart Growth Areas Act* and *the Smart Growth and Neighborhood Conservation Policy* is presented. The appendix concludes with a detailed review of Maryland water and sewer planning legislative directives and consequent agency implementation regulations. These regulations provided the basis for formulation of the evaluation instrument used to conduct the thesis research.

C.1 The Economic Growth, Resource Protection and Planning Act of 1992

Passage of *The Economic Growth, Resource Protection and Planning Act of 1992*, established seven land use visions designed to promote orderly growth and economic development in Maryland while affording protection to the natural resources of the state. The Act substantially amended Article 66B of the Code of Maryland, which relates to local governmental comprehensive planning. Municipal governments, engaged in planning for their locality, were to incorporate these visions during formulation of their comprehensive plans. Adopted plans were to establish the means and methods whereby,

1.) Development is concentrated in suitable areas.
2.) Sensitive Areas are protected.
3.) In rural areas, growth is directed to existing population centers and resource areas are protected.
4.) Stewardship of the Chesapeake Bay and the land is a universal ethic.
5.) Conservation of resources, including a reduction in resource consumption, is practiced.
6.) To assure the achievement of (1.) through (5.) above, economic growth is encouraged and regulatory mechanisms are streamlined.

7.) Funding mechanisms are addressed to achieve these visions.

The legislation also directed state agencies to consider these visions when engaged in policy and project evaluations. State funding was not to be applied to projects that ran counter to the objectives of the visions or that were inconsistent with adopted local comprehensive plans drafted under these goals.

C.2 County and Municipal Comprehensive Planning- Code of Maryland, Article 66B

The following section summarizes the contents of Article 66B, Code of Maryland, as amended by the Economic Growth, Resource Protection and Planning Act of 1992 and more recent legislation. Article 66B describes the methods by which localities are to draft, adopt, and implement comprehensive plans for their communities.

Applicable legislation:

Code of Maryland

Zoning and Planning, Article 66B, § 3.01-09 et seq. (1998).

Intent:

To provide the means for each locality to develop a comprehensive plan that will guide and accomplish the coordinated, adjusted, and harmonious development of its jurisdiction and environs, in accordance with present and future needs. In addition to implementing the seven visions, the plan should be such that it:

"Best promotes the health, safety, morals, order, convenience, prosperity, and general welfare, as well as efficiency and economy in the process of economic development; including among other things, adequate provision for traffic, the promotion of public safety, adequate provision of light and air, conservation of natural resources, the prevention of environmental pollution, the promotion of the healthful and convenient distribution of population, the promotion of good civic design and arrangement, wise and efficient expenditure of public funds, and the adequate provision of public utilities and other public requirements (Code of MD, Article 66B)."

Scope-

- All counties and participating municipalities.

Legislative requirements:

General-

All plans should include the following elements:

- Statement of goals and objectives, principles, policies, and standards that serve as a guide for the development, economic and social well-being of the jurisdiction.
- A land use plan element that shows proposals for the most appropriate and desirable patterns for the general location, character, extent, and interrelationships of the manner in which the community should use its public and private land. The land use element of the plan should include:
  - Policies for developed areas, designated growth areas, and resource protection areas,
  - Standards and criteria for the designation of growth areas,
  - Maps delineating developed, growth, and resource protection area locations, patterns, density, intensity, and their relationship to other plan elements.
- A transportation element that shows proposals for the most appropriate and desirable patterns for the general location, character, and extent of the channels, routes, and terminals for transportation facilities, and for the circulation of persons and goods. The transportation plan element shall provide for bicycle and pedestrian access and travelways.
- A community facilities plan element that shows proposals for the most appropriate and desirable patterns for the present and future general location, character, and extent of public and semipublic buildings, land, and facilities.
- A plan element related to available mineral resources.
- An element that contains recommendations that encourage streamlined review of development applications within areas designated for growth; encourage the use of flexible development regulations to promote innovative and cost-saving site design while protecting the environment, and use innovative techniques to foster economic development in areas designated for growth.
- Recommendations for the determination, identification, and designation of areas that are of critical concern to the State.
- A sensitive areas plan element that contains the goals, objectives, principles, policies and standards designed to protect sensitive areas from the adverse effects of development.

