Town of Vienna

2009 Comprehensive Plan amendments
(House Bill 1141 Requirements)

September 2009

Assistance provided by: Community Planning and Assistance

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Contents

Town of Vienna, Maryland

Municipal Growth Element

September 27, 2009

INTRODUCTION

A Municipal Growth element is required as a result of legislation enacted in 2006 (House Bill 1141). The primary goal of the Municipal Growth element is to develop a plan for future territorial growth around the Town of Vienna, integrate that plan with the Land Use element and other parts of the Comprehensive Plan, and where possible, obtain support from County and State government.

Under House Bill 1141, the Municipal Growth element must include the consideration of eleven basic land use issues. In addition, an un-codified section of HB 1141 encourages the Town and County to enter into Joint Planning Agreements on municipal growth. The eleven issues are paraphrased below and organized according to the planning process.

Vision
- Future municipal territorial growth (comprehensive and long-term view of annexation potential)
- Relationship of long-term development policy to the vision of future municipal character

Background
- Past growth patterns (in terms of territorial, physical, economic, and population growth)

Needs
- Population growth projections
- Municipal land capacity (must be accounted for in determining land needs)
- Land needed to satisfy demand consistent with the long-term development policy

Land constraints
- Rural buffers and transitions
- Sensitive areas protection

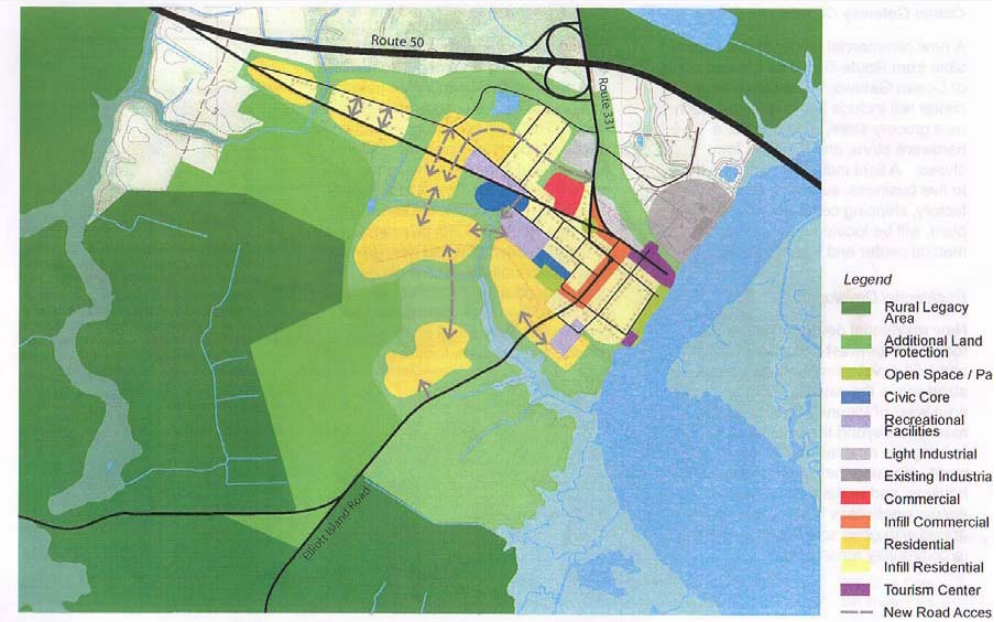
Public Services
- Services needed for growth
- Infrastructure and service financing
- Any extra-territorial service responsibilities

Interjurisdictional Cooperation and Support (encouraged)
- Incorporation of the Town Growth Area Map into the County Comprehensive Plan
- Incorporation of the Town Growth Area Map into the County Water and Sewerage Plan
- County-Town Joint Planning Agreement on municipal growth and development
- County-Town zoning cooperation

The Town of Vienna adopted a Community Vision Plan in 2002 that identified and evaluated various development options beginning with potential buildout based on zoning that existed at the time. The results from that strategic planning process were then incorporated into a new Comprehensive Plan that was adopted in January 2003. The two plans reflect a continuous and

integrated process that articulated a vision concept for Vienna and identified a suitable growth area. The 2003 Comprehensive Plan also discussed many of the same issues that must now be considered under House Bill 1141. The adopted Growth Area Map, shown below, places the Town in a good position to further advance its municipal growth planning under this new Growth Element. The Town has been a steady advocate of planning for possible Town expansion. The 2003 Map will benefit from a fresh evaluation in light of the issues listed above and also needs an evaluation for water resource issues. (A separate Water Resources Element is also required by HB 1141.)

VIENNA COMMUNITY VISION PLAN



VISION PLAN: A MODEL CHESAPEAKE COMMUNITY

"Vienna is envisioned as a gateway to the Nanticoke River and a model conservation-oriented community that respects its heritage while planning for the future".

From the Vienna Community Vision Plan, January 2003, Prepared for the Vienna Community by The Conservation Fund

The following process was used in preparing this Element:

- Examine the Town's Vision of the future; refine or expand it as needed.
- Test the suitability of the 2003 Growth Area Map under HB 1141:
  - Land demand
  - Development capacity, including infill and redevelopment potential

    - Sensitive areas, transition areas, and greenbelts
    - Community character
    - Services and infrastructure
    - Water supply, wastewater, and point and non-point source pollution (addressed in the Water Resources Element, and used as an input to the Growth element)
- If needed, change the Map and/or identify policies or conditions that address HB 1141.
- Prepare a series of goals, objectives, or policies for municipal growth.
- Amend the Comprehensive Plan to
    - Add the new Municipal Growth Element as a new chapter.
    - Incorporate the Growth Area Map into the Land Use Element of the Comprehensive Plan.
- Future Action: Use the Growth Area Map for review of annexation petitions, rezoning requests, service extensions, and other planning and zoning matters.

The new Map and overall Growth Element that resulted from this process is a reaffirmation of the Town's desire to function as a Gateway to the Nanticoke serving as a model conservation oriented community that cherishes and preserves its past while embracing its future as a controlled growth community in balance with its natural environment and its fiscal capabilities and responsibilities. Vienna will remain a rural population center, suitable for managed growth under Maryland's statutory planning visions and Dorchester County's Comprehensive Plan. It builds on the cooperative efforts between the Town and Dorchester County to plan for development, municipal annexation, establishment of urban boundaries, protection of rural community character, and provision of safe and adequate services, particularly water and sewer. The new Growth Area Map appears at the end of this Element.

Following is a summary of how House Bill 1141, State growth policy, Dorchester County's adopted plans, and Vienna's adopted plans were used to prepare this Element and update the Growth Area Map for the Town.

Future Municipal Growth

Town Vision
Under HB 1141, the Town is required to consider the relationship of plans for growth on future municipal character. The Town has identified two additional vision components in this regard:

- *Vision for Future Growth and Annexation.* This vision addresses:
    - The location, rate, and requisite conditions for annexation
    - The character of new development
    - The affect of new development on existing neighborhoods and Town character

Annexation of recently acquired lands adjacent to the southern boundary of Town will effectively complete municipal expansion for the foreseeable future. Selective smaller annexations may be proposed from time to time in response to pressures for extension of public water and or sewer service, and unanticipated economic development opportunities. Such annexations are not specifically anticipated nor planned for under this Plan, as written. However, by their very nature, this element anticipates that such proposals may be brought forth

before the Plan is comprehensively amended or revised. Should that happen, then as a matter of adopted public policy, they will be considered on their merits on a case by case basis and subject to specific findings that those annexations are in the best interests of the Town of Vienna and are consistent with the Plan's overall vision for the future. Some reasonable measure of flexibility must be maintained in order to facilitate implementation of the Plan without the necessity for constant minor amendment.

New development in the designated growth area will be compatible with the existing character of Vienna. Character includes such issues as street pattern and arrangement, lot sizing and orientation, building massing and site design, and the range of styles and materials that are currently found throughout the Town. In practical effect, new development should have the feel and appearance of the Town's historical evolutionary process. In that regard, the Town embraces new technologies that include low environmental impacts.

Traditional Neighborhood Design (TND)

Much has been written over that last several decades about the community development trend that has been termed: "Traditional Neighborhood Design." Many design consultants promote and specialize in TND development. The Town of Vienna worked with one a proponent of TND development to create a development concept plan for the Growth Area. However, before this project was able to proceed through the subdivision project review and approval process, economic conditions began to deteriorate and market forces have resulted in a much scaled back development concept. That smaller concept is incorporated in the Growth Area map and continues to be the preferred development concept embraced by the Town.

Design ideas generally consistent with a TND concept include:

An updated version of American small towns and historic neighborhoods that integrate a variety of housing types, front porches, streetscapes that eliminate garage doors and street networks that invite pedestrians. As a result, residents walk more and socialize informally in neighborhood squares and along the narrow streets.

Proportions between building and street widths create a sense of enclosure that is completed through incorporation of larger species shade trees between sidewalks and curbside parking lanes. Rear loading or detached garages that are accessed from a network of alley ways facilitate placement of utilities to the rear as well and provide additional privacy between rear lot lines.

A sense of community begins with neighborhood squares, which serve as places for impromptu socializing. Frequently, surrounding the squares is a mix of homes, which accommodate everyone from singles to seniors and first-time home buyers to empty nesters.

Rowhouses line this neighborhood square in Kentlands, Maryland.
Photo by Neil Takemoto, World Idea Networks..

There are detached homes for families, cottages for retirees and townhomes for young professionals. Sometimes various types of homes are mingled on a single street, which makes for a varied and interesting streetscape—a far cry from some new subdivisions, which are dominated by look-alike houses and garage doors.

Traditional neighborhoods are the perfect setting for architecture reminiscent of Grandma's house. Some of the timeless elements include floor plans designed for day-to-day living, as opposed to maximum sales impact. Classic vertical proportions are used for entrances, windows and columns. Dignity is achieved with balance and restraint—no single element screams for attention. Contemporary home designs are not barred, but each community has design guidelines that promote architectural harmony.

The goal is to create an entire streetscape that is as attractive as any individual house. Locating homes closer to the sidewalk allows residents sitting on their porches to converse with passersby. Porches are often complemented by flower boxes and picket

Plan BC-1700 reminds passersby of the simple homes their grandparents owned. Inside, an updated floor plan responds to modern lifestyles.
Photo byBill Coburn.

fences. Garage doors are recessed or hidden. Narrow, tree-lined streets encourage cars to move slowly, which makes the neighborhood safer and more inviting for pedestrians.

When all these elements are combined, neighborhood squares, front porches and a mix of residents—the result is small-town social interaction, reminiscent of Norman Rockwell paintings.

The famous "Three Sisters" in Harbor Town, Tenn.
Photo by Mark Englund/Home Plans LLC

Traditional neighborhoods also create a physical setting where residents can comfortably acquaint themselves with people they might not otherwise meet. "I really know my neighbors" is a comment heard repeatedly from residents of new traditional developments.

A traditional neighborhood has conveniences many have forgotten. Friendly, walkable streets encourage residents to stroll to neighborhood shops. Most TNDs do their best to include places of employment and civic institutions such as post offices, schools, houses of worship and day-care centers.

Providing shopping, jobs and community services within convenient walking distance allows residents to meet some of their daily needs without driving. This provides mobility and freedom to all residents, from 8-year-olds who can't drive yet to 80-year-olds who may not drive any more.

The residents of Port Royal, S.C., broke with U.S. Postal Service standards and built this post office to blend with their traditional community.
Photo by Jason Miller.

Steeple Street shops in Mashpee Commons, Massachusetts.
Photo courtesy of W. L. Dennis Architects.

Much of this material was found at:
http://www.tndhomes.com/under02.h

While many of the more well known TND developments (such as Kentlands, MD, I'on, S.C., Newpoint, S.C., and Harbor Town, TN) are relatively large scale developments situated in communities considerably larger than Vienna, the same TND principles that make other projects successful can make the

buildout of Vienna's growth area the model for small town development contemplated by this Element. The "cottage" developments gaining favor with smaller households, particularly in the expensive Northwest housing market, may also provide an appropriate alternative in the mixed residential uses contemplated for the Growth Area. Typically, higher density is achieved without loss of livability by careful attention to design of individualized buildings, the arrangement of structures and open spaces, and the design of common areas as they relate to interior site (and adjacent site) pedestrian experiences. Some examples are provided at the end of this Element.

LEED (Leadership in Energy and Environmental Design)

In addition to sensitive site design requirements for protecting the estuarine tidal environment adjacent to the growth area, the Town's development concept for new growth and infill development embraces the sustainability and stewardship ideals incorporated in LEED's certified "green" building technologies.

The LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. Currently in its pilot period, LEED for Neighborhood Development is a collaboration among US Green Building Council, the Congress for the New Urbanism and the Natural Resources Defense Council.

LEED for Neighborhood Development emphasizes the creation of compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities. Research has shown that living in a mixed-use environment within walking distance of shops and services results in increased walking and biking, which improve human cardiovascular and respiratory health and reduce the risk of hypertension and obesity.

Typical sprawl development, low-density housing and commercial uses located in automobile-dependent areas, can harm the natural environment in a number of ways. It can consume and fragment farmland, forests and wildlife habitat; degrade water quality through destruction of wetlands and increased stormwater runoff; and pollute the air with increased automobile travel.

Fragmentation and loss of habitat are major threats to many imperiled species. LEED encourages compact development patterns and the selection of sites that are within or adjacent to existing development to minimize habitat fragmentation and also help preserve areas for recreation.

Increasingly, municipalities are reducing fees or review periods associated with the approval process for community projects that can demonstrate a commitment to sustainability. Successfully completing the first stage of LEED for Neighborhood Development certification (pre-review approval) may assist projects that are still in the planning stages to gain the necessary approvals as expediently and cost-effectively as possible. Neighborhood certification can help projects explain the environmental and community benefits of a project to residents and businesses in nearby areas. The rating system also encourages projects to work collaboratively with the existing neighborhood to make sure their needs are taken into account.

LEED for Homes is a voluntary rating system that promotes the design and construction of high-performance green homes, including affordable housing, mass-production homes, custom designs, stand-alone single-family homes, duplexes and townhouses, suburban and urban apartments and condominiums and lofts in historic buildings. LEED homes have lower energy and water bills, reduced greenhouse gas emissions and fewer problems with mold, mildew and other indoor toxins. LEED certification is something that consumers can look for to readily identify homes that have been third-party inspected, performance-tested and certified as truly green homes that will perform better than standard homes. Homebuilders using LEED are able to differentiate their homes as some of the best on the market. *The Town of Vienna will consider and evaluate the practicality for streamlined development review in areas planned for growth (in accordance with Maryland's Smart Growth visions and principles).*

- *Vision for Infill, Redevelopment, and Adaptive Re-use.* This addresses:
  - Design and character of development
  - The affect on existing neighborhoods and Town character
  - Capacity reservations or priorities for infill development

The existing Town of Vienna has a long and storied history as village on the western bank of the Nanticoke River in southeastern Dorchester County known simply as "the town on the Nanticoke River" until being officially named Vienna on July 11, 1706. The town thrived as a port capable of handling large ships carrying goods from England, and then as a trade center when a tobacco warehouse was built in 1762. Vienna was the site of the first shipyard on the Nanticoke River. Its importance to commerce and trade was evident when it was attacked by British forces during the Revolutionary War and the War of 1812.

Despite its age, Vienna has remained a small and peaceful town. Infill and redevelopment on existing parcels has provided a legacy of development that from Department of Assessment records ranges from 1795 to 2007. (source: 2007 MD PropertyView). Town officials are aware of structures that are even older. As of 2007, records indicate the existence of 172 structures (that have an improved value in excess of $10,000). Three records are incomplete and do not lend themselves to analysis. However, the 158 improved residential parcels report an average lot size of 0.254 acres. That equates to 11,083 square feet or 3.9 dwelling units per acre as an average net density yield for intown residential development. Accordingly, that figure will provide a measure for "compatibility" of future development density. The Smart Growth density for Priority Funding Area certification equals 3.5 dwelling units per acre. The Town of Vienna considers that to be sufficiently close to the existing developed density to serve as a regulatory target for appropriate average net density in the designated Growth Area.

Actual developed intown residential lot sizes range from 0.038 acres up to 0.92 acres. This provides another measure of "community character" when faced with decisions concerning appropriate or "compatible" mix of lot sizes. Variation is the rule, and while numerous examples can be found where adjoining lots are of equal size, there is still much variation within each block and within as well as between neighborhoods. The most regular pattern of lotting practice is found in the newest developed portion of Town, the west end. It is therefore deemed appropriate that the development pattern of lots to be created within the Growth Area exhibit

variation both within individual blocks and within and between newly created neighborhoods. It is also the express desire of the Town that new housing units be of moderate size in order to also exhibit a character that is compatible with existing conditions.

Eighty-one percent of the Town's existing housing stock was constructed prior to 1960 and sixty-eight percent prior to 1940. These homes range in size from 700 square feet up to one built in 1900 that is 3,500 square feet. No studies have been conducted concerning the percentage of imperviousness on developed residential parcels in Town. However, aerial photography shows considerable green space and surface area suitable for onsite infiltration.

As a community that is concerned with supporting and promoting best management practices for urban nonpoint stormwater management, the Town of Vienna is committed to supporting and promoting sustainability as a cornerstone of its development and growth management strategy. Sustainability is the common sense notion that as stewards of our environment, we should take extra care of what we do with those parcels we are most familiar with…including the choices we make regarding our use of resources to house ourselves and the tracks we leave on the landscape with our passing. An integral part of the growth management vision of Vienna is that the choices we make should not result in conditions that limit the choices of future generations nor degrade the carrying capacity of the environment.

> "Over the past few decades, there has been an increasing awareness that as a society we have to redesign the systems that produce and support our way of life so that we don't continue to squander the Earth's resources. This concept is called sustainability... that we look more closely at ourselves, at how we want to live, at what inspires us, and at what our planet needs to return to balance. If we can start reflecting these values in what we build to house ourselves, we will be making a small but significant incremental step in helping humanity to truly live the extraordinary spirit that we are born with. Our senses are finely attuned to perceive beauty and to taste delight in every birdsong and every unfurling leaf. Over time we can too easily become jaundiced to these simple pleasures of existence, and our homes become just one more chore to maintain. What if instead they daily inspired us to be all that we can be, filled us with feelings of appreciation for the richness that always surrounds us if we will only look?"
>
> --from The Not So Big House by Sarah Susanka

Development Capacity Analysis (March, 2008) MDP

MDP has worked on a development capacity analysis with the Town of Vienna. This has involved collecting, integrating and interpreting data to make it "fit" MDP's growth simulation model. MDP has run the growth model with default assumptions and current Town zoning to obtain preliminary results. The Town of Vienna has examined the results and revised estimates based on their superior local knowledge of the town and its land.

Maryland's local governments committed to performing the Development Capacity Analysis as part of their comprehensive plan updates via the Development Capacity Analysis Local Government MOU (signed by the Maryland Municipal League and Maryland Association of

Counties in August, 2004) and the Development Capacity Analysis Executive Order (signed by Governor Ehrlich in August, 2004).

These agreements were commitments to implement the recommendations made by the Development Capacity Task Force, which are outlined in their July 2004 report (the full report is available at: http://www.mdp.state.md.us/develop_cap.htm)
See the report mentioned above for a full description of the analysis' methodology and its caveats. MDP's analysis, while not perfect, was endorsed by the Development Capacity Task Force and many local governments. This analysis produces estimates of the number of dwelling units built by build-out based on existing zoning, land use, parcel data, sewer service, and information about un-buildable lands. This analysis does not account for school, road, or sewer capacity. The estimates are focused on the capacity of the land to accommodate future growth.

Background and Trend Data

Based on the Census, in 2000 the Town of Vienna had a population of 280, comprising .9 percent of the total County population. In 2000 there were a total of 138 existing housing units.

Dorchester County is expected to grow from 30,674 in 2000 to 39,900 by 2030, an increase of 9,226. Based on the County's projected growth the Town of Vienna stands to add an additional 84 persons by 2030.

Capacity Analysis

The preliminary results of the growth model use the default MDP assumptions of the model and the current zoning of the Town of Vienna. The analysis was then modified based on information obtained from the Town and data on developments currently in the pipeline.

The scenario shows that there is more than sufficient capacity for the Town of Vienna's projected growth of an additional 84 people by 2030. According to MDP's capacity analysis, there is a total capacity of 113 households or 260 people (based on a household size of 2.3 for the Town in 2000) within the Town limits. The vast majority of this capacity is located on three parcels with 97 households of capacity.

The capacities for each zoning category are show in Table 2 below. The R1 zone contains the most capacity. This is largely due to the availability of land in this zone.

Table 1. Capacity by Residential Zoning Category

Zoning	Capacity (in Households)	Acres
V-R1	71	59
V-R2	42	12
Total	**113**	**71**

However, while this methodology may be useful at the larger scale of generalized county analysis, it overlooks practical limitations to subdivision and development that have meaning and a controlling influence on the municipal scale. Lumping scattered non-conforming and otherwise unbuildable lots within a zoning classification into a "total acreage" concept and then multiplying by some average net yield figure does not work very well in the case of Vienna.

So, this expanded vision of how the Town will approach infill and redevelopment provides the segway for a closer look at the actual realistic existing development capacity of the current land inventory within Town and within the Growth Area.

Development Capacity Within Vienna

11 acres (mostly vacant/suitable subdivision)	x 3.5 du/ac	=	38.5 dwelling units
5 acres (vacant)	x 3.5 du/ac	=	17.5 dwelling units
1 acre (underutilized/suitable for development)	x 3.5 du/ac	=	3.5 dwelling units
6 vacant lots (small)		=	6.0 dwelling units
2 vacant substandard nonconforming lots (no infill potential)		=	0 dwelling units
Total intown Capacity		=	65 dwelling units

This total development capacity is a theoretical maximum and is not supported by known plans or intentions nor by a fully developed system of streets and roads. Consequently, while technically feasible, even the figure of 65 dwelling units should be used with caution. The property commonly referred to as the Phillips farm lies partly within the current town limits and comprises the bulk of the Legg and Phillips farms within our designated Growth Area. Its relationship to the current system of town streets suggests a logical extension of the town grid as the best way to integrate new development with the current fabric of urbanization. The preferred generalized arrangement of new streets within the Growth area is illustrated on the Growth Area Map that is located at the end of this Element.

