

DRAGON RUN LAND USE POLICY AUDIT

for the Middle Peninsula Planning District Commission

SUMMARY of POLICY RECOMMENDATIONS

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1.0: INTRODUCTION AND BACKGROUND

1.1. The Land Use Policy Audit

This **Summary of Policy Recommendations** responds to Tasks # 4 and #5 of the **Land Use Policy Audit for the Dragon Run Watershed**. The Land Use Policy Audit is a component of the overall **Dragon Run Special Area Management Plan** for the Middle Peninsula Planning District Commission. The overall purpose of the Land Use Policy Audit is to evaluate how well existing local plans, policies and regulations coordinate with each other and how effectively and consistently they implement the natural resource protection goals for the 90,000 acre Dragon Run watershed as identified in **the Chesapeake 2000 Commitments** and the **Memorandum of Agreement** signed by the participants in the Dragon Run Special Area Management Plan (DRSAMP) effort.

This Summary follows on the prior **Technical Memorandum** which included an overall inventory and analysis of the existing planning and regulatory documents of the four counties that are represented in the DRSAMP: **Essex, Gloucester, King and Queen** and **Middlesex** counties. The goal of the Technical Memorandum was to provide a baseline of information on existing policies and to highlight opportunities to strengthen existing policies toward a more comprehensive land planning approach for the Dragon Run watershed. The Technical Memorandum was presented and discussed by the DRSAMP Advisory Group at a work session on May 13, 2003. The discussion and comments from the work session, as well as subsequent written comments from the Advisory Group members, were incorporated into the preparation of this Summary of Policy Recommendations. The purpose of this phase of the Land Use Policy Audit is to present a range of strategic options to improve the coordination of planning and land use policy within the Dragon Run watershed, and to critically analyze and illustrate the implications of these options on the landscape of the Dragon Run.

The recommendations will be presented in a work session with the Advisory Group on July 8, 2003. The comments and recommendations from this work session will be incorporated into a final report for the Land Use Policy Audit that summarizes all the findings and proposals resulting from this project.

1.2. Why Change Things

The Dragon Run is clearly an area that has very low development pressure today. However, future conditions may be different and changes in economic trends, whether global or local could threaten the traditional farming and forestry economy of the area and increase pressures for more intense land uses in the Dragon Run. From 1992 to 1997, Virginia lost more than 467,000 acres of forest and farmland, at a rate more than double that of the previous 10 years¹. Much of this was in suburban areas but much of

¹ Better Models for Development in Virginia, Edward T. McMahon, 2000

it, also, was in areas that had until recently been rural and natural heartlands like the Dragon Run region. Statewide trends point toward more conversion of rural land from traditional uses to developed land.

Frequently, the jurisdictions in which this land is being converted institute changes in their land use regulations to protect farmland and forest resources from incompatible land development. However, this can be an uphill battle, especially once the local real estate market has begun to favor residential subdivisions and the pressure against changes in zoning are strongest. If the underlying zoning permits smaller residential lots (1-5 acres), a pattern of sprawl often sets up, in which the remaining rural landholdings become carved up incrementally into subdivisions that are developed “as of right” - without an opportunity for public hearings or legislative approval over the development.

While some areas within any rural region are clearly needed for economic development and may be appropriate for more intensive land uses, all four counties in the Dragon Run SAMP have, through the Memorandum of Agreement, agreed that the Dragon Run is an area where protection of farming, forestry and natural resources is paramount. In order to protect the natural resources and traditional land uses of the Dragon Run, it is important to plan proactively and implement strong land use policies now, while development pressures are still low, rather than waiting until the pressures have intensified.

The current state of land use regulation in the four counties has worked so far to maintain the Dragon Run in its relatively pristine state. However, the policies are not consistent across county boundaries; they often don't reflect a clear intent for protection of the Dragon Run and thus they are open to potential challenge in the future as development pressure grows. For example, the review of policies in the first phase of this project revealed several potential opportunities to refine the current land use policies in the four counties as they relate to the Dragon Run:

- The Comprehensive Plans don't delineate the watershed as a separate planning area and have little or no specific policy guidance for the Dragon Run.
- The zoning ordinances permit some potentially incompatible uses (such as landfill or auto graveyard), either by right or as conditional uses in the watershed, that may be more appropriately located in other parts of the counties.
- The primary restriction against large-scale residential development is a restriction against major subdivisions, listed in the Subdivision Ordinances of each county. This may be open to challenge as a form of growth management if it is not underscored by similar and consistent policies in the Zoning Ordinance and Comprehensive Plan.