In addition, the legislation requires that associated ordinances and regulations designed to implement the comprehensive plan should be amended so as to be consistent with the plan

and the seven visions described by the Economic Growth, Resource Protection and Planning Act of 1992.

C.3 The Smart Growth Areas Act

The Smart Growth Areas Act, as passed by the General Assembly, stipulates that State funds be directed only to projects located in designated Priority Funding Areas. The purpose of the legislation is to provide support for projects that promote the seven visions put forward by The Economic Growth, Resource Protection and Planning Act of 1992. Designation procedures for identifying Priority Funding Areas are described in complimentary legislation.

Applicable Legislation:

Code of Maryland-

Priority funding areas, State Finance and Procurement, Title 5, § 5-7B03-08 et seq. (1998).

Intent:

To describe the requirements and provisions for the establishment of Priority Funding Areas.

Scope:

- Areas specifically identified by Maryland statutes as Priority Funding Areas.
- Areas determined by the governing body of a county under requirements outlined by State statutes.

Legislative requirements:

General-

The governing body of the county may designate a priority funding areas if the area qualifies under the provisions outlined under Title 5, § 5-7B03, State Finance and Procurement, Code of Maryland.

Designation Requirements-

In order to gain approval under the legislation, a Priority Funding Area must meet certain stipulated requirements. These requirements are grouped into five categories. These categories and associated requirements include:

1.) Industrial areas-

- The area is zoned for industrial use prior to January 1, 1997.
- The area is zoned for industrial use after January 1, 1997, the area is within a designated growth area, and the area is served by public water and sewer.

2.) Employment areas-

- The principal use of the area is for employment and is served by public or community sewer systems; or
- Public or community sewer systems are planned for in the approved 10-year water and sewer plan.
- The area is described in the county's comprehensive plan as a designated growth area.

3.) Communities-

- The community is in existence prior to January 1, 1997, is within a designated growth area, is served by a public or community sewer system, is designated for residential use, and which has an average existing or potential density of two units per acre.
- The project being considered does not serve to increase the growth capacity of the community, except for limited peripheral or in-fill development.
- The project being considered serves to maintain the character of the community.

4.) Areas other than communities-

- The area being considered is within a designated growth area.
- The approved 10-year water and sewer plan for the locality shows planned service to the area.
- Designation of the area represents support of a policy promoting orderly expansion and the efficient use of land and public services.
- Local residential designation requires an average density of at least 3.5 units per acre.

5.) Rural villages-

- The area is designated a rural village in the comprehensive plan by July 1, 1998.
- The boundary of the priority funding area is the same as that of the village as of July 1, 1998.
- The proposed project will maintain the character of the village and not extend the growth capacity of the area except for peripheral and in-fill development.

Particularly noteworthy of the legislative requirements is that, with the exception of the rural villages, each eligible category requires planned or existing sewer service in order to qualify as a Priority Funding Area. In addition, the statutes specify that priority funding designation status will be based on:

- An analysis of the capacity of land areas in the locality available for development.
- This analysis will include areas available for in-fill and redevelopment.
- The amount of area needed to satisfy demand for development will be consistent with densities demonstrated by the comprehensive plan.

Eligibility-

In order for an area to be eligible for state funding of growth related projects under the law, the local government must:

- Submit a proposal for Priority Funding Area designation to the Maryland Office of Planning for public and agency review, comment, and assistance.
- Certify that the designation of the area is consistent with the comprehensive plan.
- Provide the Office of Planning information and maps necessary to demonstrate the precise location of the area, planning and zoning characteristics, and existing and planned water and sewer services.

Under the Smart Growth Areas Act, the Maryland Office of Planning is required to provide other state agencies, that fund growth-related projects, copies of maps illustrating the Priority Funding Areas in each county and comments concerning these areas.