However, the illustration is not to be considered a "binding design concept." Rather, it is illustrative of the Town's written description of what is meant by "appropriate" development, and other arrangements of lots and streets are possible that would also fit the criteria and the constraints and opportunities in the Growth Area.

Based on the negotiated and approved 100 foot setback buffer strip (DNR/Vienna agreement) that rings the landward edge of tidal wetlands in the Growth Area, the actual development envelope was reduced to include the primary area north of Elliott Island Road (Market Street extended), and a secondary area adjacent to town-owned lands south of Island Road and extending southeastward to the Nanticoke River. In exchange for a reduction in buffer area setback within the Growth Area, the Town has agreed to place the balance of the acreage acquired into an open space preserve that will form a significant part of the Town's greenbelt.

Growth Area Capacity

The capacity of the growth area has been limited to 220 dwelling units by the Mayor and Commissioners. No separate calculation is warranted or required.

Characteristics of the 2009 Growth Area

The Vienna Growth Area comprises approximately ninety-one acres of level land that is currently used for agricultural purposes. The Nanticoke Rural Legacy area is adjacent to the municipal growth area but does not significantly impact areas designated for growth. The Dorchester County Comprehensive Plan identifies the entire growth area mapped by Vienna plus the balance of the Phillips and Legg farms as: "Municipal Growth Area". The Town has acquired those lands and intends to preserve them for agricultural and environmental benefits. They will become part of a greenbelt that will provide enhanced wildlife and water quality protections for the Town and its surrounding environment.

A limited area near the top of the creek's watershed is within the 100 year floodplain and has been identified on the 100 Year Floodplain Map. The Natural Soils Group Map shows that all of the growth area is impacted by high or very high seasonal water table issues. The primary development constraint is a limitation on the use of basements and below grade storage. The Natural Soils Map indicates that the entire Town of Vienna is similarly impacted (by high water table issues), so this is a well-understood concern in Vienna.

Non-tidal wetlands are present along the banks of the creek but fall well within the designated buffer area and pose no development constraints. These wetland areas will be protected during and after development. They will be managed and expanded by the Town, where appropriate to assist with water quality improvement strategies that will incorporate urban best management principles for stormwater management.

The growth area contains no steep slopes nor does it contain forest stands. Forest interior dwelling bird habitat does exist on greenbelt lands designated for protection but pose no issues that could be considered "development constraints" within the growth area. The following photographs provide a visual overview of the growth area:

Building Support for the Growth Area Map

The Town will reach out to other jurisdictions to promote understanding and support for its growth vision by:

- Work with Dorchester County and nearby municipalities to develop the Map

- Recommend that County adopt the Growth Map into the County Comprehensive Plan and County Master Water and Sewerage Plan.
- County zoning tools are needed to discourage growth before annexation.
- A Joint Planning Agreement can be used to solidify Town and County cooperation

The New Growth Area Map

By reference, and as required under House Bill 1141, the Growth Area Map developed under this element is officially part of the Land Use Element of the Comprehensive Plan. The new Map differs from the 2005 Map in the following ways:

1) Areas for growth are now organized into basic Two Tiers
   - Tier One (within 20 years)
     - Areas for infill and redevelopment (in Town)
     - Areas outside Town and
       - adjacent to existing (2009) Town boundaries
       - with existing or near term water and sewer service
       - identified by the County as suitable for annexation
       - identified by the County as suitable for developed land uses
       - identified independently by the Town as suitable for near-term annexation and growth
   - Tier Two (beyond a 20 year horizon): all areas within the Growth Boundary but not included in Tier One.

2) The Map shows planned land uses for both growth and protection
   - Residential
   - Commercial, employment, and other economic development
   - Major infill parcels (vacant or significantly under-developed)
   - County-designated Urban Growth Boundary sites
   - Protected land (land trust easements, public land, sensitive areas, Critical Area buffers and other habitat protection areas.
   - Land planned for rural conservation by the County

3) The Map shows special areas for conservation, and/or resource utilization
   - Town and neighborhood character
   - Rural greenbelts
   - Transition areas

The Town's first step in developing a new Growth Area Map was to create a composite of the official plans from Dorchester County that affect land in the Town's 2005 Growth Area (as amended into the 2003 Vienna Comprehensive Plan). An inspection of Town and Dorchester County official plans and maps shows that there is significant agreement between the Town and County about future land uses around Vienna. This common understanding is a function of the Town's longstanding history of cooperation and coordination with the County and Town and

County plans for public water and sewer. There is also considerable agreement about future development concepts for areas recently acquired and designated for growth.

In preparing this element, the Town of Vienna and Dorchester County have designated areas for municipal growth based on three considerations:

- Adequate acreage for the long term that allows comprehensive interjurisdictional planning for municipal growth, as opposed to case-by-case annexation.
- Adoption of a growth plan within the Nanticoke River watershed that reduces pressure for rural sprawl by accommodating growth, preserving greenbelts, and minimizing the impacts of growth on water quality.
- Municipal accommodation of a higher-than-trend share of County population growth as a strategy to further reduce sprawl within the rural environs beyond the Town.

Population Growth Projections

The "status quo scenario" is defined herein as future growth that is in line with the Town's current percentage of total County population. The "planned growth scenario" is defined as future growth that is in line with, or higher than, recent growth trends and County targets, consistent with smart growth policy.

Under the status quo, population data suggest that Vienna will have an insignificant role in accomplishing the State goal of smart growth. Vienna would continue to contain about one percent of the County's population growth.

In 2009, the Maryland Department of Planning produced a number of population projections using eight different methodologies. The range of assumptions behind those approaches demonstrate that various scenarios can be used to project population. Also, with numbers as low as those represented by Vienna, a few actual development events triggered by private decision-making are likely to have a greater influence on population numbers than an academic modeling approach.

Nevertheless, Article 66B requires that population projections be considered in the preparation of a Municipal Growth Element. Also implied is that a connection be drawn between population projections, concomitant household projections, and associated acreage demands based on proposed zoning. Looking at these issues in parallel and comparing the results to existing vacant land and developable lands within the Growth Area provides guidance on the sufficiency of lands identified for growth as well as direction regarding needed water and sewer capacities (adequate public facilities) to support and sustain anticipated growth. Accordingly, MDP's projections are presented on the following page.

Vienna - Population Projections

	Census 1970	Census 1980	Census 1990	Census 2000	Proj 2005	Proj 2010	Proj 2015	Proj 2020	Proj 2025	Proj 2030
Constant Share Method	358	300	264	280	285	301	319	333	344	355
Lowest Naïve Method (linear regression)	358	300	264	280	249	247	246	239	230	219
Highest Naïve Method (share of growth)	358	300	264	280	303	373	454	517	570	621
Avg All Naïve Methods	358	300	264	280	283	304	328	345	359	373
Avg All Naïve Methods (w/o High&Low)	358	300	264	280	285	301	319	332	343	354
Lowest Devp Pressure Method (00_05, .125 miles)	358	300	264	280	285	298	308	310	308	302
Highest Devp Pressure Method (90_05, .5 miles)	358	300	264	280	285	299	311	317	319	318
Avg Devp Pressure Methods	358	300	264	280	285	299	310	314	314	311
Avg Devp Pressure Methods (w/o High & Low)	358	300	264	280	285	299	310	314	314	311

Vienna - Household Projections

	Census 1970	Census 1980	Census 1990	Census 2000	Proj 2005	Proj 2010	Proj 2015	Proj 2020	Proj 2025	Proj 2030
Constant Share Method	132	125	121	120	125	134	144	151	158	164
Lowest Naïve Method (linear regression)	132	125	121	120	109	110	111	109	106	101
Highest Naïve Method (share of growth)	132	125	121	120	133	166	205	235	261	287
Avg All Naïve Methods	132	125	121	120	124	135	148	157	165	172
Avg All Naïve Methods (w/o High&Low)	132	125	121	120	125	134	144	151	157	164
Lowest Devp Pressure Method (00_05, .125 miles)	132	125	121	120	125	132	139	141	141	139
Highest Devp Pressure Method (90_05, .5 miles)	132	125	121	120	125	133	140	144	146	147
Avg Devp Pressure Methods	132	125	121	120	125	133	140	143	144	144
Avg Devp Pressure Methods (w/o High & Low)	132	125	121	120	125	133	140	143	144	144

The foregoing projections were considered and determined to be inconsistent with Vienna's vision for future growth and its commitment to work with Dorchester County to achieve "Smart Growth" objectives by capturing a greater share of future County growth than past trends reflect.

Land use planning, by definition, concerns the possibility and opportunity of changing the status quo. The goal of the Town of Vienna is to capture its "smart" share of County growth, thus past population growth projections are not treated as a controlling factor.

The Town wants to control the nature, character, size, and timing of development within its Growth Area. To accomplish that, a new Planned Residential Development District has been in preparation for the last couple of years and is anticipated to be adopted by the time this Comprehensive Plan has been updated. It is intended to potentially apply to tracts in excess of fifty acres (and will have the practical effect of applying specifically to the Growth Area).

The Planned Residential Development District is a floating zone district. It is the intent of this district to control the placement, design, use, and density of well-planned, residential development which offers a variety of residential building types and a more efficient overall use of land, and within these limits, to permit the optimum amount of flexibility and variety in the design of such varying types of residential structures including single and two-family dwellings**,** and townhouses

Among the many requirements that apply on a site-specific site plan basis, a minimum of thirty (30) percent of the Adjusted Tract Acreage shall be open space including parks, recreational, habitat, forest, agriculture, and stream and wetland preservation areas. Approximately 30% public open space shall be provided by the development in addition to the critical area buffers, tidal and non-tidal wetlands, and other regulated areas.

In preparing this development zone (intended specifically for managing development in the Growth Area, t*he Planning Commission and the Mayor and Commissioners have agreed upon a conceptual development cap of 220 units, overall.* Again, t*his number shall drive the development capacity analysis of the Growth Area as the limiting net development yield under the PRD zone for this area.*

Municipal Land Capacity

Estimates of land capacity within current Town boundaries were provided by the Town's consultant [and the Maryland Department of Planning]. These sources of information indicate room within current Town boundaries for a range of approximately 113(MDP) to 65(Consultant) residential units. In addition, the consultant forecasts approximately 220 additional residential units on 63 of the growth area's 91 acres. Projections prepared by the Maryland Department of Planning suggest a possible range in population growth between 93 and 341 additional people by the year 2030. The high projection could be accommodated by the development scenario contemplated by this Municipal Growth Element. The "smart growth" policy adopted by the Town and the County calls for the Town to attract population growth at a higher-than-historical rate to preclude sprawl. Under this scenario, Vienna has room for about 30 years of growth (using the 2000 census as a starting point) which exceeds the scope of this Plan.

Land Needed Consistent with the Long-term Growth Policy

According to the Maryland Department of Planning's February 2009 projections, Dorchester County will grow by 6,500 people between 2010 and 2030 (a 20 percent increase over 20 years). The County's draft Comprehensive Plan calls for municipalities to attract much of that population growth. Between 2000 and 2006, it is estimated by planning staff that 45 percent of the County growth was channeled to municipalities. It is assumed that new Smart Growth policies embraced by the County will greatly increase that percentage in the future, perhaps up to 60% (as a goal).

The Municipal Growth Element and Growth Area Map are based on the following principles:

1. County population projections to the year 2030 provide an estimate of the size of the total overall "growth opportunity," and Vienna's growth plans can affect how much of "the pot" will be captured locally.

2. State and County land use and environmental policy discourage large lot residential growth on septic systems.

3. State and County land use and environmental policy encourage growth in compact walkable forms, on smaller lots, and served by public sewer.

4. The choice of whether or not to grow is determined by each local government and implemented through the Comprehensive Plan.

The Growth Area Map shows 91 acres gross, and 63 acres net, for growth.

The following assumes that Vienna can attract its share of the growth that has been projected to go to the municipalities in Dorchester County over the next 20 years. The Town is one of 9 possible municipal locations for growth in the County, with all 9 capable of being "competitive" in attracting new residents through good planning. It is also assumed that the Town will have a Comprehensive Plan and adequate public facilities to do so, and can regulate land use and development to prevent adverse impacts to water supply and water quality. Using MDP figures:

- 2010-2030 population growth captured by 9 Municipalities: 3,900 (assume 60% of 6,500)
- Average Annual Vienna population growth rate: 1.03% (over 20 years) [average all MDP naïve methods]. Or; 2.58 aagr (over 20 years) ["share of growth" projection].
- At 2.3 persons per dwelling unit*, annual overall municipal demand for dwelling units: 141
- Assume 60% of annual growth goes to municipalities (Smart Growth development scenario): 84 edu/yr to 9 municipalities
- Vienna's historical annual share: (2% of annual municipal growth – constant share) = 3.9 persons or 1.7 dwelling units
- At 3.5 dwelling units per acre, historical annual demand for net acres: 0.48 acre
- Gross acre demand (includes land for forest conservation, roads, utilities, etc): 0.58 acre
- Number of years of growth in Growth Areas (assuming historical ratio): 108
- Town Infill (65 edu @ 3.5 du/ac) provides 32 years additional capacity (by formula)
- Town Infill (17 acres @ 0.58 ac/yr = 29 years of additional capacity. (by formula)

*Vienna census hh size = 2.33, Dorchester = 2.36; a slight reduction is assumed, generally, to yield 2.3p/du

The foregoing "analysis" merely demonstrates an excess of land based on a linear extrapolation of past trends and relationships (of Vienna to the other municipalities) while assuming that, in aggregate, the municipal share of overall County growth will increase. If one assumes that Vienna will achieve its vision of developing its 63 acre net growth area over twenty years, then the previously described exercise will prove meaningless. Given that option, the Town would realize 11 new homes per year, on average, over a twenty year buildout. Upon some reflection, it appears reasonable to expect any developer who might wish to commit to the infrastructure expenses associated with developing the Growth Area to expect an annual cash flow sufficient to actually proceed with development. No growth area could realistically support a rate of development equal to one half acre per year over a time horizon of 108 years nor would any lending institution underwrite that kind of project pro forma.

The "land demand analysis" presented above is an exercise included merely to satisfy the formula suggested by MDP and the requirement that a ratio of supply versus demand be "considered" when preparing a Municipal Growth Element. The Vienna Growth Area is the result of an ongoing growth management strategy and visioning process that dates back more than six years and has been well documented and vetted. The reality is that the Town of Vienna has achieved control over adjoining lands that are suitable for a combination of development and preservation, has plans for annexation of those lands, and has nearly completed preparation of new zoning tools to facilitate a mixed use traditional neighborhood approach to municipal expansion. If the MDP feels that economically viable growth should not occur in Vienna, then the State should indicate where else it should occur. Perhaps somewhere without public water and wastewater facilities (and existing permits that can be revised and expanded to support growth) and a public policy commitment to environmental leadership in the development of land at "Smart Growth" densities. Until the current economic downturn reverses itself and a viable development market reestablishes itself in Dorchester County, the entire debate is moot.

LAND CONSTRAINTS

Rural Buffers and Transitions

The Growth Area Map includes "Greenbelt Areas" that are planned for conservation and preservation. Further discussions are planned with Dorchester County to integrate greenbelt planning in the Vienna area with that of Dorchester County. Vienna anticipates that Dorchester County will play a primary role in helping to ensure the long-term viability of any development buffers separating Vienna from surrounding County areas. Vienna does not support the proliferation of low density residential sprawl development as "transitional" development patterns in the vicinity of Town. A clear demarcation between rural farm land and the Town is consistent with the historical character of Vienna and contributes to its unique sense of place. This is a treasured quality that the Town desires to maintain.

Sensitive Areas Protection

Sensitive Areas are generally avoided and point and non-point sources of pollution will be reduced. There are large areas of tidal and non-tidal wetland that fall within the Planning Area and these areas should be avoided. The Greenbelt Area encompasses [the watershed's major forested stream corridors and buffers in the vicinity of Town.] Steep slopes, habitat of threatened or endangered species, and wetlands are avoided by the Growth Area. Stream buffers will be protected from development and will be afforested where needed

PUBLIC SERVICES

Services Needed for Growth

Water, Sewer, and Stormwater Management:

No needs exist relative to system upgrades at this time. Future capacity expansion of the public water system capacity may be desirable (and preliminary planning should commence for a capacity allocation plan when allocations reach eighty percent (80%) of permitted capacity). Future development of the Growth Area should include a developer-provided water tank. Future water lines should be looped to maintain pressure throughout the Growth Area (as well as existing parts of Town).

Other Services:

The Comprehensive Plan includes a thorough report on services including schools, libraries, public safety and EMS, and recreation. Services are adequate at present. A determination of service adequacy will be required as part of the process for approving new development and may result in deferral of project approvals. Most services other than water and sewer are provided by County and State agencies whose service areas range well beyond the environs of Vienna. Vienna will provide proposed development information to the Dorchester Board of Education and the Dorchester County Department of Parks and Recreation as well as public safety agencies. Even with the high percentage growth that is proposed, actual dwelling unit counts and population counts remain relatively small with respect to regional services.

Paying for Infrastructure

The Town has both public and private sector sources for infrastructure financing. As an incorporated municipality, the Vienna has the authority to enact excise taxes and impact fees. These tools exact infrastructure funds from developers as a condition of project approval; excise taxes are by far the more flexible tool in terms of how the funds can be used. The Town can also enact a tax increment financing district to charge homeowners in a defined area to help pay for infrastructure.

Developer Rights and Responsibilities Agreements (DRRA) can be used to legally bind the Town and a developer for specific development projects and supporting services and facilities. Infrastructure responsibilities are often an important part of these agreements.

Vienna will continue to compete for federal and State funds that support growth. The Town will review its Priority Funding Area (PFA) map, and annexation proposals, and establish the necessary criteria, when possible and desirable, to achieve PFA status. Priority for immediate growth will be given to acreage within the Growth Area that is adjacent to the municipal boundary in order to support economical extensions of infrastructure and avoid “leap frog” development patterns.

Extra-Territorial Service Obligations

The Town currently serves West Vienna, which is outside municipal boundaries, with public water and sewer. The Town policy is that it will not extend service in the future to areas that are not within Town unless and until these areas are annexed by the Town. The Town Water Service Maps will be revised to reflect the Growth Area Map. Revisions should also be incorporated into the Dorchester County Master Water and Sewerage Plan, consistent with the Growth Area Map and this policy.

Interjurisdictional Cooperation and Support

The following objectives will be used to enhance Town and County coordination and cooperation for municipal growth:

- Incorporation of the Growth Area Map into the County Comprehensive Plan
- Incorporation of the Growth Area Map into the County Master Water and Sewerage Plan
- County-town Joint Planning Agreement on municipal growth and development
- County-town zoning cooperation
- Adopt a formal Joint Planning Agreement
- Adopt annexation guidelines that provide for improved Town/County coordination

Goals And Objectives For Municipal Growth

Goal: Accommodate future growth and appropriate economic development while maintaining the small town character and setting of Vienna

Objectives:

- Locate commercial and light manufacturing in appropriate areas
    - Concentrate new commercial development between Route 331 and Ocean Gateway
    - Identify potential sites for commercial infill along Market Street
    - Locate light manufacturing on the west side of Route 331
    - Locate tourism-oriented businesses, such as restaurants or gift shops, on Ocean Gateway near the Nanticoke River
- Encourage development of residential "pods" integrated with open space
    - Create residential zones west and southwest of town
    - Encourage residential development that includes open space and is integrated into the existing town fabric
    - Encourage development of elderly, affordable and rental housing
- Expand and improve infrastructure systems
    - Modify and extend existing streets, such as Market Street and Church Street, to link to new development
    - Make improvements to stormwater management system
    - Improve and expand sidewalks, add streetlights and street trees

    - Create new streets to integrate areas west and south of Vienna into existing community

Goal: Enhance quality of life in Vienna by providing community amenities for residents and visitors

Objectives:

- Create a new civic center
    - Locate new buildings such as a Town Hall, Library, and/or Day Care around a new Town Green
    - Create appropriate streetscape on streets adjacent to the Town Green
- Improve "Gateways"
    - Enhance intersections at entrances to Town (planting, signage, etc.)
    - Improve streetscapes of streets leading into Town
    - Create signage to direct visitors to downtown and waterfront
- Expand recreational opportunities for residents and visitors
    - Develop a new open space trail network, including land, water and railroad trails
    - Develop a new recreation center near school and Town Green with ball field, basketball and tennis courts
    - Open seasonal outdoor outfitter on the waterfront

Goal: Enhance and protect the significant cultural and natural resources within Vienna and the surrounding area

Objectives:

- Improve and interpret the natural environment
    - Encourage ecological restoration of wetlands
    - Extend waterfront boardwalk to provide access to wetland and other natural areas