This Summary of Policy Recommendations goes one step further to suggest ways that land use policies in the Dragon Run watershed can be improved through a concerted effort that builds on the outstanding work of the regional partnership of the Dragon

Run Steering Committee and SAMP to-date. The purpose of these recommendations is to propose a strategic course of action for strengthening and better coordinating the land use policies within the watershed so that they can maintain the character of the Dragon Run in the wake of potential future changing conditions in the region.

2.0: RECOMMENDED STRATEGY and APPROACH

2.1. Overview of The Recommended Strategy

The goals of protecting traditional uses, rural character and natural resources in the Dragon Run are shared by all four counties that encompass its watershed. Nevertheless, each county has its own existing planning and regulatory context and its own unique political sensitivities and issues. The objective of achieving better coordination of land use policies among the four counties needs to be pursued through a careful strategy that takes into account the needs and constraints of each individual jurisdiction.

For this reason, this report proposes a phased implementation strategy for the DRSAMP Advisory Group to consider. Three basic phases of an overall process are proposed below, each of which entail different levels of implementation, coordination and regulatory change.

LEVEL 1: Adoption of the SAMP Watershed Management Plan as an Addendum to the County Comprehensive Plans

Each County would adopt the Dragon Run Watershed Management Plan (to be finalized by the Dragon Run Steering Committee) as an addendum to their comprehensive plans. This could be done as a simple paragraph that is added to the land use or environmental policy section of each county's comprehensive plan. The paragraph would state the purpose of adopting the Watershed Management Plan and reference it as an addendum to the Comprehensive Plan that would be adopted by means of a Comprehensive Plan amendment.

This action presupposes the expansion of the current Land Use section of the Watershed Management Plan into a more detailed set of policies that are appropriate for adoption throughout the Watershed. By adopting the Watershed Management Plan, each county would also be adopting a uniform set of land use policies for the Dragon Run watershed and furthering the goals of the SAMP.

In addition, the policies could specifically recommend an approach to limiting incompatible development in the Watershed. Even though the counties' existing policies and regulations already control some of these issues to varying degrees, this would be an opportunity to underscore a unified approach and intent for the watershed as a whole. Recognizing the varying state of land use regulations among the four counties, the Watershed Management Plan could propose general standards that would be common to all 4 counties for open space protection and limiting large-scale development in the watershed.

The main advantage of this approach is that the four counties in the watershed would be better prepared to address potential change or development pressure in the Dragon Run area in the future. An important distinction with this scale of implementation is

that the counties would not amend their future land use maps- that is, there would be no change in the official land use map and district designations for each jurisdiction. Although general analysis maps would be included in the Watershed Management Plan, it is not anticipated that it would contain a “proposed land use map” for the four counties. Thus, the only land use changes that the counties would be recommending by adopting the Watershed Management Plan at this stage would be in the form of a comprehensive set of policies to be pursued and a clear statement of intent for the Dragon Run. This would provide an opportunity for a more far-reaching effort, such as the adoption of a new unified Dragon Run Planning Area, as described below in Level 2.

Summary of Level 1:

- Adopt the SAMP Watershed Management Plan as an Addendum in the Comprehensive Plans of all 4 counties.
- Include a comprehensive set of General Land Use Policies for the Dragon Run watershed in the Watershed Management Plan
- No change to the Proposed Land Use Maps of the Comprehensive Plans and no other regulatory changes.

LEVEL 2: Adoption of a Unified “Dragon Run Planning Area” Designation in the County Comprehensive Plans

Level 2 goes one step further in achieving the shared goals for the Dragon Run area. It does this by creating and mapping a specially designated planning area within the proposed Land Use Map and Land Use Element of each county’s comprehensive plan. This is an important step for two reasons. First, it geographically designates the watershed of the Dragon Run as a special district that is clearly tied to a set of policies. Second, it allows for more detailed land use policies guiding such key issues as permitted uses, development density and utility service applicable to a distinct area in each county.

Technically, there is no legal distinction in the status of the land use policies in either Level 1 or Level 2. Whether they are adopted by reference, as an addendum to the comprehensive plan, or whether they are adopted under a new district within the main body of the comprehensive plan, they have the same status as policy guidelines in the planning process. However, by putting the recommendations in the main body of the plan text and by attaching them to an official mapped district that is part of the plan, they more strongly emphasize the protection of the Dragon Run area as a key priority in the county. They also constitute a much better platform for further implementation of the policies through zoning and other regulatory changes, as described in Level 3, below.