In January of 1998, the Governor of Maryland issued an executive order, relating to Smart Growth. This order was intended to insure that state agency policies and actions would be supportive of the Smart Growth initiatives.

C.4 Smart Growth and Neighborhood Conservation Policy, Executive Order, 01.01.1198.04

Executive Order 01.01.1198.04 established the Smart Growth and Neighborhood Conservation Policy for the state of Maryland. This order expresses the desire that all governmental actions begin to actively support the goals described by the Smart Growth initiatives and reflect the visions contained in the Economic Growth, Resource Protection and Planning Act of 1992. Among the directives contained in the order are the following:

- An interagency sub-cabinet is to be formed. This cabinet is directed to:
  - Assist in the implementation of the Smart Growth Policy,
  - Provide a forum for interdepartmental discussion,
  - Establish a mechanism for identification and coordination of activities and projects within Priority Funding Areas,
  - Ensure that all state actions influencing redevelopment and growth are identified and submitted for review during project planning,
  - Review procedures established regarding the review of state projects and agency determinations for consistency with the visions and goals of Maryland Growth Policies,
  - Work to promote understanding of the smart Growth initiatives.

- The executive order directs the Maryland Office of Planning to:
  - Provide mapping and other technical assistance as requested to counties and municipalities when mapping Priority Funding Areas.
  - Help local governments to establish a public review process prior to Priority Funding area certification.
  - Provide a standard GIS protocol that localities are to use in their identification of Priority Funding Areas.
  - Consider land capacity, potential for in-fill development, and demand when commenting on Priority Funding Areas.
  - Provide Priority Funding Area maps and comments to other agencies.
  - Establish a schedule for annual updates of the maps.

- The executive order requires that all state agencies:
  - Refer to the Priority Funding Area maps when making decisions regarding projects proposed in Priority Funding Areas.
  - Obtain written certification from the local government that proposed projects are within a Priority Funding Area.
  - Assist the Office of Planning in conducting surveys of Municipal, County, and State governmental infrastructure needs as provided by § 5-7b-09(b) of the State

Finance and Procurement Article. Including information relating to the financial capacity of the affected unit of government to undertake proposed projects.

- The order further directs the Department of Business and Economic Development to consider the local government's comprehensive plan, the location of the site in relation to available water and sewer, as well as other Priority Funding Areas when reviewing new Enterprise Zone applications.

- Finally, the executive order requires that all agencies appoint an individual to be responsible for the implementation of Smart Growth policies within the agency and that each agency submit an annual report relating to programs and projects approved under the policies.

C.5 Summary of Adopted Growth Management Strategies

Anticipated increases in population and growth will continue to present Maryland with the various challenges represented by escalating development. The General Assembly has recognized its responsibility regarding this issue. The series of growth related legislation adopted over the last decade clearly reflects the legislature's ongoing commitment to provide for orderly and efficient growth within the state. Review of these initiatives reveal that the General Assembly has created a close association between the planned provision of water and sewer services and the designed methods to direct growth. In doing so, the general assembly is building upon previous legislation that directs county governments to draft and implement comprehensive water and sewer plans. The viability and effectiveness of the various growth management strategies rely on the strength and validity of these associated planning efforts. The following section presents an outline of the legislation regarding water and sewer planning in Maryland and the corresponding agency regulations.

C.6 Water and Sewer Planning and Funding

This section outlines a description of the state legislation directing that comprehensive water and sewer planning be conducted in the State of Maryland.

Applicable legislation:

Code of Maryland-

Zoning and Planning, Article 66B, § 3.01-09 et seq. (1998).

County Water and Sewerage Plans, Environment, Title 9, § 9-218, 9-501-18 et seq. (1998).

Priority funding areas, State Finance and Procurement, Title 5, § 5-7B03-08 et seq. (1998).

Intent:

To require each county and Baltimore City to develop water supply and sewerage systems so as to be consistent with county comprehensive planning.

Scope-

- All counties and the City of Baltimore.
- All public and private water and systems.
- Any water and sewer systems serving two or more individual lots.