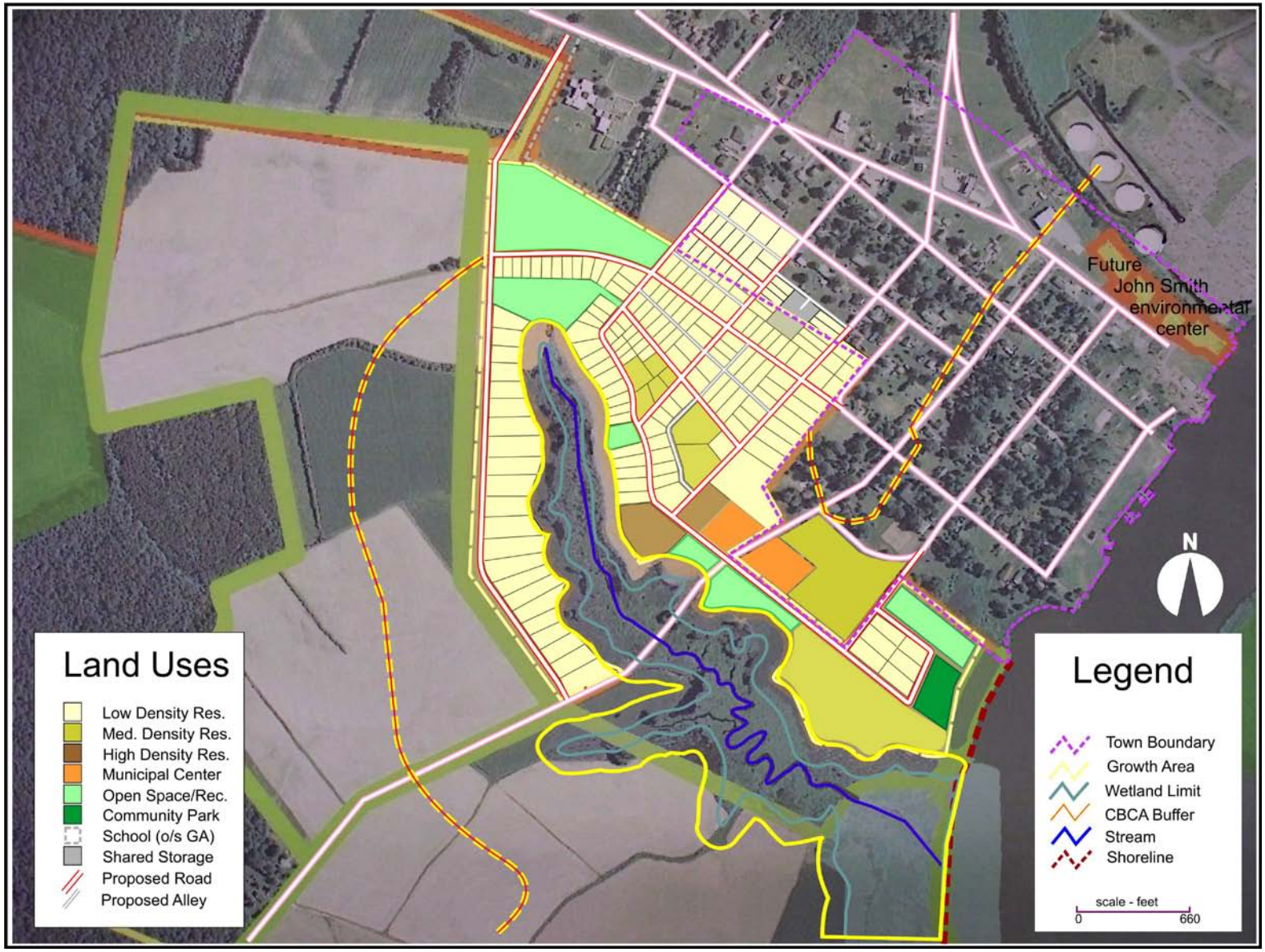
Goal: Maintain the rural legacy of the Vienna area by protecting significant scenic vistas, farms and forest surrounding the Town

Objectives:

- Protect important scenic land surrounding the Town
    - Pursue priority protection areas identified under Rural Legacy
    - Expand area for protection through easements, management agreements, design standards, etc.
    - Encourage landowners to fin conservation-based development alternatives for accommodating growth while protecting resources
- Protect and enhance nearby farmlands and forests
    - Encourage and support Vienna's heritage of working landscapes – farms, woodlands, waterways

- Encourage use of sustainable forestry techniques
- Encourage wildlife habitat enhancements in woodlands and around farm fields

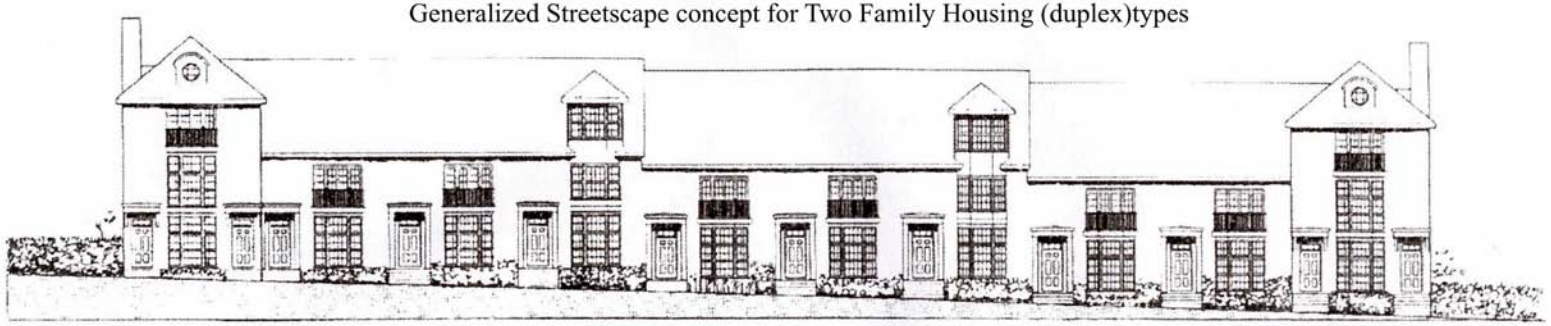
Vienna Growth Area - Municipal Growth Element



Generalized Residential Character for Growth Area

Generalized Streetscape concept for Single Family Housing types

Generalized Streetscape concept for Two Family Housing (duplex)types



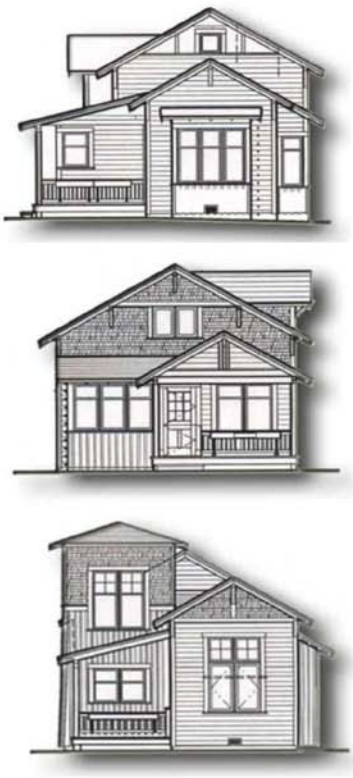
Generalized Streetscape concept for Townhouse Housing types (smaller massing for multi-family structures is preferred)

Greenwood Avenue Cottages in the Seattle, Washington area provide visual examples of innovative small scale condominium housing that incorporates common areas, private gardens, clustered garage and visitor parking and good attention to detail in the design of small individual housing units. The siding materials and window trim are compatible with the traditional architecture of that region. Similar scale residential developments, appropriately altered to blend with the traditional architecture *of our* region, is deemed appropriate for infill development in Vienna.

"Cottage" Housing is also consistent with small lot infill options and affordable workforce housing goals. As such, Cottage development could be incorporated into larger Growth Area projects in response to Town requirements for "mixed residential" developments

Greenwood Avenue Cottages in the Seattle, Washington area. Various interior and exterior views of "Cottage Style" housing including a "commons" building that residents use for meetings, recreational activities, and functions and activities that require a larger space. Careful attention to design and extensive use of customized builtins enhance the livability of these modestly sized units for their owners. Ideal for one and two person households, these units appeal to a wide range of age groups and income levels increasing their marketability and helping to account for their acceptance and rapid sales in local markets. Porches add to the sense of community and encourage interaction.

These examples are not "prescriptive" but rather provide illustrative examples to guide developers who may want or be asked to provide more affordable housing options.



Examples from several other projects done by the CottageCompany in the Seattle, Washington area. Use of color to define space and unifying trim details plus generaous windows increase livability and help expand the spaces visually. Interesting detail reminiscent of the "craftsman" movement in turn of the century bungalow architecture also enhance the traditional character of these comfortable and attractive units. Shingle, shiplap, and "board and batten" siding options are consistent with construction details commonly used in traditional home construction on the Lower Eastern Shore.

Actual units should be reviewed and approved separately by the Vienna Planning Commission to ensure compatible character with Vienna and Maryland tidewater vernacular architectural styles

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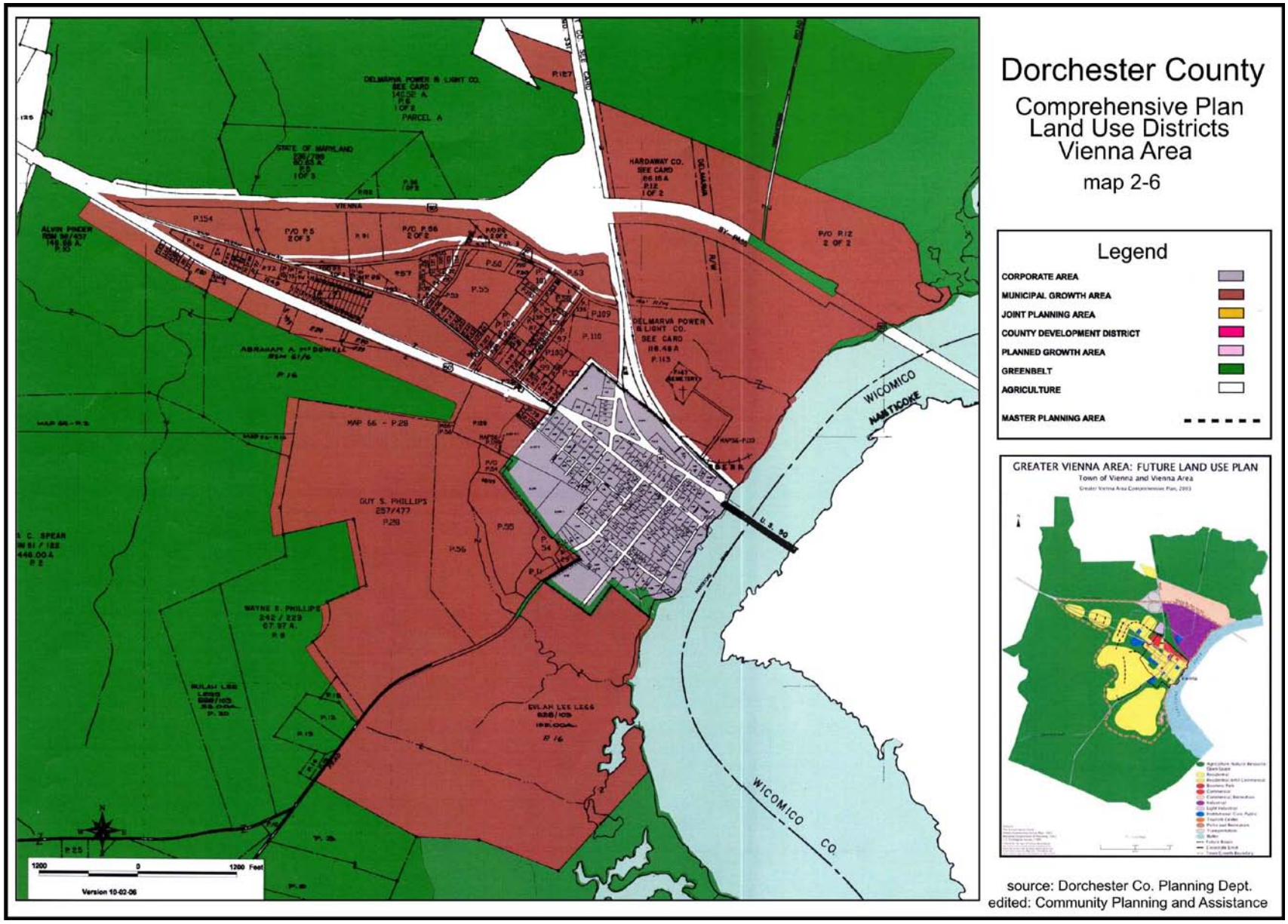
Dorchester County
Comprehensive Plan
Land Use Districts
Vienna Area
map 2-6
Legend
CORPORATE AREA
MUNICIPAL GROWTH AREA
JOINT PLANNING AREA
COUNTY DEVELOPMENT DISTRICT
PLANNED GROWTH AREA
GREENBELT
AGRICULTURE
MASTER PLANNING AREA
GREATER VIENNA AREA: FUTURE LAND USE PLAN
Town of Vienna and Vienna Area
VIENNA
WICOMICO
WICOMICO CO.
MAP 56 - P.28
GUY S. PHILLIPS
257/477
P.28
WAYNE S. PHILLIPS
242 / 229
67.97 A.
DELMARVA POWER & LIGHT CO.
SEE CARD
HARDAWAY CO.
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STATE OF MARYLAND
ABRAHAM A. McDOWELL
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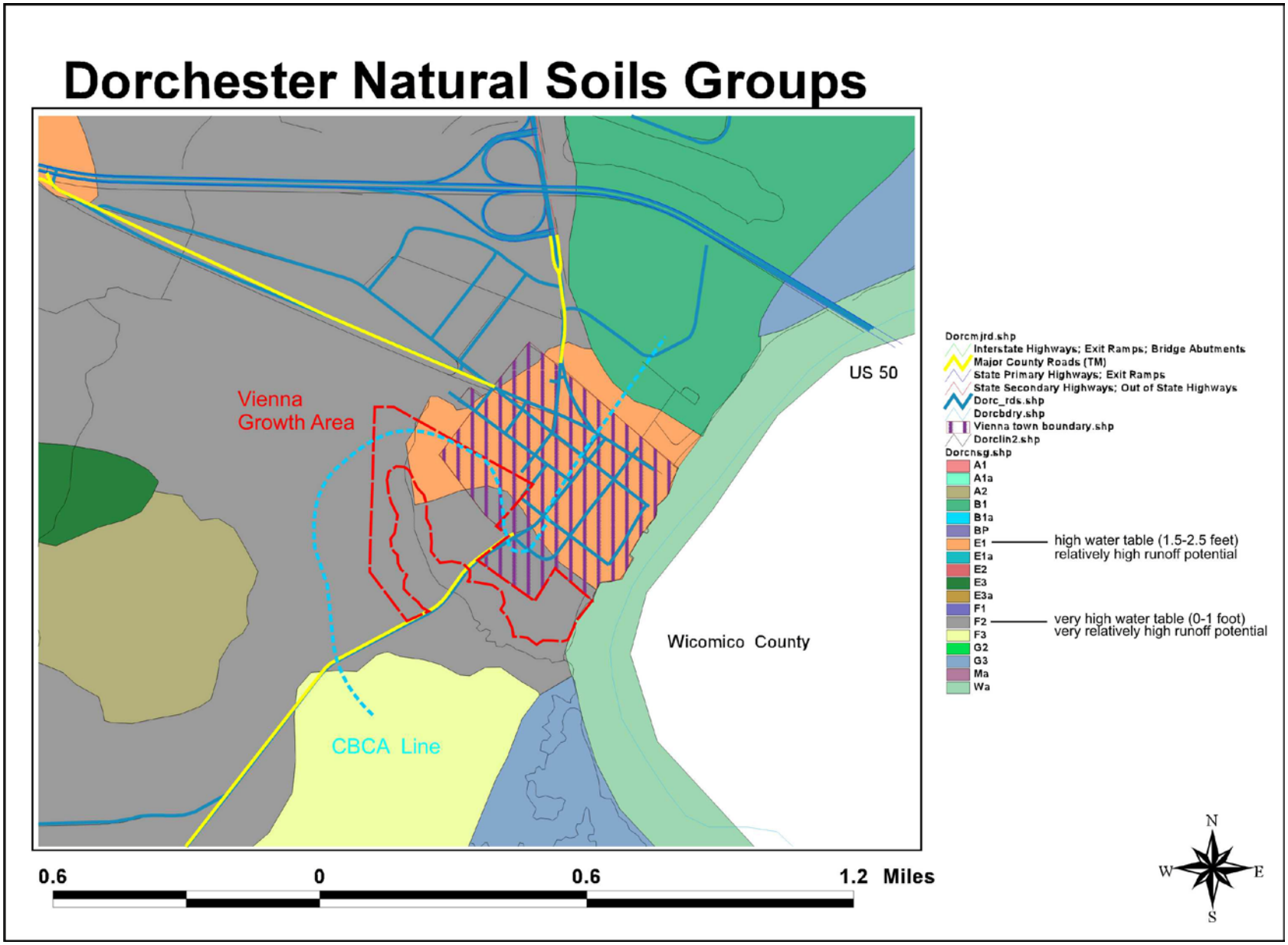
Version 10-02-06
source: Dorchester Co. Planning Dept.
edited: Community Planning and Assistance