Legislative requirements:

General-

Each county shall have a plan that is,

- Approved by the Department of the Environment (DE),
- Covers a ten-year period,
- Consistent with all local and county comprehensive plans.

Revisions and amendments-

- Each plan should be reviewed at least every three years. (Lengthened from two years in 1994.)
- Revision and amendments to the plan must be made if either the county governing body or the DE considers it necessary.
- Schedule for regular revision is to be adopted by DE, counties are to make provisions for compliance with DE schedule.
- When considering a revision or amendment a public hearing with notice must take place.

Specific-

- Each plan should provide for facilities adequate to prevent the discharge of inadequately treated sewage.

- Plans are to include information concerning:
    4. Capacity of present systems,
    5. Present level of usage,
    6. Projection for use of capacity based on:
        - outstanding building permits and,
        - subdivision plats or zoning commitments.

- Plans should take into account all relevant planning, zoning, population, engineering, and economic information and all State, regional, municipal, and local plans and show:
    - Those areas that can reasonably expect sewer service within the next ten years.
    - Procedures for identifying and acquiring, on a time schedule supporting the ten year projections, the necessary rights-of-way and easements.
    - Those areas where it is not foreseeable that service will be provided in the next ten years.
    - Time schedule and method for financing the construction and operation of community and multiuse systems.
    - Estimated costs for construction and operation of any planned systems.
    - Quantity and quality of waste to be discharged into state waters.
    - Differentiate areas of the county that:
        - Must be serviced by community sewerage systems,
        - May be serviced by multiuse sewerage systems,
        - Interim individual sewerage systems are allowed till community service is provided.
    - Treat each publicly owned community sewerage system as a separate entity for fiscal purposes.

- Conformance to county plan, §9-511.
    - Water supply and sewerage system are not to be installed or extended unless they conform to the county plan.

C.7Code of Maryland Agency Regulations (COMAR): Water and Sewer Planning

The Department of the Environment is currently the lead agency in regards to water and sewer planning in Maryland. The following section describes the regulatory guidelines drafted by

the department in response to state legislative directives. Particular consideration is given to those aspects concerning county sewer planning.

Applicable regulations:

Department of the Environment (DE)

Water supply, sewerage, solid waste, and pollution control planning and funding, Title 26, subtitle 03, chapter 01 (26.03.01.01-.08 et seq.).

Intent: §26.03.01.02

To require the governing body of each county and Baltimore City to develop water and sewerage systems that are consistent with county comprehensive planning.

- The plan shall be used as a tool to implement county policy so that:
    - Wastewater may be collected and delivered to points best suited for treatment, disposal, or reuse.
    - Wastewater can be treated... to minimize most effectively adverse effects on legitimate water uses.

Scope-

- All counties and Baltimore City are required to develop plans.
- County governing body is to be coordinating agency.
- Plans are to incorporate all or part of the towns, municipal corporations, sanitary districts, privately owned facilities, and local, State, and federal agencies having existing, planned, or programmed development within the county.

Regulatory requirements:

General- §26.03.01.02

- In developing their plans, counties are to give consideration to the related aspects of:
    - Land use,
    - Zoning,
    - Population estimates,
    - Engineering,
    - Economic factors,
    - And all governmental, industrial, and other plans for privately owned facilities.

Revisions, Amendments, Reviews- §26.03.01.02

- The county water and sewer plan shall be reviewed at least annually.
- A report of the review, together with any revisions or amendments adopted by the local governing body, shall be submitted to DE.
- A statement verifying that all comprehensive planning agencies having any immediate jurisdiction within the county have been consulted will be attached to the review.
- A public hearing shall be held on all amendments and revisions to the county and sewer plan.

Procedural requirements- §26.03.01 .03

Under agency regulations Counties are directed to:

1. Draft a water and sewer plan.
2. Submit a preliminary plan with maps to multi-county or regional comprehensive planning agencies. Copies are to be provided to DE, the Maryland Office of Planning (MOP), and the Department of Natural Resources (DNR).
3. Receive comments from DE.
4. Hold a public hearing.
5. Formally adopt the water and sewer plan.
6. Prepare in final format as set forth in Regulation §26.03.01.04.
7. Submit four copies to DE for review.
    a. Note--- DE is directed to forward a copy to MOP and DNR for comment.
8. After final approval, the county is to print 50 copies and send four to DE and four to DNR.

Specific format of planning document- §26.03.01.04

All county plans are to contain an introduction and four chapters as described in the following:

Introduction-

- Statement certifying official adoption.
- Statement certifying submittal to DE and other operational planning agencies.
- Statement certifying that the engineering aspects of the plan have been prepared and reviewed by a licensed engineer.
- A letter of approval from DE.

Chapter 1-

- A statement of goals consistent with county comprehensive planning.
- An organizational chart and discussion relating to county management of water supply and sewer facilities.

Chapter 2-

- Includes general background information related to water and sewer planning including the maps, charts and tables described below:

  Physical-

  c.) Maps showing aquifers, soil drainage characteristics, topography, ground and surface water patterns.
  d.) A map or table showing water quality criteria.

  Population-

  c.) Map showing present and projected population and density.
  d.) "Table no. 1" county populations projections.

  Land use-

  e.) Maps showing existing land use, zoning, and adopted comprehensive development plan for the county.
  f.) "Table no. 2" reflecting existing and zoned land use in acres.
  g.) A map showing existing and proposed major public institutions (i.e. schools, hospitals, correctional, government complexes).
  h.) A table showing the approximate populations of these facilities.

Chapter 3-

- Relates to water supplies, sources of pollution, and environmental impact of developing future proposed water supply sources.

Chapter 4-

- Shall contain a description of the existing and planned community and multi-use sewerage systems.

- Should include tables, maps, charts, graphs, descriptive information and all other matters regarding these systems.

- Should indicate locations of proposed points of waste discharges.

- Shall show how existing facilities meet effluent limitations specified by Department of the Environment, COMAR 26.08.03.01.

- Shall show how programmed facilities will meet these same limitation standards.

- Shall contain a summary of each available point of discharge evaluation, specifically those parts pertaining to protected water uses.

- Provide a discussion for the rational for selecting the planned alternative for any proposed treatment facility, pumping station, or interceptor.

- For every service area and community system, the following should be discussed:
  - Operating agency,
  - Design average and peak flows,
  - Whether combined or separate collection systems,
  - Level and type of treatment,
  - Sludge disposal plans,
  - Condition of treatment and transmission facilities,
  - Operation and maintenance costs,
  - Proposed means of financing improvements.

- Minimum requirements for tables and maps-
  - Population projections and present and expected demands and capacities by sewerage service area (Table 9).
  - Inventory of existing sewage treatment plants (Table 10).
  - Inventory of problem areas, including inadequate portions of community systems and areas where individual systems are experiencing difficulty (Table 11).
  - Identify by service area water quality problems due to storm drain outfall and to non-point sources (Table 12).
  - Immediate, 5, and 10 year priorities for sewerage system development (table 13).
  - Maps meeting the technical requirements outlined in §26.03.01.04.G, of the regulations.

- The plan should include an inventory of problem marinas and include basic concepts for sanitary facilities at all marinas.

- Technical requirements for data presentation are described in §26.03.01.04,G.

- In addition to other requirements, planning maps are to show the following delineations:
  - Existing or proposed and planned community and multi-use water and sewerage facilities and their respective sizes and capacities.
  - S-1 areas- served by systems currently existing or under construction.
  - S-2 areas- to be served by extensions of systems and are in final planning stage.
  - S-3 areas- where improvements to or construction of systems are to be given immediate priority.
  - S-4 areas- where systems are programmed for the 3 to 5/6 year period.

- S-5 areas- where systems are programmed for the 6/7 to 10 year period.
- S-6 areas, where no service is planned.

- Flow data for all sewerage facilities are to be presented in Table no. 15 for wastewater treatment plants and 15A for all principal collector sewers, interceptors, pumping stations, and associated force mains. Data from tables 9 and 10 may be omitted from table 15.