Dorchester Natural Soils Groups
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Growth Area
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Wicomico County
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Interstate Highways; Exit Ramps; Bridge Abutments
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Vienna town boundary.shp
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Dorcnsg.shp
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high water table (1.5-2.5 feet)
relatively high runoff potential
very high water table (0-1 foot)
very relatively high runoff potential
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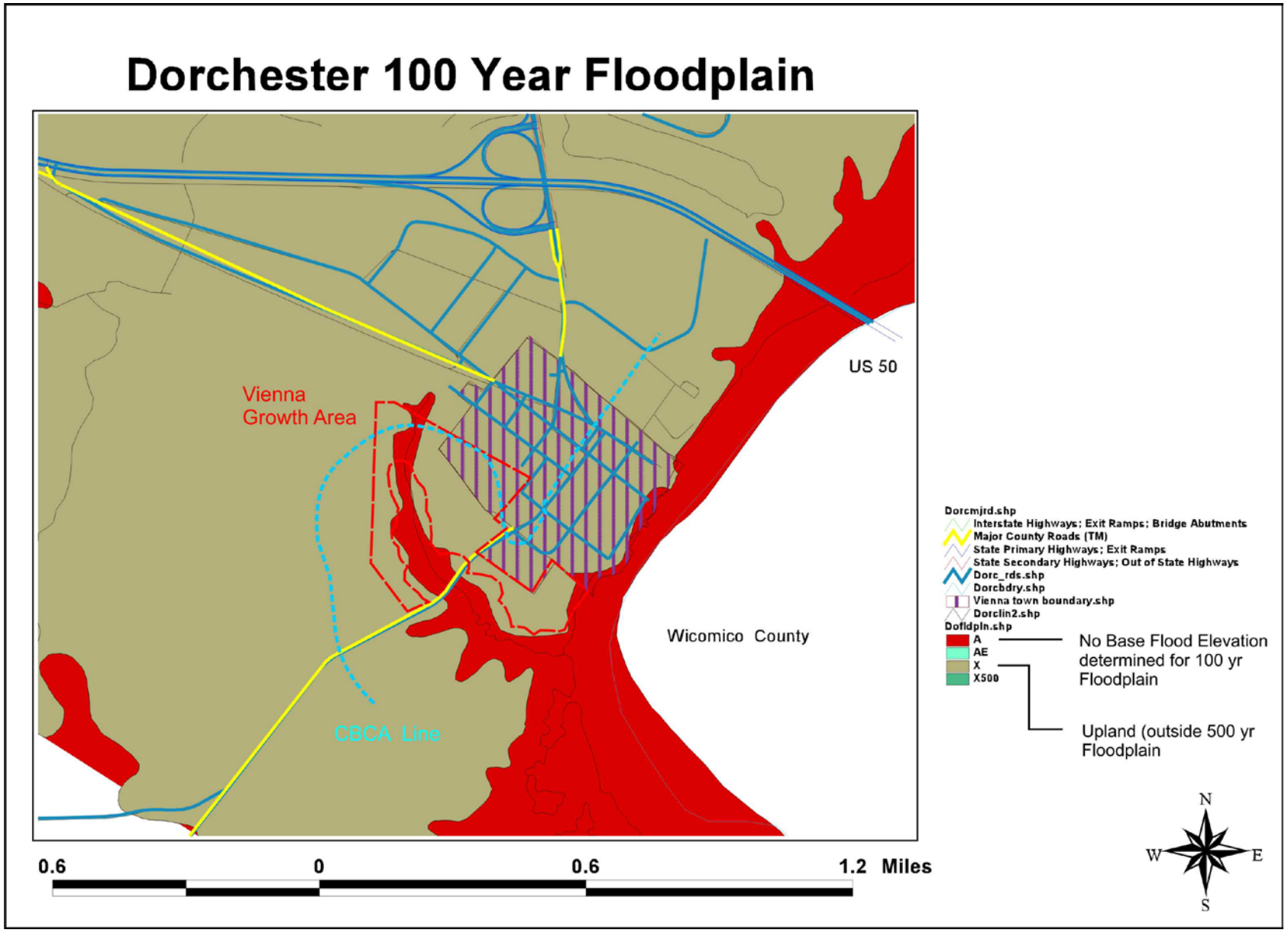
Dorchester 100 Year Floodplain
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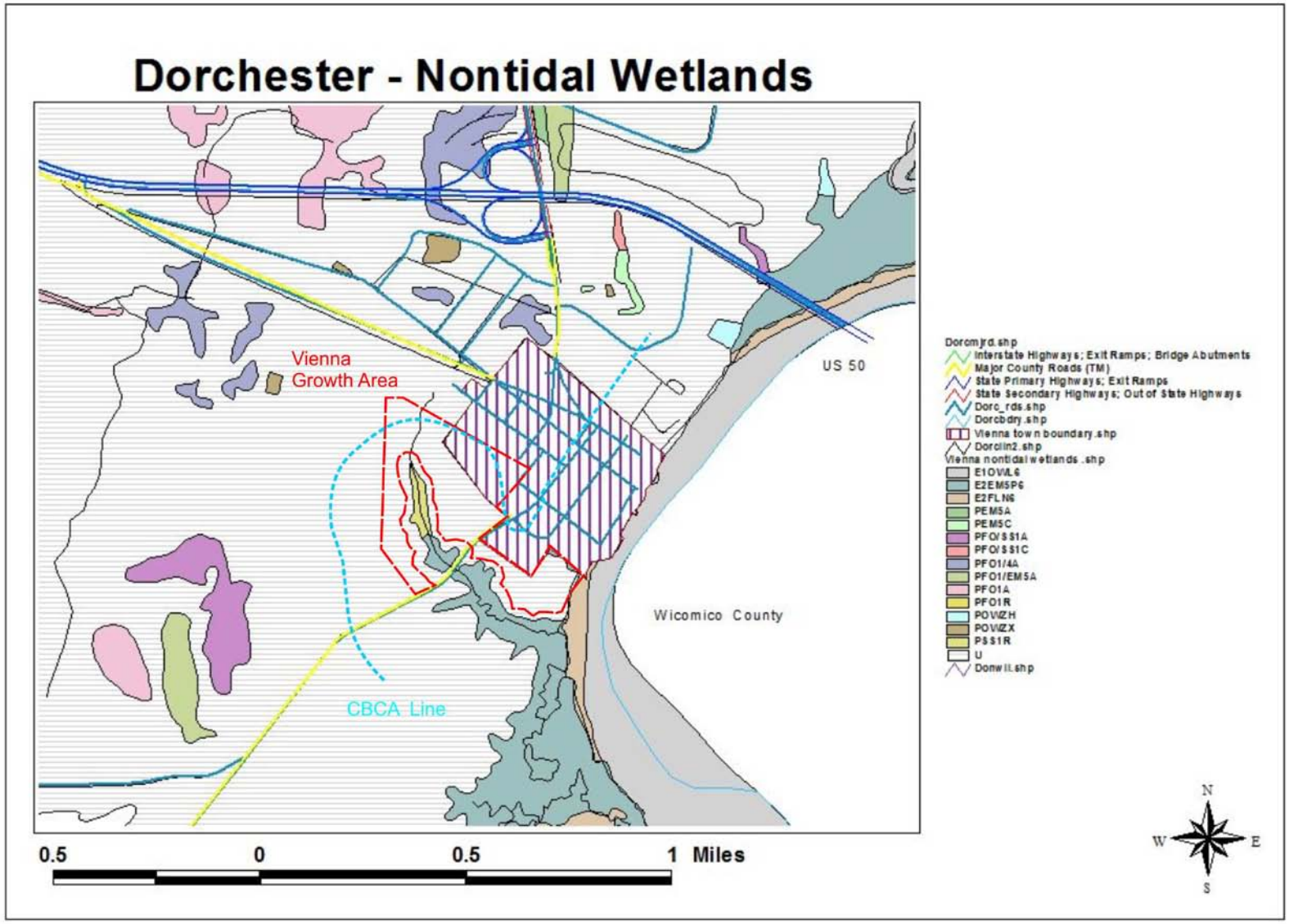
Dorchester - Nontidal Wetlands
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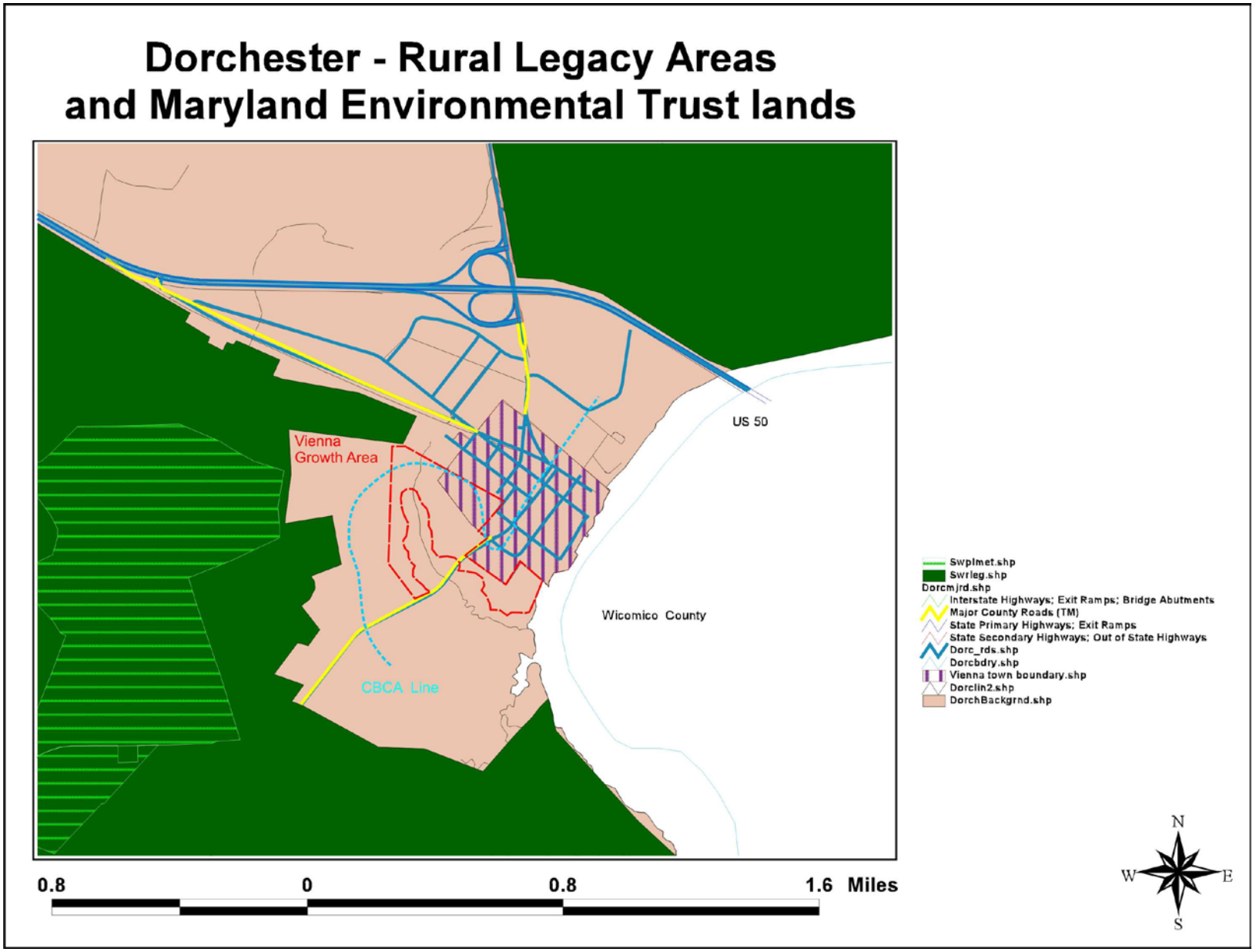
Dorchester - Rural Legacy Areas
and Maryland Environmental Trust lands
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Growth Area
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Swrleg.shp
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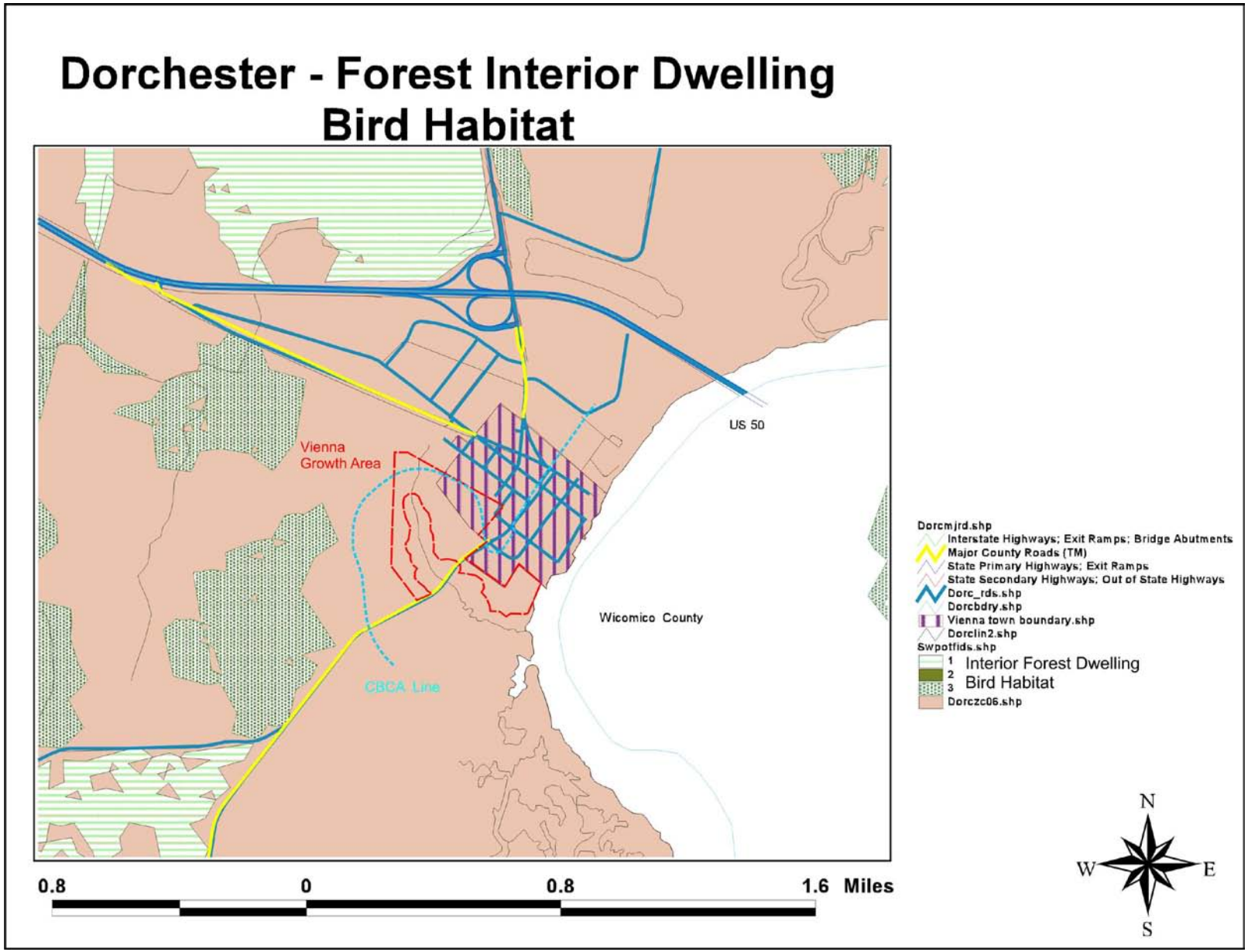
Dorchester - Forest Interior Dwelling
Bird Habitat
Vienna
Growth Area
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Wicomico County
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Major County Roads (TM)
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State Secondary Highways; Out of State Highways
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1 Interior Forest Dwelling
2
3 Bird Habitat
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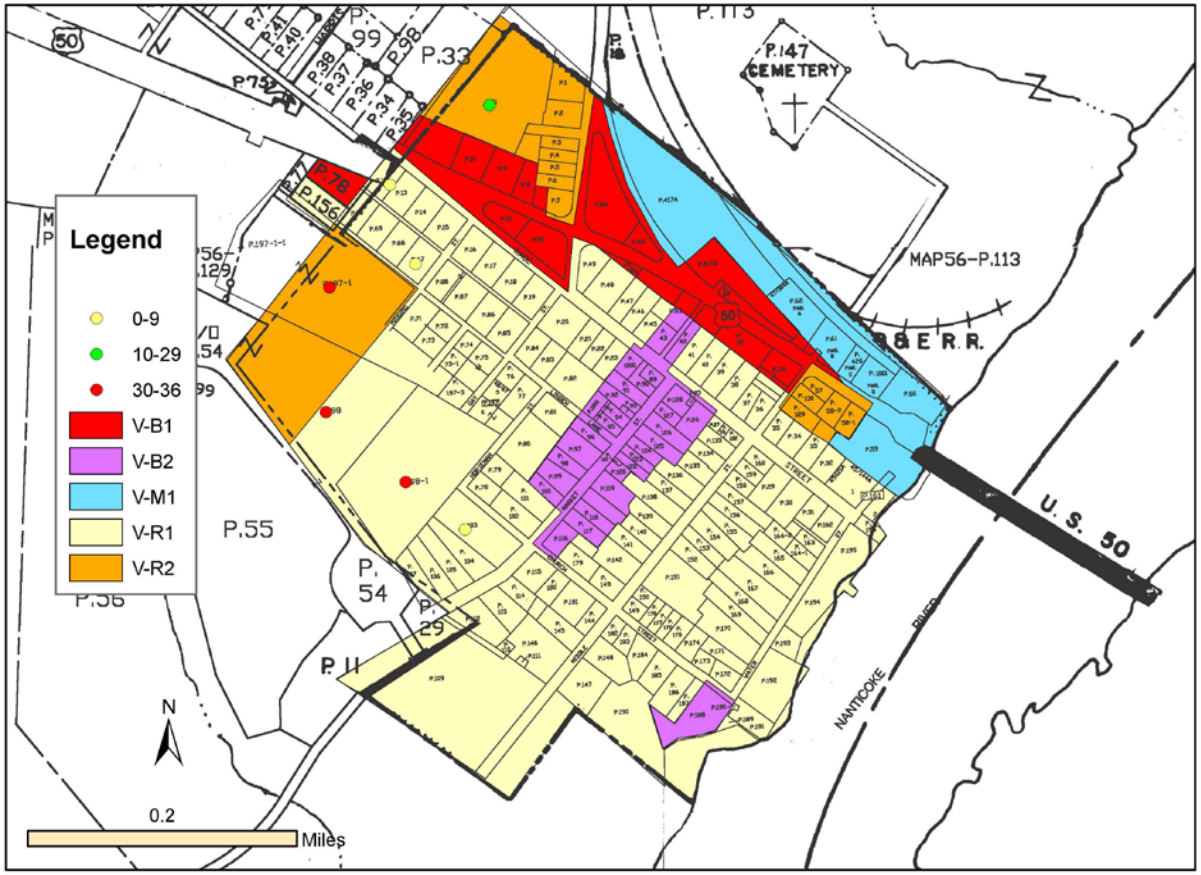
Vienna Parcels by Zoning and New Household Capacity



The map presented above was prepared by the Maryland Department of Planning as part and parcel of their "capacity analysis." It is included for purposes of general illustration and completeness only. The indicated range of infill capacity for each of the three colored bullets does not provide sufficiently detailed information to aid decision-making at this scale. The implied capacity ranges between 100 and 164 dwelling units. No parcel-specific analysis accompanied the map to provide specific insight.

Vienna Water Resources Element

Background

Article 66B of the Maryland Annotated Code, as amended by House Bill 1141 (2006 Session), requires a Water Resources element in the Comprehensive Plan that addresses the adequacy of water supply and the suitability of receiving waters for point and non-point discharges. The WRE must evaluate the adequacy and suitability of water resources on the basis of existing and future land use, both within the Town and within the Town's growth area. Thus, the WRE is based on the Land Use and Municipal Growth elements of the Comprehensive Plan. It is also tied to the Community Facilities element (for water and sewer), and to the Plan's environmental goals and policies for protecting water supply and water quality.

If, after considering the condition and capacity of the existing water system and factoring additional demands anticipated over the planning period, issues are identified then two options are available:

> Expand and upgrade existing capacity (quantity and/or quality); or
> Revise downward the level of growth that is planned (to bring facility demand into balance with facility capacity).

Similarly, waste water treatment capacity is analyzed to determine whether expansion and/or upgrades to the level of treatment are needed to ensure adequate disposal to the receiving waters. The waste water stream is divided into point and non-point sources to reflect treatment plant discharge and pollution originating in the sheet flows associated with stormwater discharge and general migration of contaminants over and through soils and into stream corridors (as the mixture of water and pollutants works its way toward the Chesapeake Bay).

This analysis is complicated by external limits established on various contaminants by State and Federal regulatory agencies. Various permits limit the quantity and rate at which water resources can be extracted from different available aquifers and also the quantity and quality of waste water that may be discharged to receiving waters. These limits are dependent upon local aquifer conditions and pollution absorption limits established by tributary studies conducted under Department of Natural Resources leadership.

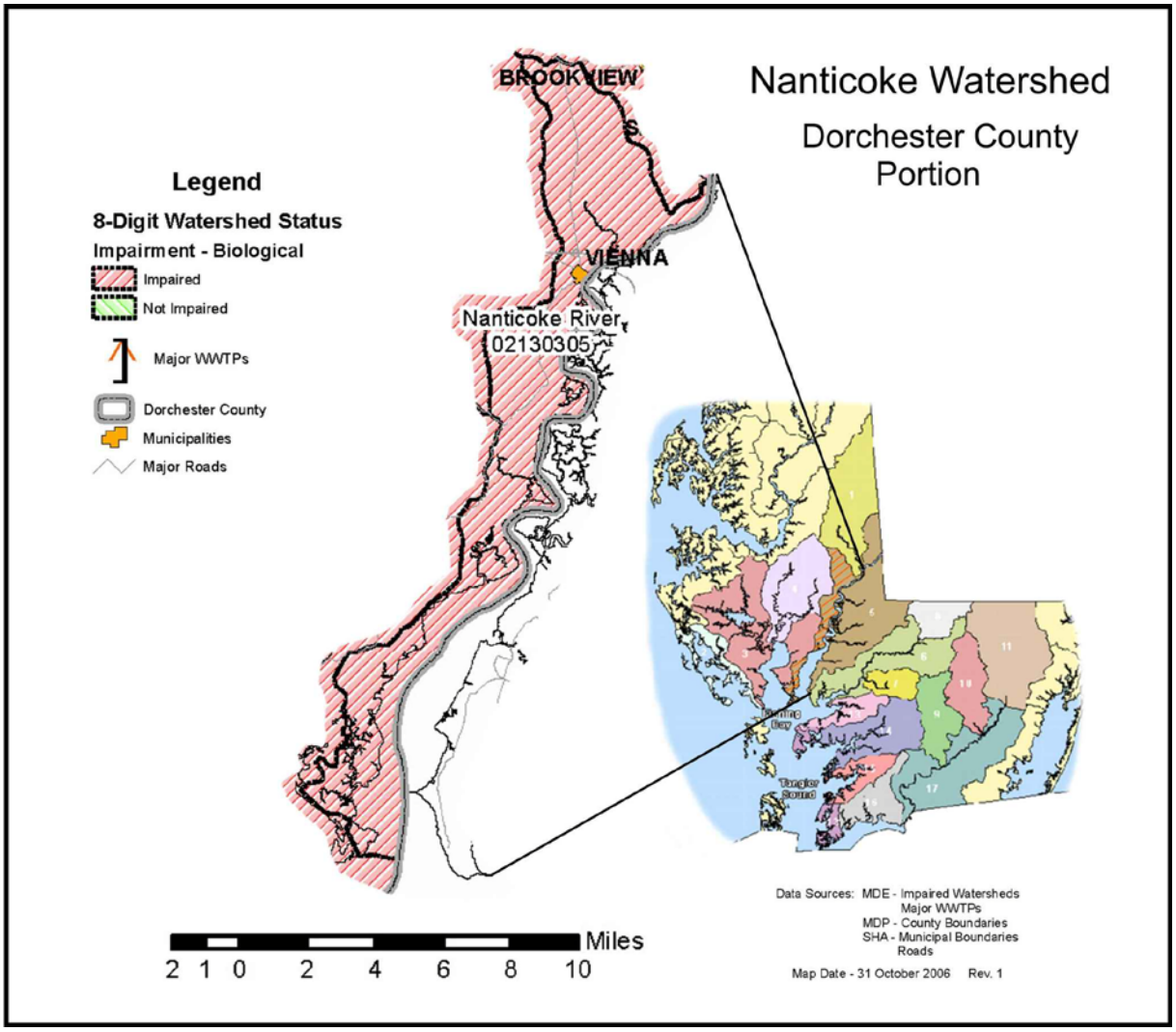
All of these issues need to be evaluated and balanced into a coordinated strategy that ensures adequate public facilities are in place or are planned to be provided in a manner timed to meet projected demands from future growth and development. What may appear relatively straight forward, can be further complicated by the need to ensure that the provision of needed public services are affordable to the population of the jurisdiction. Simply suggesting that future growth will be paid for by future residents oversimplifies the economics and structure of public finance for water and sewer systems. Finally, estimating the nature and timing of future demand is more art than science, especially in a jurisdiction as small as Vienna.

Comprehensive Planning begins from the standpoint that a reasonable working hypothesis suggests that the trends and conditions of the past are likely to predict the challenges and issues of the future, adjusting for natural increases and decreases in population. However, that is just a beginning, and the purpose behind the planning process is to do the best possible job of refining (and guiding) the community's vision toward the future it would like to see realized.

The Town of Vienna recognizes that many of the issues bearing on water supply and water quality are beyond the scope of the Town to control. Ground water aquifers and watershed drainage systems are vast

in comparison to the acreage in Town and the relative impacts of a small population in a very small geographic area have a very small relative measurable impact (compared to the numbers represented by the overall Nanticoke River watershed that Vienna is part of). Notwithstanding that, the Town is committed to the ethic of universal environmental stewardship and will make every effort to coordinate and cooperate with both Dorchester County and the various interests of Maryland State government to improve and enhance the health of the Bay and the lives of residents.

Watershed Location



Vienna is located on the banks of the Nanticoke River at the eastern edge of Dorchester County. As such, the Town is located within the Nanticoke Watershed which includes portions of Wicomico County and Sussex County, Delaware. The Dorchester County portion of this watershed has about 36,185 land acres (based on MDP 2002 land use GIS data). The land use is fairly evenly divided between agriculture (39%), forest (31%), and wetland (28%). Note that wetland acreage estimates based on this land use data may be grossly underestimated. More accurate wetland estimates, as discussed later, are based on GIS data from DNR. There is also a small amount of developed area (2%). Both the Chesapeake Bay Foundation and The Nature

Conservancy are putting special emphasis on preserving the Nanticoke River watershed. The meanders of the Nanticoke River have resulted in extensive wetlands on the inside bends. For purposes of identification, study, and analysis, the watershed has an eight digit identifier that is used for water quality modeling by State and Federal agencies

Nanticoke River (02130305)

Roughly two-thirds of the County drains into the Nanticoke River (Dorchester County, 1996). Upper Nanticoke River, Chicone Creek, Mill Creek, and Savanna Lake are designated *Natural Heritage Areas* within this watershed. To get this designation, an area must 1) Contain species considered to be threatened, endangered, or in need of conservation; 2) Have unique geology, hydrology, climate or biology; and 3) Be among the best Statewide examples.

Some of the Dorchester County portion of this watershed is classified as prime farmland (based on US Department of Agriculture, National Resource Conservation Service (NRCS) GIS data), with the largest amounts around Wrights Millpond and Chicone Creek mouth. In order to preserve agriculture in the County, wetland restoration/creation should attempt to avoid areas classified as prime farmland. Prime farmland is present in the immediate vicinity of Vienna. A 3,304 "area of interest" has been delineated to limit discussion to the area(s) subject to review in this particular municipal WRE.

Vienna's Prime Farmland

Approximately 23% of the area immediately adjacent to Vienna is classified as "prime farmland." An additional 51% of the 3,304 acre area is classified as "farmland of statewide importance." Almost three quarters of the land surrounding Vienna has very high quality soils.

Prime Farmland Illustration

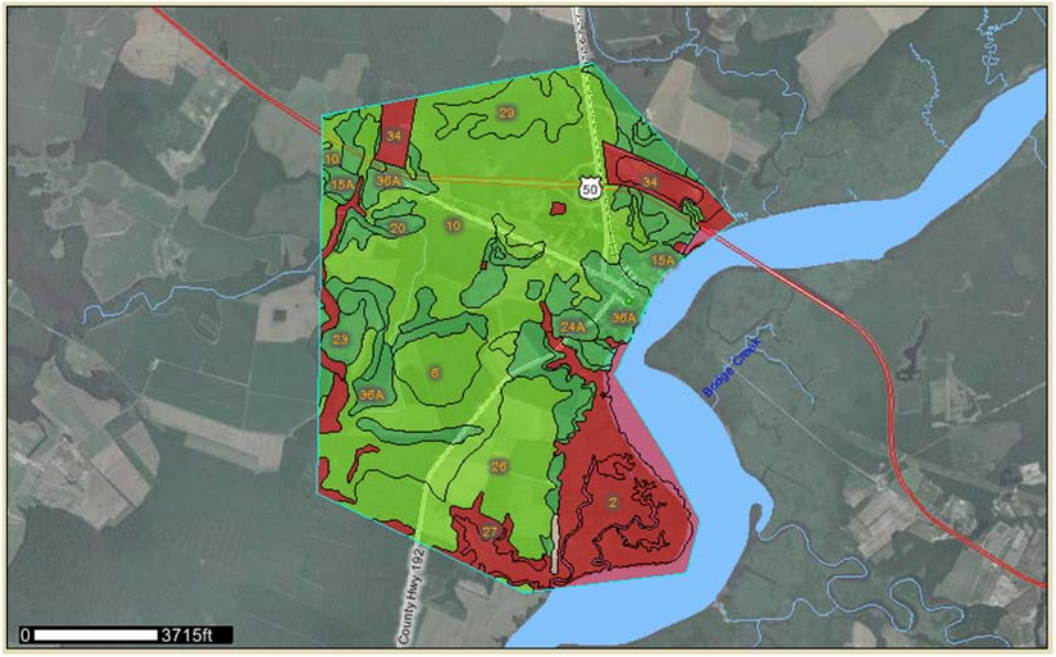


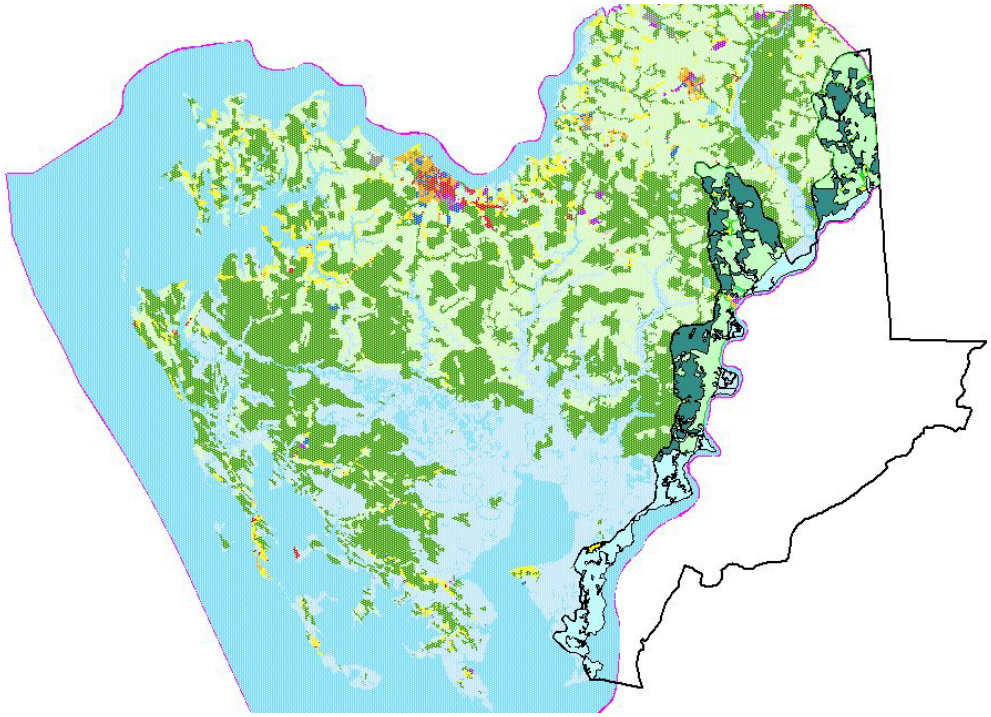
Table 14 Prime Farmland

Summary by Map Unit — Dorchester County, Maryland

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Bestpitch and Transquaking soils	Not prime farmland	351.7	10.6%
3	Chicone mucky silt loam	Not prime farmland	35.3	1.1%
6	Elkton loam	Farmland of statewide importance	105.0	3.2%
10	Fallsington sandy loam	Farmland of statewide importance	1,160.8	35.1%
12B	Fort Mott loamy sand, 2 to 5 percent slopes	Prime farmland if irrigated	8.1	0.2%
15A	Hambrook loam, 0 to 2 percent slopes	All areas are prime farmland	141.2	4.3%
15B	Hambrook loam, 2 to 5 percent slopes	All areas are prime farmland	58.9	1.8%
17	Honga peat	Not prime farmland	2.1	0.1%
20	Keyport silt loam	All areas are prime farmland	42.6	1.3%
22A	Matapeake silt loam, wet substratum, 0 to 2 percent slopes	All areas are prime farmland	48.8	1.5%
22B	Matapeake silt loam, wet substratum, 2 to 5 percent slopes	All areas are prime farmland	10.6	0.3%
23	Mattapex fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland	82.3	2.5%
24A	Mattapex silt loam, 0 to 2 percent slopes	All areas are prime farmland	31.3	0.9%
25	Nanticoke silt loam	Not prime farmland	16.9	0.5%
26	Othello silt loam	Farmland of statewide importance	344.8	10.4%
27	Othello and Kentuck soils	Not prime farmland	91.6	2.8%
28	Pone mucky sandy loam	Farmland of statewide importance	18.4	0.6%
29	Pone mucky loam	Farmland of statewide importance	125.4	3.8%
33	Sunken mucky silt loam	Not prime farmland	4.6	0.1%
34	Udorthents	Not prime farmland	74.7	2.3%
35	Woodstown loam, 0 to 2 percent slopes	All areas are prime farmland	1.7	0.1%
36A	Woodstown sandy loam, 0 to 2 percent slopes	All areas are prime farmland	348.5	10.5%
36B	Woodstown sandy loam, 2 to 5 percent slopes	All areas are prime farmland	14.4	0.4%
W	Water	Not prime farmland	184.5	5.6%
Totals for Area of Interest			**3,304.4**	**100.0%**

Description — Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.



The Dorchester County portion of the Nanticoke River Watershed (shown above) has not experienced significant land use change since it was mapped by the Maryland Department of Planning in 2002. Accordingly, that data set was used to calculate existing land uses in the that portion of the watershed. Results are tabulated below:

Table 15

Land Use Classification	Acres	Percentage
Low density residential	513	1.4%
Medium density residential	89	0.2%
Commercial	7	n/a
Industrial	73	0.2%
Institutional	20	n/a
Town of Vienna (urban)	87	0.2%
All (urban)	702	1.9%
Agriculture	14,133	39.5%
Forest	11,073	30.9%
Wetlands	9,189	25.7%
Total	35,758	100%

Source: MDP 2002 land use land cover. Calculations: Community Planning and Assistance

The total nitrogen, phosphorous and sediment non-point loading rates for a similarly rural watershed were found (for the Upper Choptank Watershed that was the subject of a Watershed Restoration Action Strategy that studied runoff characteristics from the same aggregated land uses). For practicality, planning and illustration purposes, Vienna has used the same coefficients

(contained in the following table) to estimate relative impacts for the Nanticoke Watershed with the following results:

Table 16

Nanticoke Watershed (Dorchester County) Non-Point Source Loading Rates			
Land Use	Nitrogen (lbs/ac)	Phosphorous (lbs/ac)	Sediment (tons/ac/yr)
Urban	7.5	0.7	0.09
Crops	17.11	1.21	0.74
Pasture	8.40	1.15	0.30
Forest	1.42	0.00	0.03
Urban	5,265	491	63
Agriculture	241,815	17,101	10,458
Forest	15,723	n/a	332
Wetland	unknown	unknown	unknown
Nanticoke Total	262,803	17,592	10,853
Vienna (pre growth)	652	61	7.8
Vienna (post growth)	1,125	105	13.5

Vienna's post development nonpoint loadings improve the "pollution budget" in every category: 606 fewer pounds of nitrogen per year, 32 fewer pounds of phosphorous, and a reduction in over 40 tons of sediment per year. While clearly beneficial it appears that the real emphasis (and resultant benefit to the Bay's health) should focus on improving agricultural practices to reduce fertilizer and sediment loads.

The statistics demonstrate that the planned Town growth will increase (theoretically, absent the implementation of new best management practices – to which the Town is committed to promoting) "urban" loadings by less than 1/5 of 1%...an amount so small as to be practically unmeasurable. The water quality battle will be won or lost in the Nanticoke watershed through best management practices for agriculture and silviculture. The Town is committed to working cooperatively with the County and State agencies as a partner in discussions and regulatory initiatives that will accomplish those purposes. Wetland restoration and increased buffers will play a significant part in achieving water quality improvement in the Nanticoke watershed.

Estimates of wetland acreage for the entire Maryland portion of the watershed, based on DNR mapped wetlands, are as follows:

Estuarine

- Emergent: 14,050 acres
- Scrub shrub: 345 acres
- Forested: 523 acres
- Unconsolidated bottom: 7 acres
- Unconsolidated shore: 120 acres

• Palustrine

- Emergent: 2,532 acres
- Scrub shrub: 1,408 acres

- Forested: 18,367 acres
- Unconsolidated bottom: 241 acres
- Unconsolidated shore: 5 acres
- Farmed: 280 acres

Total: 37,878 acres

These figures include extensive areas in Wicomico County (but do not include important wetlands in Delaware). Wetlands along the Nanticoke River, Marshyhope Creek, and tributaries have a high potential for surface water detention, nutrient transformation, and sediment and particulate retention. The estuarine and lotic (adjacent to freshwater streams and rivers) river portions had high potential for coastal storm surge detention and shoreline stabilization. Many of the terrene wetlands were estimated to have moderate to high potential for surface water detention. The Nanticoke River and lower tributaries have high potential for fish and shellfish habitat, and waterfowl and waterbird habitat. There are several State-designated Nontidal Wetlands of Special State Concern and one potential WSSC within this watershed. However, *none are in the Vienna Planning/Growth Area.*

Sediment Reduction

Wetlands along rivers, streams and coastal areas are important for removing sediment from surface and tidal waters. During large flood events, rivers frequently overtop their banks and water flows through adjacent floodplains and wetlands. Flood waters carry large volumes of suspended sediment, mostly fine sand, silt and clay. Because floodplains and wetlands provide resistance the flow of water is slowed and sediment is deposited and stored in these areas. Similarly, coastal marshes and estuaries retain sediment brought in by tides and residual suspended sediment from rivers.

Wetland biological and chemical processes remove suspended and dissolved solids and nutrients from surface and ground water and convert them into other forms, such as plant or animal biomass or gases. Debris and suspended solids (fine sediment or organic matter) may be removed by physical processes, such as filtering and sedimentation.

Soil characteristics, landscape position, and hydrology all contribute to the relative ability of a wetland to perform nutrient removal and transformation. Sufficient organic matter must be present for microorganisms in the soil to consume or transform the nutrients. Wetlands are often depressions in the landscape that hold water, transported sediment, and attached or dissolved nutrients for a longer period of time than a sloping area or areas with relatively higher elevations. A longer retention time allows for chemical interactions and plant uptake to occur.

Impervious urban areas pose the greatest potential impact on non-point runoff, and Vienna will continue to manage and expand the wetlands that exist within Town, the Growth Area, and areas beyond the growth area as a policy demonstrating the Town's commitment to environmental stewardship and a step toward meeting its vision goal of being a model conservation oriented community.

Tidal wetlands are highly effective sinks and/or transformers of nutrients, as nutrients are taken up and stored by plants or released as nitrogen gas into the atmosphere. However, the uptake and transformation occurs on a seasonal basis during the growing season. At the end of the growing season, as plants die and decompose, nutrients are released back into the aquatic system.

Wetlands are most effective at nutrient transformation and uptake when there are seasonal fluctuations in water levels. Wetlands that are temporarily flooded (saturated or inundated for brief periods early in the growing season) and those that are permanently inundated would generally be less effective than seasonally wet areas (saturated or inundated for longer periods during the early-mid growing season but are drier by the end of the growing season).

The loss of marshes from erosion due to nutria herbivory and sea level rise may increase water quality problems as loose sediments and attached nutrients are released into the water column.

Toxics Retention

Retention of heavy metals has been reported most often in studies of tidal wetlands, though most wetlands are believed to serve as sinks for heavy metals. Accumulation is primarily in soils, with plants playing a more limited role. Plants such as cattails, bulrushes, and Phragmites are among the more effective and commonly used plants for uptake of toxic materials such as metals. As is the case for nutrient transformation and sediment retention, soil characteristics, landscape position, vegetation, and hydrology all contribute the relative ability of a wetland to retain toxic materials. The longer the duration that water and transported materials remain in the wetland, the greater the likelihood that the materials will be retained. Many wetlands have been constructed as part of stormwater management facilities to treat surface runoff. The Town of Vienna will investigate the management potential of wetlands within the Planning Area as suitable bioretention and filtering areas to reduce the non-point impacts of urban land runoff.

Since it is estimated that sea level rise will result in high amounts of land loss in this County, wetland restoration and preservation should consider the long-term effects, as discussed previously.

The Town of Vienna is committed to the protection (and expansion) of wetlands along the banks of the Nanticoke River and its tributary streams and waterways. Best management practices that emphasize “green” nonstructural techniques to reduce sediment migration will include revisions to ordinance and design guidelines that promote and provide incentives for low impact designs and maximum water quality benefits through engineered site planning that maximizes on-site retention and on-site percolation of storm water runoff.

Hydric soils

Hydric soils suggest where wetlands are currently or were historically. There are many hydric soils that are not mapped wetlands (based on USDA/NRCS GIS data and NWI/DNR wetlands).

Hydric soils illustration

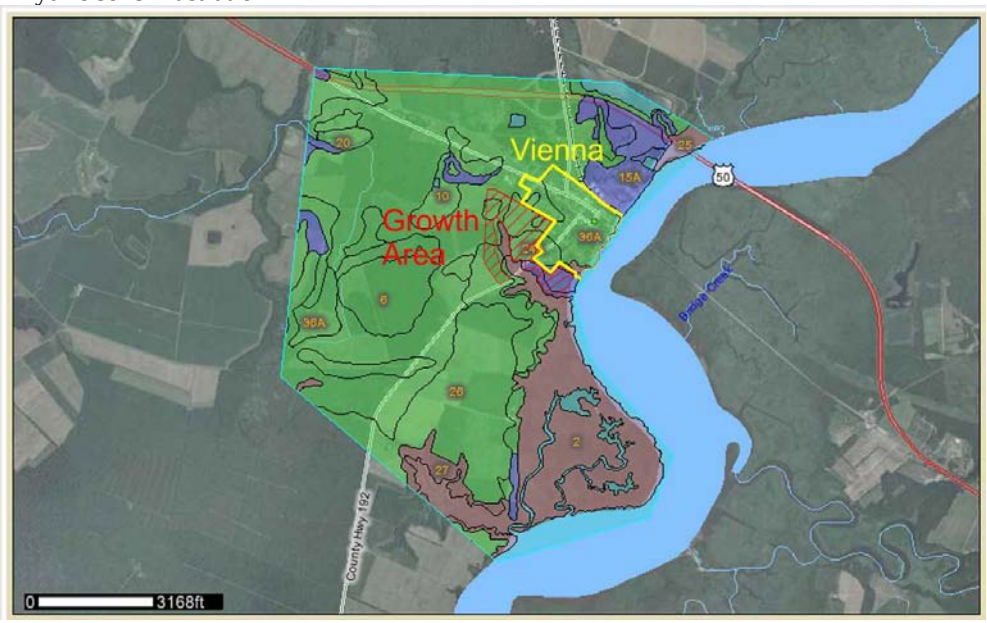


Table 17 Hydric Soils

Summary by Map Unit — Dorchester County, Maryland

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Bestpitch and Transquaking soils	All Hydric	349.3	14.3%
6	Elkton loam	Partially Hydric	99.4	4.1%
10	Fallsington sandy loam	Partially Hydric	813.5	33.2%
12B	Fort Mott loamy sand, 2 to 5 percent slopes	Not Hydric	8.1	0.3%
15A	Hambrook loam, 0 to 2 percent slopes	Not Hydric	72.2	2.9%
15B	Hambrook loam, 2 to 5 percent slopes	Not Hydric	40.3	1.6%
17	Honga peat	All Hydric	2.1	0.1%
20	Keyport silt loam	Partially Hydric	42.6	1.7%
22A	Matapeake silt loam, wet substratum, 0 to 2 percent slopes	Not Hydric	31.8	1.3%
22B	Matapeake silt loam, wet substratum, 2 to 5 percent slopes	Not Hydric	10.6	0.4%
23	Mattapex fine sandy loam, 0 to 2 percent slopes	Partially Hydric	49.8	2.0%
24A	Mattapex silt loam, 0 to 2 percent slopes	Partially Hydric	23.2	0.9%
25	Nanticoke silt loam	All Hydric	17.2	0.7%
26	Othello silt loam	Partially Hydric	284.3	11.6%
27	Othello and Kentuck soils	All Hydric	48.3	2.0%
28	Pone mucky sandy loam	Partially Hydric	16.1	0.7%
29	Pone mucky loam	Partially Hydric	15.5	0.6%
33	Sunken mucky silt loam	All Hydric	4.6	0.2%
34	Udorthents	Partially Hydric	16.2	0.7%
36A	Woodstown sandy loam, 0 to 2 percent slopes	Partially Hydric	318.0	13.0%
36B	Woodstown sandy loam, 2 to 5 percent slopes	Partially Hydric	14.4	0.6%
W	Water	Unknown Hydric	171.8	7.0%
Totals for Area of Interest			**2,449.2**	**100.0%**

Most of these soils are “poorly drained” and are located in the northern portion of the County. However, as demonstrated, some do exist in the Vienna area. Hydric soils that are not currently wetlands may be good potential sites for wetland restoration. The Town of Vienna will

investigate recently acquired lands to assess the potential presence of hydric soils in subareas of the growth area. The hydric soils figure presented below suggests that localized conditions may warrant special attention during site plan review for residential development contemplated for the future.

Watershed Restoration

In the document entitled "Watershed-based Wetland Characterization for Maryland's Nanticoke River and Coastal Bays Watersheds: A Preliminary Assessment Report," Tiner et al., (2000) proposed wetland restoration sites in the Nanticoke River and Marshyhope Creek watersheds totaling 22,506 acres. These sites were classified into two categories: former wetlands (Type 1) and existing impaired wetlands (Type 2). Type 1 sites included filled wetlands (without any buildings on them), farmed wetlands, and those converted to deepwater. There were only 360 acres of Type 1 sites, scattered throughout the two watersheds. The Type 1 estimate is conservative because they did not include areas having hydric soils that were effectively drained, and now appeared to be productive farmland. These areas were indistinguishable from the surrounding land in aerial photographs and the likelihood of landowner interest is low.

However, since identified Type 1 sites are generally surrounded by effectively drained areas, restoration potential acreage is larger than it may first appear. About a third of the existing wetlands within these two watersheds are designated as Type 2 sites, degraded wetlands. Most of these wetlands were ditched palustrine (98%), but some were tidally restricted, impounded, or excavated. There were 22,146 acres classified as Type 2 sites. While these sites are scattered throughout the watersheds, larger Type 2 wetland restoration opportunities include priorities to:

Specific recommendations for restoration:

Restore "gaps" in the Green Infrastructure network to natural vegetation, especially along waterways;
Restore wetlands and streams within the headwaters;
Protect areas within the Green Infrastructure network, especially along the Nanticoke and tributaries.

Specific recommendations for protection:

Protect areas within the Rural Legacy Are;
Protect designated Natural heritage Areas;
Protect additional unprotected areas that are designated Ecologically Significant Areas;
Protect tidal wetlands used as reference sites in DNR's study of wetland vegetative communities;
Protect wetland s and streams within the headwaters.

Water Quality

The 1998 Clean Water Action Plan classified this watershed as Category 1, a watershed not meeting clean water and other natural resources goals and therefore needing restoration. It is also classified as a "Selected" Category 3, a pristine or sensitive watershed most in need of protection. Failing indicators include high nutrient concentrations, low submerged aquatic

vegetation (SAV) abundance, low SAV habitat index, a poor non-tidal fish index and poor non-tidal instream habitat index, high amount of historic wetland loss (54,807 acres), and being on the Federal 303(d) List for water quality impairment.

The majority of this watershed is designated "Green Infrastructure hub," with the exception being a north-south strip radiating out from Vienna (DNR, 2000-2003). Large portions are protected by the State (Fishing Bay WMA and Chesapeake Forest land) and MET holdings. With this said, there are still large section of Green Infrastructure hub that are unprotected. Unprotected areas along the Nanticoke River should be high priority for protection. According to the Maryland Greenways Commission, existing or proposed greenways include:

Nanticoke River. This is a proposed ecological greenway that follows the Nanticoke River. Some of this land is protected by Fishing Bay WMA and Maryland Environmental Trust easement. The remaining proposed section will continue north along the Nanticoke River and past Marshyhope Creek confluence. Some of this land is owned by The Nature Conservancy and a Boy Scout Reservation. Other sections are not currently protected.

Hurlock Rail Trail. This proposed trail would connect Hurlock and Vienna, following the railroad owned by Connectiv. It could also connect with the potential Wicomico County trail to Salisbury.

Vienna has a stated policy of participating in the planning of greenways and the preservation of forested tracts, wetlands, and open farmland adjacent to and beyond the Growth Area.