- Demonstration that plan complies with the Maryland Water Conservation Plumbing Fixtures Act (Article 56, §455, Annotated Code of Maryland).

Financial Management- § 26.03.01.08

In order to gain DE approval, each county plan must include a financial management plan for all publicly owned community sewerage systems.

- Each plan should include:
  - A narrative describing the financial roles and relationships of all public entities involved with providing service.
  - A completed Financial Statistics Schedule for each self-contained, publicly owned system. This schedule should demonstrate that adequate fiscal resources are or will be available for the operation, maintenance, and repair of existing and future systems.

- Before any issuance of permits for new systems will occur the following should requirements should be met:
  - The financial management plan described previously should have been adopted as part of the county plan and approved by DE.
  - The proposed system should have been described with narrative text, revised tables. Maps, etc., as part of an approved update or amendment to the county plan.

- All new financial plans are to be submitted no later than 7/1/1989.
  Note: The regulations do not describe specific procedures for updating the financial management portion of the water and sewer plan.

- DE may request additional specific information from the counties as described in the regulations.

C.8 Comparison of Water and Sewer Planning Legislation and Regulations

The regulations described in COMAR, 26.03.01.01-08 et seq., were drafted in order to implement General Assembly legislative directives concerning water and sewer planning in Maryland. The primary elements common to both the legislation and regulations include:

- Consistency with local comprehensive plans,
- Ten-year period coverage,
- Department of the Environment is designated lead agency,
- Require differentiation of areas by service type,
- Require capacity and flow rate estimates and projections,
- Require identification of anticipated needs,
- And require financial planning element.

Some discrepancy does exist between the legislation and regulations. These discrepancies concern:

- Review period-
  - Legislation stipulates that reviews are to be conducted every three years.
  - Regulations stipulate an annual review.

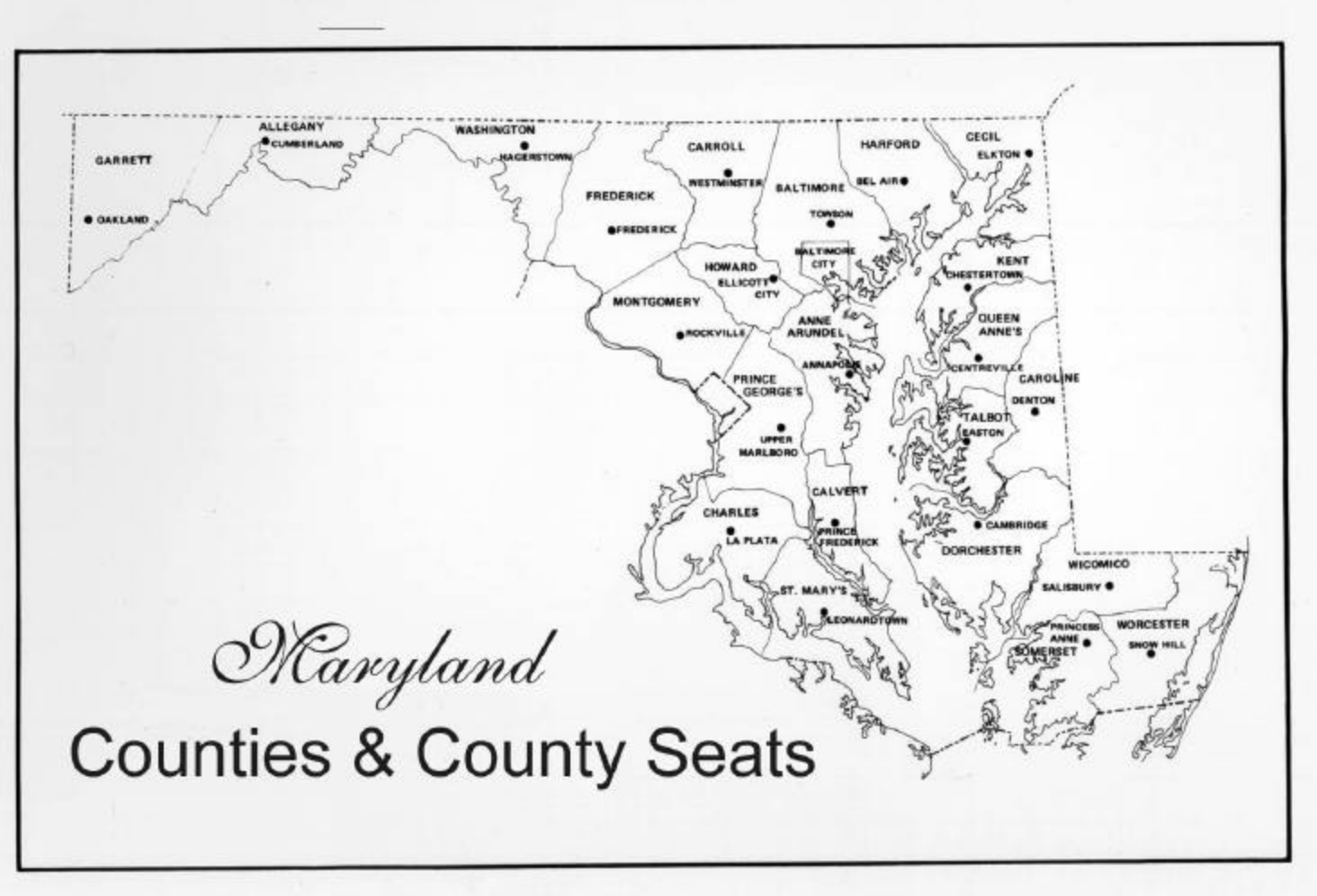
- Rights-of way, easements.
  - Legislation stipulates that procedures for identifying and acquiring necessary rights-of-way for the ten-year period demonstrated by the plan.
  - Regulations do not address this factor.