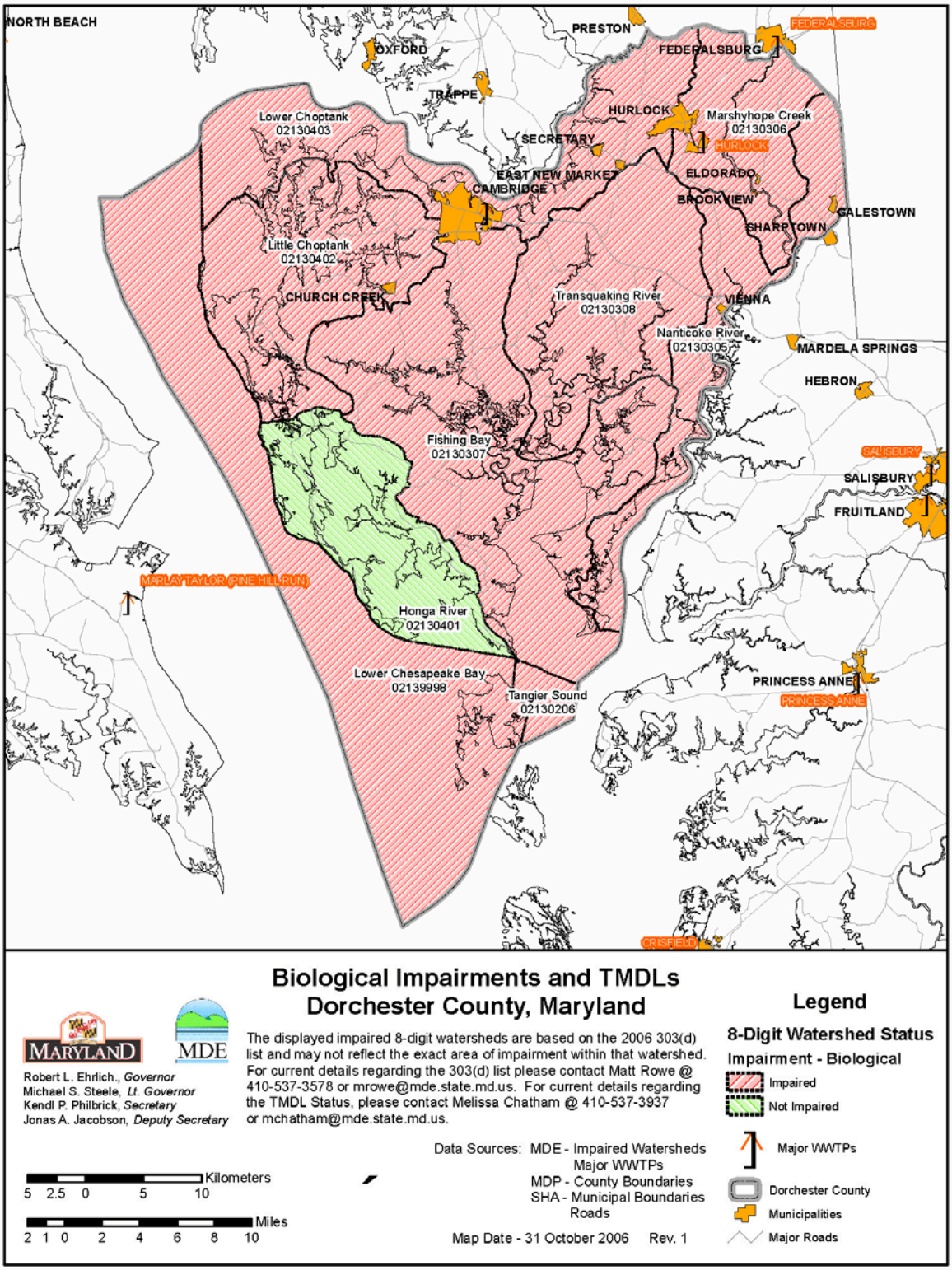
Rural Legacy Area

The following information is summarized from the document Rural Legacy FY 2003: Applications and State Agency Review. The Nanticoke Rural Legacy Area is in the eastern part of the County, adjacent to the Nanticoke River. It is fragmented by the Town of Vienna. Sponsors include The Nature Conservancy, The Conservation Fund, and Dorchester County. Goals include protecting agriculture, forest, waterway buffers, and a greenbelt around Vienna. This area is 21,000 acres, with 33% already protected. Since the Rural Legacy Program funds are not always adequate enough to support all of these requests, other programs should consider preservation of these sites.

TMDL (Total Maximum Daily Load)

The 2004 303(d) List contains basins and subbasins that have measured water quality impairment and may require a TMDL limits. The Nanticoke River watershed is impaired for excessive fecal coliform in the lower tidal reaches of the river. Shellfish harvesting is restricted due to biological impairment of the resources near the mouth of the river. The report: "Maryland's Lower Delmarva Peninsula" was closely reviewed. However, actual TMDL limits for total nitrogen and total phosphorus have not yet been established. When such limits are created, the Town of Vienna will update this element and include an appropriate evaluation of their impacts upon the Town's comprehensive land use programs and this Comprehensive Plan, in particular.

Nanticoke Watershed Impairment illustration



Sources of Nitrogen

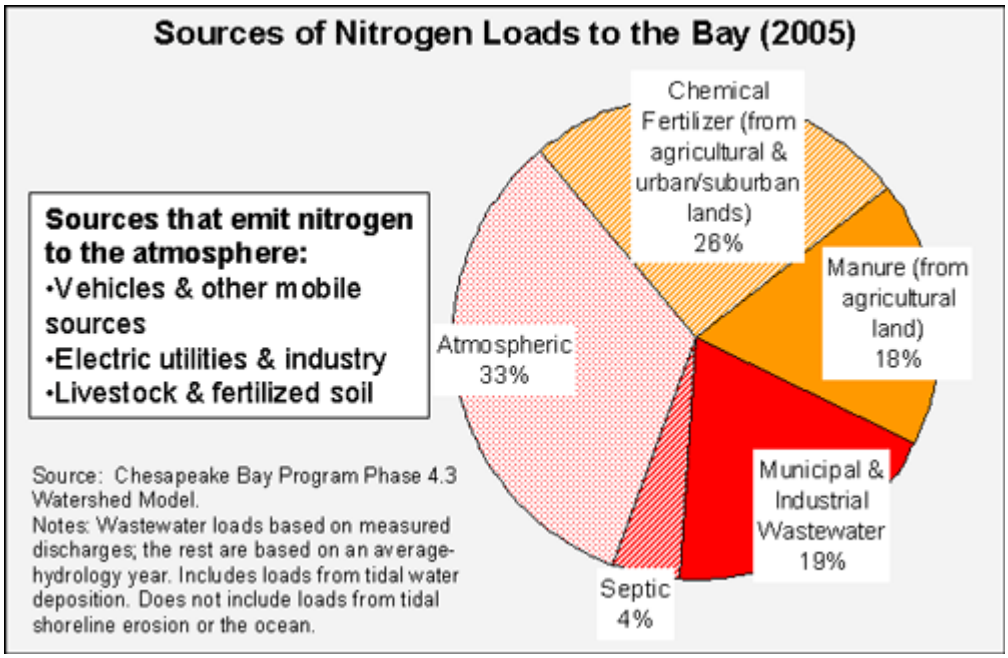
The main cause of the Bay's poor water quality and aquatic habitat loss is elevated levels of two nutrients, nitrogen and phosphorous. Nitrogen occurs naturally in soil, animal waste, plant material, and even the atmosphere (78% of the Earth's atmosphere is inert nitrogen gas). However, most of the nitrogen delivered to the Bay comes from:

emissions from vehicles, industry and electric utilities;

excess chemical fertilizer and manure applied to agricultural, residential and urban areas;

human waste treated and discharged from municipal wastewater treatment plants and wastewater discharged from industrial facilities;

and septic systems that treat household wastewater and discharge effluent to groundwater in the Bay watershed.

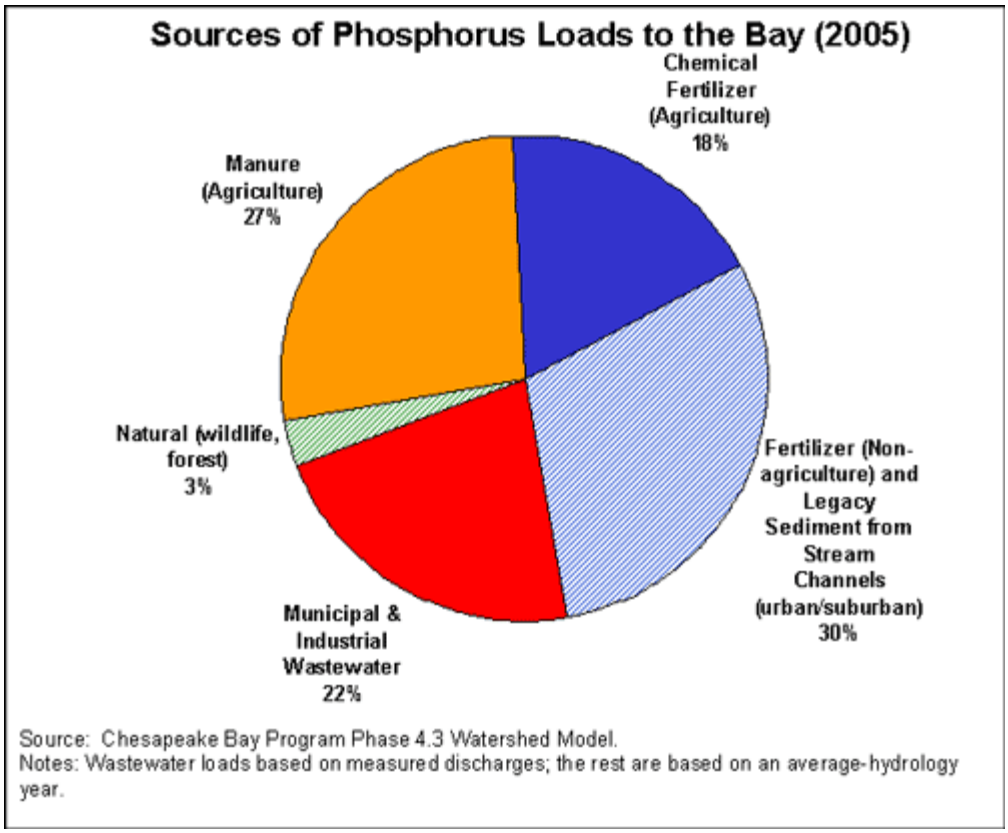


Sources of Phosphorus

Phosphorus occurs naturally in soil, animal waste and plant material. However, most of the phosphorus delivered to the Bay comes from:

excess chemical fertilizer and manure applied to agricultural, residential and urban areas;

human waste treated and discharged from municipal wastewater treatment plants and wastewater discharged from industrial facilities; legacy sediment from stream channels.



The ocean is also a significant source of nutrients to the Bay, but is not accounted for in these charts. Contributions from tidal shoreline erosion are not included either. Additionally, since the source for this information is the Phase 4.3 Bay Watershed Model, it should be remembered that variations in land use and best management practices (that vary greatly from watershed to watershed) were combined to create generalized comparisons for pollution inputs and land use efficiencies. The current "state of the art" is such that future improvements, particularly at the individual watershed level, will provide more useful guidance for comprehensive planning and land use policies. The Town of Vienna, in recognition of current data and modeling limitations, will continue to work with State and County efforts to improve the management of total nitrogen and total phosphorus removal from the waste water flow.

As a practical matter, Vienna will continue to minimize the loss of forest cover in the watershed by careful stewardship of the woodlands within its control and by the expansion of acreage devoted to "forest" cover land use, both for water quality improvement and for habitat enhancement.

Water Supply

Vienna depends on groundwater supplies held in Coastal Plain aquifers at fairly deep levels. The supply is abundant and the storage and delivery system are adequate. Naturally occurring

arsenic is an issue in wells tapping the Piney Point aquifer and salt water intrusion has been documented in parts of the Aquia in the densely populated portions of Kent Island in Queen Anne's County.

While Vienna withdraws from the Calvert formation (and does not currently have to cope with these specific issues) the Town is aware of the potential for long-term problems regarding drinking water supply on the Eastern Shore and needs to stay engaged in the water supply/water quality discussions at the State and regional levels.

On a regional basis, withdrawal characteristics vary, as do land use characteristics. The Eastern Region's differences are a function of its agrarian-small town land use patterns. In the Eastern Region, 2005 public supply accounted for only 24 MGD (27% of all withdrawals in the region and only 2% of all Maryland withdrawals). The public supply is distributed among a few medium sized cities and many small towns in the Region.

The water withdrawal data for Dorchester County shows that, in 2000, most of the withdrawals (63%) were for irrigation (8.71 mgd). The northern part of Dorchester and the adjacent southern part of Caroline share the same sandy soils, are heavily used for crop production, and consequently, form a sub-region within which crop irrigation is concentrated and represents a major use of water. This area uses 57 percent of all the water used in Maryland for irrigation purposes.

The impact of population and physical growth in Vienna will have only minor impacts on the growth in water withdrawals when compared to water needed for irrigation. Over 25 MGD (72% of all withdrawals in the two-county area) were used for agricultural withdrawals (irrigation, aquaculture, and livestock). Public supply withdrawals made up ten percent of withdrawals in the two-county area, which includes the relatively large City of Cambridge, as well as the towns of Denton, Federalsburg, Greensboro, Preston and the other eight towns in Dorchester County.

When demand for irrigation is low (due to excess rainfall), the "*difference between the [Eastern] Shore and the rest of the State is approximately 30 mgd…However, when the pumping rate goes up, the difference between the Shore and the rest of the State is dramatic and dominating."* In 2030 the demand on the Shore will be about 2.5 times larger than the remainder of Maryland. (Source: Appendix C of the Report of the Advisory Committee on the State's Water Resources, September 28, 2004).

Wellhead Protection

In order to protect important public water supply sources, Maryland has developed and implements the Wellhead Protection Program (WHPP), a preventive program designed to protect public water supply wells from contamination by establishing a wellhead protection area (WHPA) around each well. Existing and potential contamination sources are identified and management plans are developed to identify the best means for protecting the sources. EPA approved Maryland's Wellhead Protection Program in June of 1991. The program coordinates wellhead protection activities among State agencies, public water suppliers, local governments

and the public. The MDE-Water Supply Program (WSP) assists local jurisdictions in delineating WHPAs and in developing management programs to protect water supplies within the wellhead protection areas.

Maryland has completed source water assessments for all public ground water systems, which included recommendations for protection of the water supply. Water suppliers are strongly encouraged to develop and implement protection measures. In FY 2007, the Town of Poolesville finalized a wellhead protection ordinance for the protection of its water supply. In May 2007, Frederick County adopted amendments to the County Code on Wellhead Protection and Storage Tanks. Vienna has a designated wellhead protection for its drinking water supply which is located beyond the Growth Area and will be protected for any future development. The Town will study the example of towns like Poolesville to determine the need for and usefulness of a wellhead protection ordinance locally.

The wellhead protection area for Vienna is located outside of the growth area in Town controlled lands identified for open space preservation. Based on the source water assessment, the water system for the town of Vienna is susceptible to nitrates (from fertilizers), and iron and manganese (naturally found in the Pleistocene aquifer). The Town's water treatment plant provides good quality drinking water that is within public health standards.

The Town of Vienna consumes very little of the region's groundwater, and most of the groundwater in the area is used for agricultural irrigation. Irrigation is concentrated in Maryland within northern Dorchester and southern Caroline Counties. In 2000, nearly 57 percent of the surface and groundwater used in Maryland for irrigation came from these two Counties. Withdrawal for irrigation is expected to increase dramatically by the year 2030.

The Maryland Department of the Environment (MDE) estimates that by 2030 irrigation on the Eastern Shore will use over 73 million gallons per day (mgd), about 2.5 times more water than the remainder of the State. Because irrigation withdrawals are only periodic, their actual daily withdrawal during irrigation season is much higher than the annual daily average. This means that the stress on water supply during withdrawal is even greater than would appear from the data.

The potential for high-yield groundwater production in the Coastal Plain is substantial. Long term quantity does not appear to be a problem at this time. However, due to statewide concerns over aquifer drawdown, the Department of the Environment is systematically studying the hydrology and ground water resources of Maryland. When the Coastal Plain Aquifer Study is completed (in the next few years) additional information will become available, and it may then be appropriate to refine or revise this section of the Plan.

Current knowledge suggests that productivity is about ten times greater than wells in crystalline rock. In and around Vienna, groundwater is stored in the Potomac group aquifers. Wells that reach the bottom horizons of the aquifer can produce yields of 200 to 500 gallons per minute. Withdrawals of groundwater can cause a "cone of depression" in the immediate area (a lowering of groundwater levels), making the placement, depth, and adequate separation of wells important considerations for planning. Although the Potomac aquifers are confined, they can leak in

places, causing shifts and exchanges over time. In general, estimates of groundwater yield in Coastal Plain wells are fairly accurate (and more so than in Piedmont wells).

The quality of the ground water in all of Dorchester County is generally acceptable for all uses. The groundwater is soft; many Coastal Plain wells contain iron and have a low pH. All of these conditions can be treated. With properly constructed wells, pollution of groundwater poses little problem as the surface geology provides protective filtering of potential contaminants.

Municipal Water System

The Town of Vienna water system consists of two wells, including drilling a new well, capping an old well, 150,000 gallon elevated storage tank and two pumps, approximately 25,000 feet of 8 inch transmission line, and 4,500 feet of 6 inch line.

The water tank is supplied by two wells drawing from the Calvert aquifer. The capacity of the system is estimated at 0.125 million gallons per day (mgd). Average daily water use is 0.080 mgd. The Town currently provides service to 240 equivalent dwelling units (EDU's). Water use averages 200 gallons per day per EDU.

In February and March of 2005, MDE received several complaints of pink water and rusty water from residents of Vienna. In response to the complaints, an evaluation of the water system was conducted by WSP staff. WSP staff worked with the Maryland Rural Water Association and the Town to identify areas that needed improvement, such as plant management, operation and maintenance. Several upgrades to the plant were completed, including replacement of the filter media, installation of new tower and well controls, and replacement of the plant's auto-dialer. Upon completion of all the upgrades, plant performance significantly improved and has remained consistently better in the years since.

Service is provided to 254 improved lots, 182 of which are in Town. However, 14 of the in Town (serviced and improved) lots are deemed "underutilized" due to low assessed value. The Maryland Department of Planning has assumed that the 43 vacant and "underutilized" parcels have a development capacity of 113 dwelling units. The potential water demand from potential infill development is therefore 22,600 gallons per day (at 200 gallons per household per day).

Potential water demand from the 64 vacant parcels in the service area (in West Vienna) could be as great as 165,200 gallons per day based on a maximum net yield of 3.5 dwelling units per acre on the 236 acres of vacant land in that area. This area is not part of "Vienna's Growth Area," yet given public water and sewer service by the Town, County zoning would support approximately 826 additional dwellings in West Vienna.

Growth Area Water Demand

The maximum water demand potential within the Vienna Growth Area is based on 220 dwellings (on the 63 acres allocated for development) using 200 gallons per day and yielding a total daily demand of 44,000 gpd.

Water Needed for the Land Use Plan Element
Table 18 **(Municipal Areas, Growth Areas, and West Vienna)**

Source of Demand	Vienna system capacity: (336,000 gpd) Water Use (gallons/day)
Existing Development Vienna: 259 EDUs West Vienna: 293 EDUs	41,440
Vacant/Underused Parcels Vienna: 33 to 45 EDUs West Vienna: 100 to 249 EDUs	5,280 to 7,200
Sub-Total	46,720 to 48,640
Growth Area 220 EDUs	52,320 to 58,800
Total Demand	227,840 to 236,240

Vienna, Maryland

Table 19 **Public Systems**

WATER	
	Vienna Data
Source (# of wells)	Calvert (2)
Existing Permitted Capacity (gpd)	120000
HH on Public Water	280
Current Demand (ADF)	60000
Projected Demand	(double) 120000
Future Capacity	0*
Planned Expansions & Upgrades	1 or 2 new wells
*assumes complete buildout of growth area and all existing in Town theoretical development "opportunities"	
WASTEWATER	
	Vienna Data
Treatment Technology	Extended aeration
Size (Acres)	3
Point of Discharge	Nanticoke River
Nutrient Cap	none
HH on Public Sewer	280
Existing Treatment Capacity (gpd)	137,500
Average Daily Flow (gpd)	50000
Projected Demand	120000*
Future Capacity	17,500
Planned Expansions & Upgrades	none
HH on Septic Systems	0
*This assumes all 220 edu's (GA limit) are developed and that an additional 60 edu's are somehow created within current Town limits. Future capacity would still be adequate to accommodate potentially 87 edu's in unincorporated West Vienna, if the Town Commissioners chose to do so.	

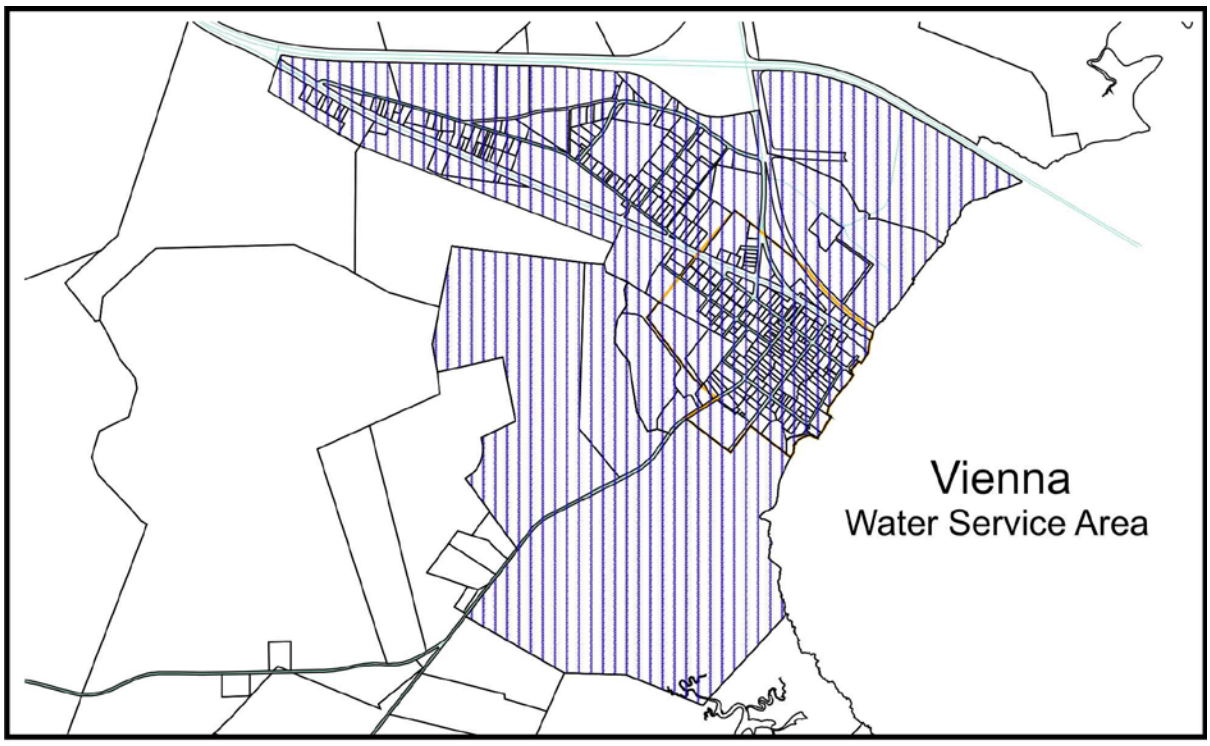
The Growth Area is planned for annexation and growth in cooperation with Dorchester County. This means the County will support annexation and enact suitable zoning or grant zoning waivers in a timely manner. The County would be supportive in other ways, including through official "review and comment" procedures, technical assistance, Critical Area growth allocation, integration into County facility and functional Master Plans, and infrastructure funding. The Growth Area is sized so that Vienna can target a share of the County's population growth under a "Smart Growth" scenario between now and the year 2030.

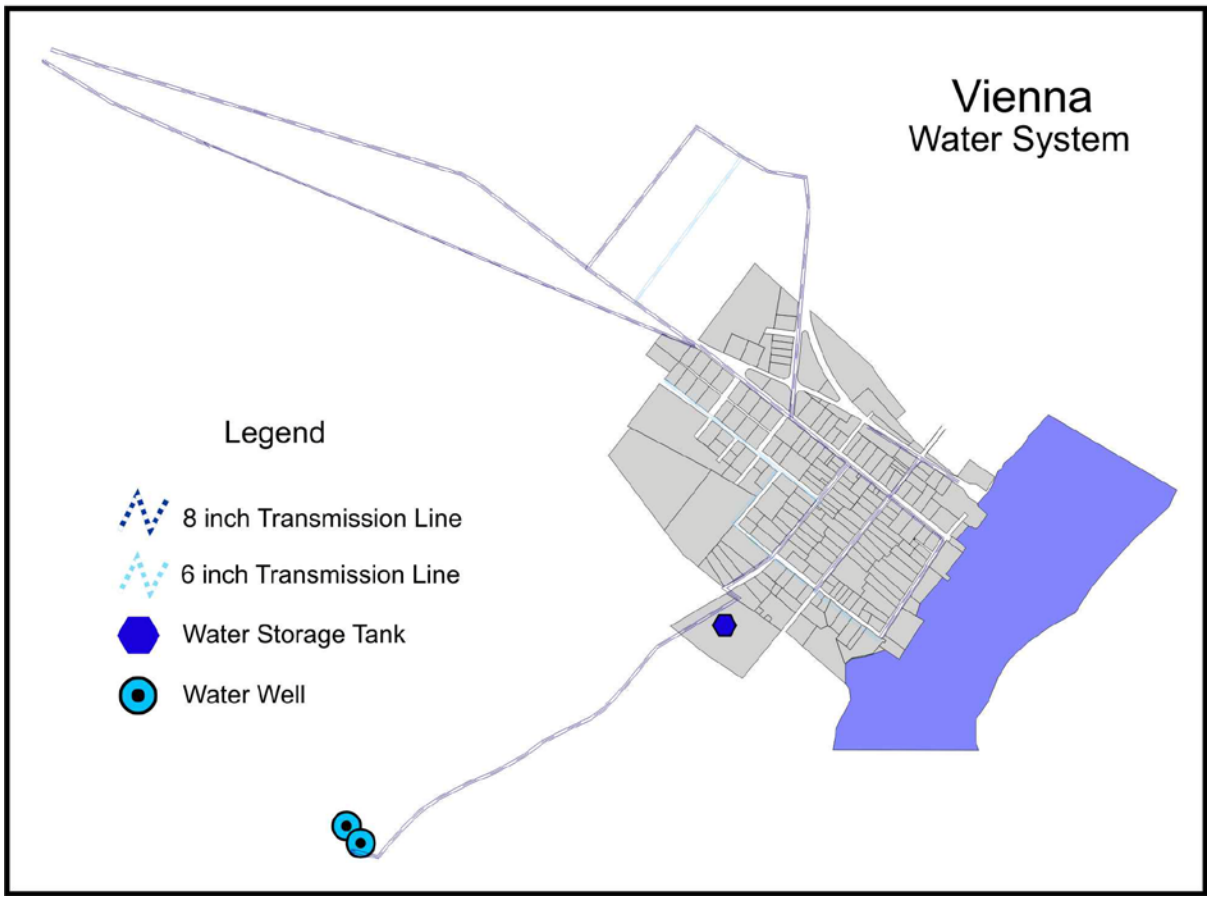
At this time, the only water or sewer infrastructure issue that needs additional study is preliminary planning for an eventual capacity expansion to the public water system. Growth

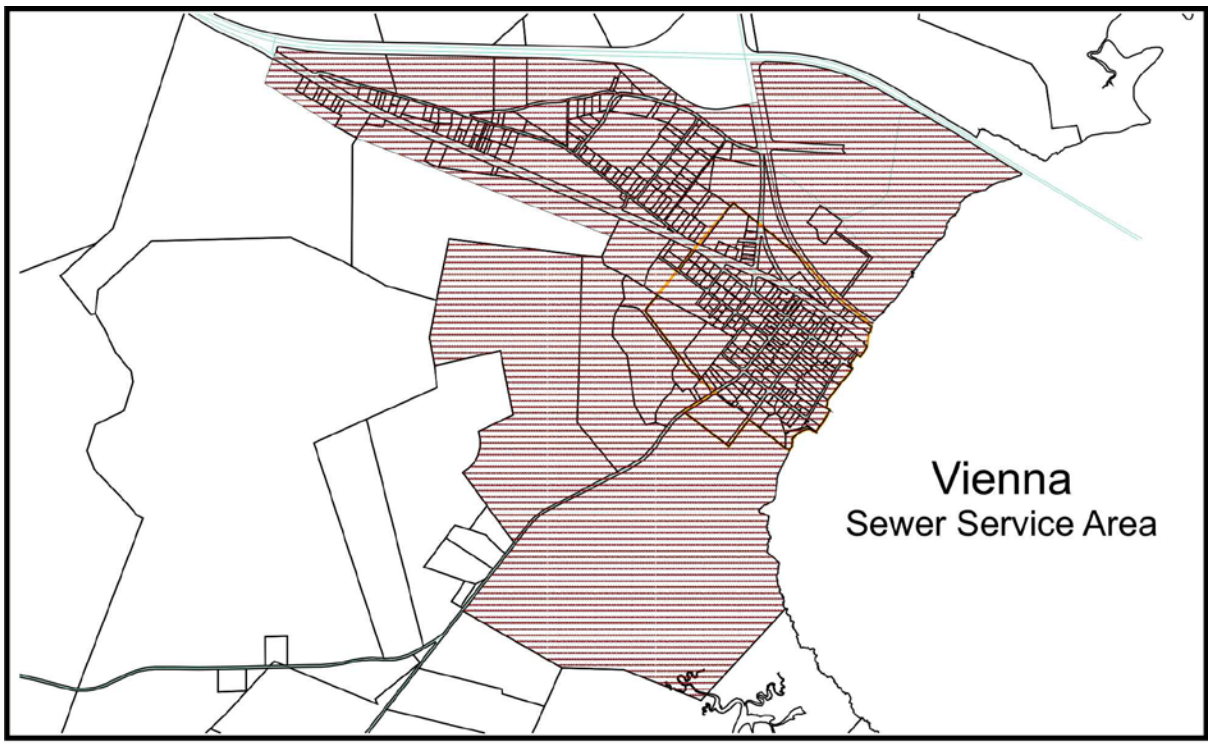
Area development should consider locating a second water storage tank and looping of distribution lines to maintain pressure throughout the water system.

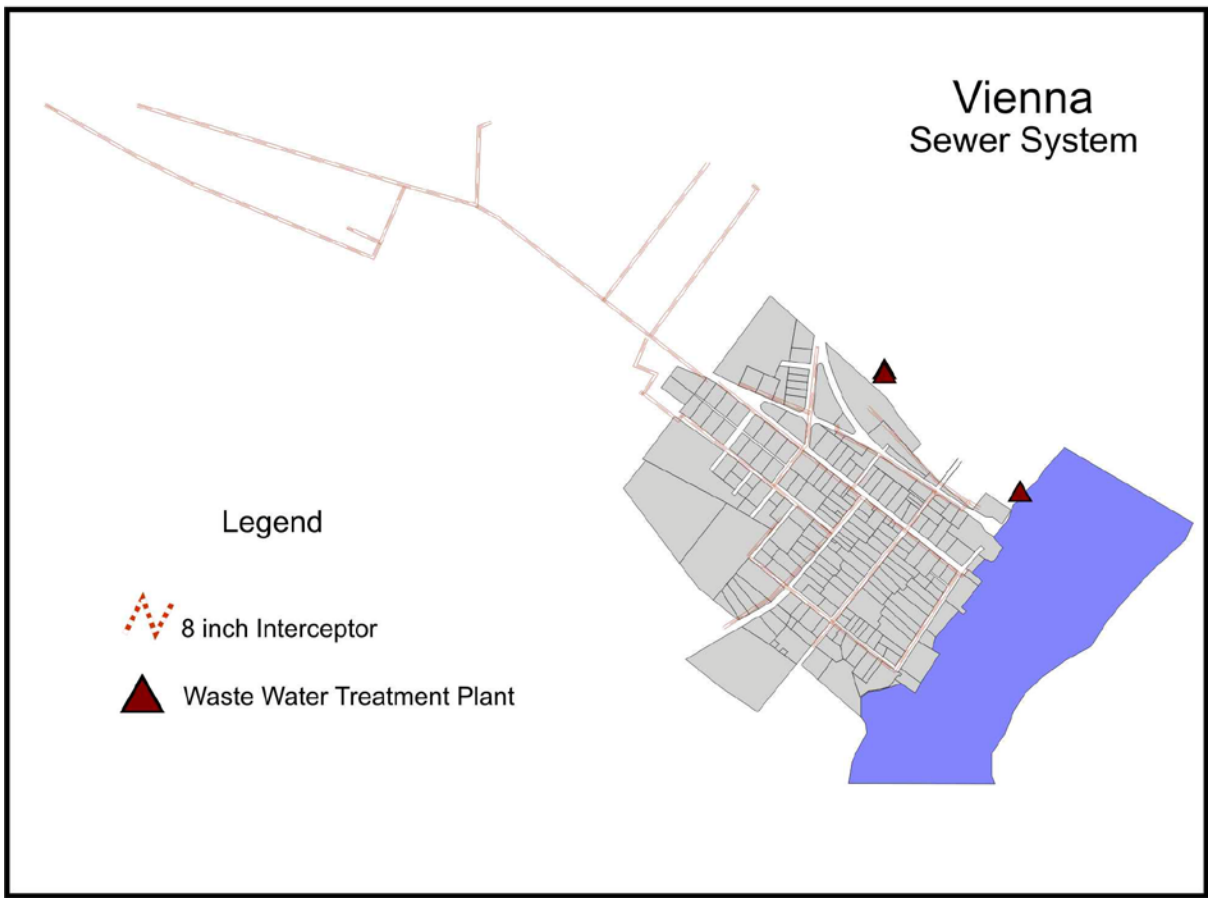
Projections and Growth Scenarios

This element is based on the population and household projections that went into the development capacity analysis of existing in-Town parcels and the vision for the Growth Area (analyzed in the Municipal Growth Element (MGE)). ***The results and recommendations of the Vision Plan continue to guide the work to update the Vienna Comprehensive Plan*** by the addition of the MGE and this Water Resources Element. In the spirit of efficiency and consistency, those projections and policies are incorporated by reference and will be used, where appropriate, in analyzing water and wastewater concerns but are not be duplicated in this Element (in an effort to minimize redundancy).


Vienna
Water Service Area


Vienna
Water System
Legend
8 inch Transmission Line
6 inch Transmission Line
Water Storage Tank
Water Well


Vienna
Sewer Service Area


Vienna
Sewer System
Legend
8 inch Interceptor
Waste Water Treatment Plant

The following formula is included to facilitate future calculations that may be needed in the event that nutrient caps or Total Maximum Daily Loads are eventually assigned to the Vienna waste water treatment facility. Limits are calculated by MDE based on the assimilative capacity of the Nanticoke River and the base line loading conditions in the Nanticoke River Watershed. It is possible that the Town may need to upgrade its process flow to meet Biological Nutrient Reduction standards (applicable to "minor" treatment plants that process flows less than 500,000 gpd) as the result of a future State mandate.

mg/l to lbs/yr FORMULA: daily total nitrogen/phosphorus concentrations (expressed as mg/L to the nearest 0.01mg/L) multiplied by the flow volume of effluent discharged during the 24-hour period (expressed as MGD to the nearest 0.01 MGD) multiplied by 8.34 and rounded to the nearest whole number to convert to pounds per day (lbs/day) units, then totaled for the calendar month to convert to pounds per month (lbs/mo) units, and then totaled for the calendar year to convert to pounds per year (lbs/yr) units. SOURCE: MDE

1mg/l = 3.78mg/gal

Goals and Recommendations

In cooperation with Dorchester County, it is the goal of Vienna to maintain safe and adequate drinking water supplies and adequate wastewater treatment capacity in its public systems.

The Town will take all necessary steps to meet regulatory requirements by protecting and restoring water quality in the streams within its jurisdiction and working cooperatively on efforts to improve the water quality of the Nanticoke River.

The Town will use this Element as a tool to refine its land use planning and growth management efforts to address not only the location and amount of appropriate future growth but also as a means to manage the rate of growth such that the provision of adequate public facilities is not overwhelmed.

These three overarching goals relate to the following other Comprehensive Plan goals:

- to protect the character of Vienna as an attractive small scale rural community with historic roots and orientation to the water;
- to permit a mix of new residential growth in the designated Growth Area that is in keeping with previously identified priorities;
- to ensure that the rate of municipal growth is sustainable from both an economic and environmental basis;
- to ensure a balance between growth and the protection and preservation of the environment, both within and adjacent to Town; and
- to serve as a model for other communities throughout the region and the Eastern Shore.

Review Comments

Maryland Department of Planning Review Comments Draft 2009 Town of Vienna Water Resources Element (WRE) and Municipal Growth Element (MGE) August 27, 2009

The Visions

Maryland's Planning Act of 1992 and subsequent legislation in 2000 requires that the eight Visions be included and implemented through the comprehensive plan. Although the Town did _incorporate the eight (8) visions in its' adopted 2003 plan, it is important to note :that SB 273/HB294, which passed during the 2009 session of the Maryland General Assembly, replaces the State's existing eight visions with twelve new visions. The effective date of this-legislation is October 1, 2009. The Town of Vienna is aware of SB 273 and will add the reworded existing visions and the four new visions to the Plan in the course of its ongoing planning program.

Municipal Growth Element

Population. Household Projections and Development Capacity:

The Town has done a good job attempting to include population projections and a development capacity analysis into the plan. However, it is difficult to determine if there is the appropriate balance between land supply and population demand. There are multiple population projections and capacity figures presented in the plan. MDP understands that a discussion of varying projections is warranted, given the desire of the Town to receive a larger share of County growth in 'the future, however the Town must select one projection from which to evaluate future infrastructure needs. The Town of Vienna included the range of population projections prepared by MDP to demonstrate that even MDP does not have a perfect crystal ball, particularly when geographies and population size is as small as Vienna's. One might well argue that no population projection is better or worse than any other. In that vein, Vienna has chosen to select a progressive "Smart Growth" policy that encourages limited and very specific growth within the context of the 2003 Comprehensive Plan. The only change that has occurred since that Plan was written was a downturn in the economy (which has essentially brought all growth and development to a halt) and a refinement of the initial growth envelope to a smaller more compact area immediately adjacent to the current town boundary on the south side. The 2006 requirement for a Municipal Growth Element was accommodated and further defines and refines the Town's vision for the previously identified growth area.

The population projection that has been selected is one the Town feels is one the might be achieved if the growth area were developed with the number of equivalent dwelling units the Town has established as an upper limit plus a measure of reasonable and realistic infill growth potential. Projected water and wastewater demands are based on that development scenario (and resultant population projection). This strategy is clearly described in the current Plan Amendment (MGE/WRE).

The draft plan includes multiple capacity figures for the in-town capacity. On page 126 of the plan a detailed chart of capacity is presented estimating the Town has capacity for 65 additional households. Later page 134 includes the results of a capacity analysis completed with MDP's assistance. This MDP analysis reports a total capacity of 113 dwelling units. The Town should select a capacity figure for the Town to appropriately assess future land needs. The future capacity for the growth areas is well established, a total of 220 units may be accommodated on these land. The Town included the MDP analysis in an effort to acknowledge prior MDP assistance provided by the Lower Eastern Shore Regional Office. However, detailed analysis of individual

parcels that were subjected to the MDP methodology revealed that many of the parcels were uniquely located, sized, and oriented to existing development in ways that makes it extremely unlikely or impossible to achieve subdivision and development suggested by MDP methodology. Accordingly, the Town has included a more realistic infill number of 65 additional households.

On page 131, the Town presents population projections prepared by MDP; these projections were prepared as a starting point of discussion to assist municipalities in developing or refining what they believe to be a reasonable future. MDP urges the Town to select a population projection that is reflective of their desired future. The inclusion of many projections in .the draft plan, make it difficult to follow and evaluate land and infrastructure needs to accommodate future growth. As already stated, the Town hopes to achieve it's growth vision through the development of mixed use traditional neighborhood expansion oriented around the extension of the Town's existing grid of local streets. Article 66B includes "population projections" as one of 11 "considerations" that underlie the structure of the Municipal Growth Element. A "consideration" is a factor or opinion that is included in forming a judgement or decision. In that context, Vienna clearly "considered" population projections prepared by the Maryland Department of Planning and determined that other factors (such as limits on infill and future development capacity, as described in the Plan) have a more realistic impact on the Town's future growth and character. Accordingly, those numbers were selected to evaluate the Town's responsibility for providing "adequate infrastructure" in support of anticipated growth. To the extent that the Town takes a positive outlook toward the future and plans to provide land in support of that vision, Vienna suggests that some arbitrary population projection based on other assumptions does not support its vision for the future as well.

While not clearly stated it appears that the Town has selected a "final" projection derived from the share of future County growth the Town wishes to accommodate. Page 136 of the plan states that the Town will average 13.2 persons or 6 dwelling units per year (6%) and will reach Growth Area build out in approximately 37 years, and an additional 41 years for infill, these calculations would yield much higher projections than those developed by MDP. While the rationale behind this higher projection is given, the Town should actually indicate if, in fact, this is the final population projection from which future needs are being assessed. The final population projection figure should also be clearly stated. This Plan was prepared by and for the residents of the Town of Vienna. The Town has a very clear understanding of the meaning and intent of the words it has chosen to incorporate. Any reader who is unfamiliar with Vienna is encouraged to visit and put the Plan elements into context. Similarly, the casual reader is referred to the clarification provided above.

The plan talks about a "status quo scenario" (keeping the Town's 2000 share of County population thru 2030) and a "planned growth scenario" involving something that is higher than recent growth trends and County targets consistent with smart growth policy. The step-by-step process of the planned growth scenario is at the bottom of page 135 of the draft MGE. Some comments regarding this process follows:

> The 2010-2030 growth for the County (5,900) is from an MDP 2007 projection set. The use of the most current (December 2008) projection would show growth of 6,500 (this is because of a lower projection for 2010 in the later set, not a higher 2030 number). This comment is confusing. In any case, the relatively fluid numbers generated within one year of each other further suggests that even at the much larger scale of County geographies, changing assumptions can affect a "projection." Vienna recognizes that it has no way to anticipate with any degree of accuracy how long the current economic downturn will last, nor how active a resurgence the local real estate market will enjoy once demand begins to build again (and

one should note that Vienna chooses to assume that the economy will improve over the next several years). That said, a new census count will occur next year and the Plan will be subject to reevaluation in no more than six years. It therefore seems reasonable not to place too much emphasis on what might or might not occur over a twenty year horizon. In fact, Vienna suggests that whatever number is "selected" is more likely to be wrong than right.

"The annual population growth of .879% (x25 years)" is confusing; in that in the bullet before the assumption is growth over a 20 year period (2010-2030). This section has been corrected.

The assumption of 75% municipal capture of County population growth is neither explained nor rationalized. This capture share has been reduced and the discussion revised.

The use of 2.3 persons per household is not explained. Is this ratio based on the 2000 Census (2.36),MDP's 2005 estimate (2.32), or something else (such as an analysis of the type of housing anticipated or perhaps the age structure of the population)? This has been clarified. (A general reduction to reflect somewhat smaller anticipated household size through a "rounding off" process for both census and estimated hh size).

Following the logic on page 135 and 136, Vienna's additional population between 2010 and 2030 would be 264 persons and 120 housing units. However, there is no estimate for 2010, so the totai2030 population and household number is not clear. That discussion has been revised and clarified.

It is not clear how these projections result in the determination of the number of years of growth (capacity) in the growth areas (37 years) and infill (an additional 41years). Are these projections addressing Vienna only? How does this relate to Table 1 on page 134? The discussion has been clarified. The projections do not relate to Table 1. That table was included to demonstrate the results of MDP's capacity analysis (and by itself does not present an "analysis" but rather the results of applying the MDP formula).

The MDP projections, on page 132, are not to be viewed as a .range of possibilities, but the results of various projection techniques. MDP's .recommendations from this set would include the 2030 population totals in the 320 to 350 .range. Noted.

It would be helpful if all of the population projections and household capacity estimates for in-town and the growth areas were organized in a chart to clearly demonstrate Vienna's visions for the future. The Town may want to consider eliminating projections and estimates not used to assess future needs. The projection discussion has been revised. Projections not actually utilized are included to provide background and context for why the Town chose the words it did.