- Financial planning-
  - Legislation states that each plan should set forth the estimated cost of constructing and operating each planned community and multi-use system.
  - Regulations are only concerned with publicly owned systems.

- Comprehensive plan conformance-
  - Legislation states that sewerage systems are not to be installed or extended unless they conform to the county comprehensive plan.
  - Regulations state conformance requirement but allow for wide discretion on the part of the approving agency.

Appendix D

Map of Maryland Counties



Source:

Maryland State Highway Administration, Department of Transportation

VITA

Michael D. Whipple was born in Cincinnati, Ohio at a very young age. Not long after, Michael and his family moved to Cherry Hill, New Jersey. Michael spent most of his time in New Jersey actively engaged in the processes involved in getting older. Activities centered primarily on work (delivering newspapers), school (K-12), extra-curricular activities (fishing, camping, scouting, and anything ending in "ball"), and journeys into spiritual development (Am I the center of the universe?). This quadrilateral pattern of activities and interests proved to be a predominant theme as Michael continued on in life.

Upon graduating from High School, Michael showed his willingness and love for exertion, completing two semesters at Rutgers University while concurrently working in construction, retail service, and maintenance. Seeking a full-time, university experience, Michael transferred to the University of Delaware. At Delaware, he pursued his fascination and love for the natural environment by concentrating his field of study on biogeography and was awarded a Bachelor of Arts in Geography. In addition, he reveled in the many opportunities presented at the University to participate in faculty research, serve in student leadership positions, engage in recreational activities, and work in the community.

Having received his B.A., Michael elected to relocate to Roanoke, Virginia. The particular attributes of this area allowed Michael the chance to further develop a natural proficiency in the propagation of plants and creation of landscapes. In addition, his ability to effectively communicate with people representing diverse economic and socio-cultural backgrounds was enhanced as a result the numerous professional and volunteer activities Michael engaged in.

A deep desire and commitment to bridge the current gap that exists between attitudes concerning the built and natural environment, and the necessity to collaboratively bring the constituent interests of each of these systems into agreement led to Michael's most recent decision to return full time to school, where he has received a Master's degree of Urban and Regional Planning.