Once the Town. has selected a specific projection to estimate population and households (as discussed above), the Public Services" section of the draft MGE (page 136) must be revised to provide an estimate of impacts to several various public services, as well as financing mechanisms to support these necessary public services and infrastructu.re [see Article 66B,

§3.05.(a)(4)(x)5]. HB1141 requires that an analysis of anticipated services and infrastructure, as well as financing mechanisms, be performed as a part of development of a MGE (simply stating that "a determination of service adequacy will be required for new development", as suggested on page 136 of the draft MGE, is not sufficient to meet the requirements of State law.) The Town has stated a willingness to coordinate and cooperate with Dorchester County – the political jurisdiction primarily responsible for providing public services in this primarily rural county. The Town has explained that it provides public water and sewer services. When those service allocations reach 80% of permitted capacity the Town will prepare a capacity allocation plan that will address when and how capacity will be increased. To the degree that anticipated growth is not yet "real" real demands cannot be calculated. Without being able to calculate real costs, no estimate or strategy can be prepared for how to finance something that hasn't been designed yet (to address a real need). The Town has retained the consulting firm of Davis, Bowen and Friedel as their Town Engineers. At such time as capacity expansion or permit requirements change, the firm will be asked to prepare a facility study that analyzes engineering options and includes engineering based cost estimates. At that time, decisions can be made regarding what to construct and how much will need to be financed, and what the best financing methods (and borrowing rates) are at the time. Until then, the element has included a discussion of potential funding options. If no growth occurs, then no expansion will be necessary, and no funding solutions need be addressed. If a viable development proposal is brought before the Town, it may require an amendment to the Dorchester County Water and Sewer Plan (which will be based upon the foregoing engineering studies and cost estimates). The Town has considered these issues and included an appropriate discussion. In re: Art.66B section 3.05(a)(4)(x)(5), the MGE shall consider:

A. Public schools, sufficient to accommodate student population consistent with State rated capacity standards established by the Interagency Committee on School Construction; [the element states Vienna's intent to cooperate fully with the Dorchester County Board of Education, which has the responsibility for siting schools and determining priorities for school expansions].

B. Libraries; [In Dorchester County, library services are provided by the County. There is no library branch in Vienna. Provision of the number of households anticipated over the next few years is unlikely to lead to the construction of a branch library in Vienna. If such an outcome appears feasible as a result of interjurisdictional coordination, then an appropriate recommendation will be included in the Vienna Comprehensive Plan – either by amendment or at the next scheduled update in the six-year cycle].

C. Public Safety, including emergency medical response; [These services are provided by Dorchester County and the Town has no direct control over them. The Town is too small to provide these services on its own, and the level of projected growth is not likely to change that without resorting to techniques described in the Plan, such as a Developers Rights and Responsibilities Agreement or the adoption of sufficiently high impact fees to facilitate these services. Again, given the relatively small number of new homes the requisite impact fees would need to be so high as to preclude any semblance of affordable housing costs (which are a policy priority for Vienna, as described)].

D. Water and Sewerage facilities; [A realistic strategy for addressing these issues has been explained. The Town does not have the financial capacity to independently construct facility expansions nor does it have a need to. The issue has been addressed].

E. Stormwater management systems, sufficient to assure water quality both inside and outside the proposed municipal growth area; [Stormwater management is provided by Dorchester County and it is anticipated that Dorchester County will adopt the new Stormwater Management Manual prepared by the Maryland Department of Environment. If that manual is somehow deficient or otherwise not appropriate to assure water quality both inside and outside the proposed municipal growth area then Vienna is ready to cooperate with Dorchester County and the Maryland Department of Environment to take such corrective actions as my suggest themselves. In the meantime, Vienna believes it has considered this issue and included extensive discussion in the Water Resources Element concerning the Town's environmental ethic and intent to address nonpoint pollution through buffers, setbacks, clustering, and innovative approaches to urban runoff].

F. Recreation; [The Town has a park that is sufficient for its residents. Future development in the Growth Area will include additional privately funded recreation areas, as delineated in the concept for Growth Area development. Those improvements will be negotiated as part of the development approval process. The Town also has a waterfront area that includes a public boat ramp. This facility is considered to be adequate and has benefitted from recent improvements that are well-known to residents. The question of recreation was discussed by the Planning Commission and elected officials with the result that the issue received consideration. Facilities are adequate and do not need to be expanded for the foreseeable future].

Growth Area Issues

Vienna is to be commended on its continued efforts to ensure that the Town's Growth Area will be established in a well-planned, environmentally sound manner. To that end, it is recommended that' quite a bit more detail be provided as to how-the proposed growth area was established, and what will need to occur to bring this vision to fruition. More specifically, on page 127 of the draft MGE, the third paragraph begins with a statement, absent any context, that "[b]ased on the negotiated and approved 100 foot setback buffer strip that rings the landward edge of tidal wetlands in the Growth Area". It is suggested that discussion occur relative to the following:

2003 Vienna Community Vision Plan process relative to Town's Growth Area Inclusion of such a discussion was removed from an earlier draft at the request of the Planning Commission which deemed such a discussion redundant to the language in the Vision Plan (which is incorporated into the Comprehensive Plan by reference and is readily available on line for anyone not familiar with its contents). Most residents of Vienna were closely involved in the numerous meetings and discussions that went into the creation and adoption of the Vision Plan. MDP is directed to the Plan for further detail.

Original Elm Street Proposal (with discussion of reduction in scope, and establishment of greenbelt) Again, this issue has been discussed at length within the Town and needs no further discussion in the MGE. The decisions were made in the past and have been referenced and included as "givens." The MDP Lower Eastern Shore Office has been closely involved in the review of the Elm Street Proposal and has been informed at every step of the negotiations with DNR. It is suggested that the reviewer consult the MDP/LES staff regarding any questions they may have.

Previous design charrettes (citizen participation) The Town record on these activities are available but are not required by the Planning Commission or the citizens of Vienna to evaluate the consistency nor the adequacy of the present MGE in embracing and implementing the recommendations of the charrettes. Again, these prior activities were included in prior drafts but removed as being redundant and offering little to the essential direction and focus of the Growth Element. Previous efforts are incorporated by reference or by actual text and map recommendations.

Critical Area Commission/Town negotiation of various buffers The MGE references that these negotiations resulted in the buffers shown in the MGE. The Vienna Planning Commission and the Mayor and Commissioners were involved in those negotiations and do not believe it necessary to revisit that detail in the MGE. If MDP staff (outside of the LES office) desire additional details, they should contact the MDP/LES office or DNR.

Town acquisition of greenbelt (this would further speak to "transition areas" as required by HB1141) The Town's acquisition of areas identified for preservation (and inclusion as designated greenbelt) is identified on the Growth Area graphic at the end of the MGE. It is not clear what useful information can be added that would materially change or improve the MGE for Town residents or officials. The determination has been made and is heartily endorsed by residents and officials alike.

Growth Allocation requirements Growth Allocation is its own process and will be closely tied to a particular development proposal, if and when it should be brought before the Town for consideration. The Town will not recommend Growth Allocation for any project that is substantially different from what is described and contemplated in the MGE. Dorchester County is not likely to support an allocation that is inconsistent with either the Town's or County's plans and priorities. This question has been discussed during the aforementioned negotiations, and the Town is satisfied that sufficient protections and understandings are in place to ensure that appropriate Growth Allocations will be granted when a suitable development proposal is submitted. Such a proposal will, by definition, require the application of all stormwater management policies that are current under Dorchester County's regulations as well as those of MDE and DNR. Similarly, all of the requirements and processes of the Vienna Critical Area program will apply. Since this program is in place and has been reviewed by the Critical Area Commission, it is unclear what additional processes or safeguards the reviewer had in mind.

PFA establishment requirements (Dorchester County requirement for Growth Allocation) As stated above, the Growth Allocation process is well-understood by the Town of Vienna (which benefits from the technical assistance of the MDP/LES office and the specific expertise available from the staff of that office. Additionally, Dorchester County is very well aware and supportive of the development concept(s) contained in the MGE. The County has been a participant in the evolution of the development concept and is aware of the previously mentioned buffer area reduction negotiations. There seems no benefit in pointing out the obvious to those who were and are most involved.

DRRA and Annexation Agreements DRRA's have been addressed in the MGE. Little is to be gained from prematurely suggesting what may or may not be required or negotiated until an actual development proposal is brought forward for preliminary discussion. The reviewer may wish to provide additional detail concerning what he feels is necessary. In re Annexation Agreements, the Plan clearly indicates that the Town is in control of the annexation process and the Growth Area generally. Annexation of the Growth Area is proceeding independently of any specific development proposal. Annexation, by its nature, is merely a transfer of jurisdictional authority and is not contingent upon development. The Town is working to finalize new zoning that will apply specifically to the annexed Growth Area and will facilitate any future development that is consistent with the Plan and its antecedent policies. These points have been adequately mentioned in the MGE. Additional detail would add nothing of substantive value in the Planning Commission's opinion.

Schools

The 2009 Municipal Growth Element "Public Services: Other Services" section, located on page 136, points the reader to the comprehensive plan for detailed information on community facilities. The MGE lacks the necessary information to analyze it for consistency with 2009 Dorchester County's Educational Facilities Master Plan (EFMP). A copy of the 2009 Dorchester County EFMP was requested but not received. Requests of MDP for a copy resulted in referral to the Dorchester County Board of Education. Future updates will seek the best available data.

While the MGE discusses current and future enrollment conditions, it does not provide a school boundary map, schools capacity data, current and projected enrollments for the schools serving Vienna. When appropriate information is received, it will be added to the element.

Page 19 of the EFMP indicates that Vienna Elementary School is currently overcrowded and will be at 145% capacity by 2016. The Local Educational Agency (LEA) anticipates that the feeder schools are more than capable of handling additional capacity, unless, housing growth rates exceed expectations. As part of MDPs review of the EFMP, we will be asking the LEA to provide 2017 and 2018 projections. Discussion of this issue within the MGE, Within the context of infill, and Growth Area, is warranted. Vienna welcomes the provision of additional information and hopes that MDP will share the results of its discussions with the LEA. Perhaps the LES office can facilitate the necessary local coordination.

According to the EFMP, Vienna Elementary will be evaluated for possible replacement to address educational adequacy issues and alleviate growth pressures. The LES may seek planning approval for a replacement in FY 2016. North Dorchester High School which is not projected to be overcrowded in the next 10 years will be seeking planning approval for either New ConstructionReplacement or Renovation/Addition in 2012. Town officials should work closely with their LEA to ensure that up-to-date information is being disseminated and to address shared opportunities to address future school overcrowding. Discussion of this issue within the MGE, within the context of infill and the Growth Area, is warranted. Vienna welcomes the provision of additional information and hopes that MDP will share the results of its discussions with the LEA. Perhaps the LES office can facilitate the necessary local coordination. The addition of these comments to the back of the amendment will provide guidance for future updates and potential project review.

Water Resources Element

The WRE is incomplete, but would meet the requirements of HB1141 with recommended amendments. The most important amendments to include are in bold. The WRE does not yet effectively address the following purposes of the law ***and/or State guidance*** as follows:

Identify suitable receiving waters and land areas to meet the stormwater management and wastewater treatment and disposal needs of existing and future development proposed in the land use element of the plan, considering available data provided by: MDE (Section 1.03(iii), Article 66B). The only available receiving waters for wastewater treatment and disposal needs of existing and future development are the waters of the Nanticoke River. Whether or not they are suitable is a determination of the MDE (which has issued a discharge permit for the existing wastewater treatment facility). The MDE has not established TMDL limits on nitrogen or phosphorus for the Nanticoke River. Accordingly, no evaluation is possible of the potential impacts of increasing the existing discharge by residential flows from 220 additional dwelling units in the Growth Area. When the MDE provides additional information that can facilitate such an analysis, Vienna will add that to the Water Resources Element. It is hoped that such information will be forthcoming before the next scheduled update to the Comprehensive Plan. It is also hoped that such TMDL limits will include reasonable and viable options for meeting them that Vienna has control over. If pollutant loadings in the watershed are such that TMDL limits jeopardize the continued viability of the Vienna wastewater treatment plant, then it seems unlikely that Vienna will have any realistic policy or regulatory authority to directly address whatever issues resulted in the TMDL limits. The practical alternative to an operating wastewater treatment plant in Vienna is a return to septic tank technology. The WRE discusses the need to reduce the speed of stormwater runoff in order to increase onsite retention times and increase the rate and amount of onsite infiltration. An attendant strategy includes the minimization of impervious surface area, particularly within the Chesapeake Bay Critical Area. How that could be accomplished by retrofit technology within the existing builtup areas of Vienna is not clear given the current development pattern, elevations, and proximity to the Nanticoke River. Perhaps the MDP can suggest specific appropriate solutions or improvements. If so, Vienna will be happy to consider them for inclusion in the WRE.

The WRE should, for each watershed, calculate the total forecasted nutrient load, which includes nutrient loads from current and future WWTP discharge, septic tanks, and stormwater runoff (MDP M&G 26, p. 13). This information will be taken from Dorchester County's WRE after it is adopted to ensure consistency. Vienna's initial evaluation of it's watershed acreage is less than one half of one percent. Vienna is willing to cooperate with MDE in the development and application of a reasonable and realistic model that can provide meaningful policy guidance. In the meantime, Vienna defers to Dorchester County for the necessary watershed based analyses and to the State for potential discharge limitations.

General WRE comments:

The WRE should indicate that the land use plan from Vienna's 2003 comprehensive plan is being analyzed in this section. This was made clear in that these two new elements are additions to the 2003 Plan (which was reviewed and determined to be satisfactory in its current state, absent the addition of the elements required by HB 1141 (2006)). The inclusion of these comments further clarifies this point.

The Town should be commended for its excellent discussion of wetland protection (p. 159).

Comments on the water demand analysis include:

Table 18 (p. 169) details the water needed for the land use plan element. There appear to be errors with the figures in the table. For example, if you use the water planning figure of 200 GPD and multiply it by the existing 259 EDUs in Vienna (under the row entitled "Existing Development"), the water usage comes out to be around 52,000 GPD. Without even adding the West Vienna EDUs, this amount (52,000 GPD) is larger than the 41,440 GPD under the "Water Use" column. Including West Vienna, the total water use for the existing development should be equal to 110,400 GPD. Please recalculate all figures in this table with the Town's designated water planning figure of 200 GPD. The table utilizes actual water usage figures which the Planning Commission feels provides a more realistic demand figure than an arbitrary theoretical "demand" number.

The plan does not state whether there are any private wells in the Town. Please add this information to the WRE. If wells exist, please note whether there are any plans to connect any failing wells to the public water system and the capacity needed to serve them. The plan could then discuss whether they are susceptible to pollution and whether these might be included in future source water protection plans. The Plan does not discuss private wells because there are no private wells supplying potable water to residences or businesses. The Town has a public water system (which is discussed) and requires all properties to be connected. The Town feels this clarification is sufficient.

Comments on the proposed methods for protecting the Town's source water include:

The WRE identifies that the Town's source water is susceptible to nitrates and iron and manganese (p. 167) and should be commended for recognizing the need to "stay engaged in the water supply/water quality discussions at the State and regional levels" (p. 166) and for its designated wellhead protection for the drinking water supply (p. 167).

Comments on the sewer demand analysis include:

Table 19 (p. 170) should specify what year the future capacity figure for the Town's WWTP is for. The Plan does not identify a particular year because the future capacity need is linked to a future development scenario that does not include a developer at this time. Absent a specific development proposal with phased implementation dates, no realistic future demand dates can be identified. Potential future development reviews (and approvals) will be dependent upon a viable infrastructure strategy that includes funding and construction schedules.

The plan does not state whether there are any septic tanks in the Town. Please add this information to the WRE. If septic tanks exist, please note whether there are any plans to connect any failing septic tanks to the public system and the capacity needed to serve them. The Plan does not discuss septic tanks because the Town is served by public sewers (and requires all developed parcels to be connected). Accordingly, there cannot be any septic tanks in the Town.

Comments on identifying suitable receiving waters include:

Table 16 (p. 157) details the non-point source loading rates for the Nanticoke Watershed in Dorchester County. Please clarify some of the data within the table.

Specify what years the rows ''Vienna (pre growth)" and ''Vienna (post growth)" are for. As explained above, this is not possible absent a specific development proposal (particularly one that has received approval). The table discusses potential future conditions only as an aid to understanding potential needs.

The post growth non-point source loading rates in the table are higher than the pre growth loading rates; however, the paragraph below the table states that the post development nonpoint source loadings improve the ''pollution budget" in every category (p. 157). Please clarify this discrepancy between the figures in the table and the discussion below the table. This depends upon which loading model is utilized. The “rainfall” model suggests that the “best” land use is agriculture (because it has the least amount of impervious surface and the greatest rate of infiltration). However, the trib strategy approach suggests that urbanized runoff contains the least amount of pollutants and is therefore the “highest and best use.” Vienna finds this all to be more than a little confusing, and recognizes that the fundamental question is whether future growth should occur at higher densities within areas served by central sewer systems or in a low density sprawl pattern on individual well and septic systems. Given that choice, Vienna chooses to accept the trib strategy argument that “post development nonpoint source loadings are better” under an urbanized development scenario.

The paragraph below the table also states that there will be 606 fewer pounds of nitrogen per year and 32 fewer pounds of phosphorous per year in the post development scenarios. Please clarify how these figures were derived from the data presented in the table. Absent specific modeling guidance for the Nanticoke Watershed, Vienna chose to use the loading rates applicable in rural Caroline County on the assumption that they would most likely be similar.

The second paragraph below the table contradicts the preceding paragraph when it states, "The statistics demonstrate that the planned Town growth will increase (theoretically, absent the implementation of new best management practices -to which the Town is committed to promoting) "urban" loadings by less than 1/5 of l%...an amount so small as to be practically unmeasurable." Please clarify this since the paragraph above states that the post development loadings will improve the "pollution budget" in every category. The discussion assumes that Vienna will develop its designated growth area. That area is less than 1/5 of one percent of the watershed and as such will have an extremely minimal influence on marginal changes in pollutant loadings, i.e. statistically "unmeasurable" with any degree of confidence. Accordingly, given the Town's willingness to stipulate acceptance of the trib strategy model, urbanized loading rates are lower than agricultural rates, ergo: "better."

The WRE does not contain any present or projected point source loading data. Please include this data in the plan. Vienna will continue to cooperate and coordinate with MDE and will add data as it becomes available.

Under the Maryland Tributary Strategy, a point source cap for the Vienna WWTP will be established once the WWTP expands. Please contact MDE to identify the future WWTP cap and include it in the WRE. Vienna will continue to cooperate and coordinate with MDE and will add data as it becomes available.

Once a point source pollution forecast is completed, the WRE should include a combined nonpoint and point source pollution forecast and added to this to the plan. Vienna will continue to cooperate and coordinate with MDE and will add data as it becomes available.

The plan does not yet discuss whether the water bodies are suitable receiving waters for expected land use impacts. The plan states that no actual TMDL limits have been set for total nitrogen or total phosphorous in the Nanticoke River watershed. If not enough information exists to determine suitability, the plan should state this. Vienna will continue to cooperate and coordinate with MDE and will add data as it becomes available.

The Water Resources Element section should indicate the Town's responsibility to maintaining a water and sewer allocation program and an annual certification of water and sewer infrastructure monitoring, by amendment, to include the annual Capital Improvement Program projects, financial statements on operations, water demand and sewer flow data, and effluent nutrient quality. This appears to be an unenforced (by MDE) requirement of the County Water and Sewer Plan. If that is the case, clarification may be warranted as to why this information should be included in the WRE. The Town's responsibility to maintaining an allocation program extends to the preparation of an allocation plan when existing capacity reaches 80% of permitted capacity. It is suggested that the Town's engineering consultant will prepare such a plan when conditions require one. The Town does not utilize the Capital Improvement Program budgeting tool because the Town is so small that it has historically not needed to engage in a complicated budgeting process. If future growth requires a significant multiyear phased funded approach to infrastructure capacity expansion, then the Town agrees to revisit the suitability of developing and adopting an annual Capital Improvement Program based on a five-year capital improvement plan. Financial statements on operations, flow data, and effluent quality are records that are more suitably included in the Dorchester County Master Water and

Sewer Plan at the request of MDE.

Maps and Illustrations

Vienna Growth Area Municipal Growth Element Map: Within the legend there is a pattern associated with a "school", but does not seem to be used on the map. Internal discussion determined to remove the purple area from the map because the school is located outside of both the Town and the Municipal Growth Area. The aerial image provides better detail and understanding in any case. The Town will consider removing the designation from the legend in future revisions to reduce potential confusion for readers not familiar with Vienna.

Vienna Growth Area –Municipal Growth Element Map: At the northeast of the Town there are five (5) parcels shown in a shading that is not shown within the legend (perhaps this is the area discussed within the first bullet on page 138, for tourism oriented businesses). Noted. Those parcels were identified as the "future John Smith Environmental Center" on the underlying base used to prepare the MGE map. It has been labeled (even though it is outside the actual designated Growth Area).

Vienna Growth Area - with a "school", but does not seem to be used on the map. Noted. The symbol has been amended for clarity and added to the map to locate the school (even though it is outside the actual designated Growth Area). Its walkable proximity to the Growth Area is noteworthy. The Town boundary has also been brought to full visibility to aid in differentiating between infill and Growth Area development and to show its planned integration.

Growth Element Map: Within the legend, and covering land in cultivation, is a term entitled "Shared Storage". This term may be unfamiliar to the end-user of this document, and perhaps some discussion within the MGE is warranted. The concept of "shared storage" applies to limited medium density development proposed in an area that overlaps infill and growth areas. It is intended to provide secure storage for trailers, recreational vehicles and other personal items either within a fenced area or structure and is accessible by alley and benefits the adjacent properties (whose lots may be too narrow under TND siting to facilitate access and storage of commonly owned vehicles and personal possessions). The end users of this document, i.e. the Vienna Planning Commission, has endorsed this solution to potential practical site design issues and real-world concerns.

Dorchester-Nontidal Wetland Map: There are several wetland series, shown within the legend, that ate not pertinent to Vienna. ,Perhaps (as was done in the *Dorchester Natural Soil Groups Map)* specifically indicating relevant wetland series, with a brief description, would make the nontidal wetland map more user-friendly. This is a constructive suggestion that will be addressed as time permits.

Dorchester Rural Legacy Areas and MET Land Map: It is suggested that the legend be revised to use more user-friendly titles (e.g. something other than 'swplmet.shp' and' swrleg.shp,). This is a constructive suggestion that will be addressed as time permits. The legend was generated by the GIS program that mapped the relevant shape files (provided by Dorchester County).

Hydric Soils illustration (p. 160): Suggest adding a legend to this illustration. Also suggest adding Town and Growth Boundary to illustration. Town and Growth boundaries have been added. However, the accompanying table serves as the legend since it contains all relevant information shown on the graphic and the technical issues involved in duplicating that information legibly within the graphic are prohibitive.