Potential Characteristics of the “Dragon Run Planning Area”

- A mapped geographic area for the district that corresponds to the portion of the Dragon Run watershed (as designated by the DCR as unit code #CO2) within each county
- A statement of purpose and intent for the district that is based on the goals of the DRSAMP Memorandum of Agreement signed by each county
- A brief summary of inventory and analysis data for the Dragon Run watershed, describing the important physical and environmental characteristics of the land, existing patterns of land use and current regulatory context
- A list of general goals for the watershed as a whole, based on the goals of the joint Memorandum of Agreement
- A list of specific policies being established for the county that are central to meeting the goals and objectives for the watershed as a whole
- Suggested implementation actions for the county to pursue that address each of the policies of the Dragon Run Planning Area

The specific goals, policies and actions would be summarized in a proposed “Model Comprehensive Plan Amendment for the Establishment of the Dragon Run Planning Area.” This proposed model language should be based on a thorough review and analysis by the DRSAMP Advisory Group and Steering Committee. It is important that any model language pass under an established review and recommendation methodology that is the most acceptable one to all the counties involved. The process used for adoption of the Memorandum of Agreement is a good example of this and could be used as a basis for recommending the model comprehensive plan district.

The general land use policies under this option may not differ from the policies described in the Watershed Management Plan in Level 1. Both efforts would require the development of a clear and effective set of land use policies for application in the Watershed. However, since this option also establishes a geographically defined Dragon Run Planning Area, there is also an opportunity to include more specific policies that address issues such as residential density, permissible uses, etc.

One main difference assumed in this level is that it actually maps an area for the application of the policies. By doing so, it makes the watershed an effective and formally defined planning unit that can be used by the county for further development and implementation of the policies in its comprehensive plan. This approach is especially important in addressing the current variations and inconsistencies in land use policies across jurisdictions in the watershed. The following level (Level 3.) recommends an approach for coordinating land use regulations into a uniform zoning overlay district. It is important to note, however, that developing any such overlay zoning district needs to be preceded by and predicated upon the approach

recommended in this stage, that is to first adopt a Dragon Run Planning Area under each county's comprehensive plan.

Summary of Level 2:

- Each county adopts a model "Dragon Run Planning Area" designation in its Comprehensive Plan.
- The Dragon Run Planning Area, which consists of the portion of the Dragon Run watershed in each county, is adopted as part of the official land use map of each county by a Comprehensive Plan amendment.
- The mapped area is also linked to a specific set of land use policies that set guidelines for permissible uses, residential density, utilities and development standards in the Dragon Run Planning Area.

LEVEL 3: Adoption of a Dragon Run Protection Zone in the County Zoning Ordinances

The final level of implementation is probably the most complicated from a technical standpoint, but also represents the most comprehensive approach to furthering the shared goals for the Dragon Run. At this level, each county would adopt a model Dragon Run Protection Zone within its current zoning ordinance for the portion of the watershed that lies inside its jurisdictional boundaries. This would entail both a zoning map amendment and zoning text amendment. Also, as noted above, this step would only be taken after, or in conjunction with, corresponding map and text revisions in the county's comprehensive plan.

This is analogous to the effort undertaken in 1987 with the adoption of the initial Dragon Run Conservation District by three of the four counties in the watershed. This option, however, has some key differences in approach from the 1987 ordinance.

Key Differences from the 1987 Dragon Run Conservation District

- This new proposed district would apply more comprehensively to the whole watershed, rather than being defined by soil types or stream buffers, as was the 1987 district.
- The new district would be based on a clear statement of intent and findings that would be based on the goals of the DRSAMP Memorandum of Agreement and the Watershed Management Plan.
- The new zoning district would also be based on, and preceded by, a comprehensive plan amendment in each county that clearly sets the policy context for the Dragon Run area and the new protection zone.

- The regulatory framework of the new district would be more comprehensive and better integrated into existing county regulations - for example, it would include standards for land use, density, development and stewardship practices, and it would be coordinated with Chesapeake Bay Protection regulations and other county regulatory policies.
- The new district would be adopted with a map amendment to clearly delineate its legal boundaries within each county.

The process for adopting this type of uniform protection zone would be much the same as described above for adopting a comprehensive plan designation and district. In this case, it is especially important to get active participation from the landowner community and any other parties that would potentially be affected by zoning changes in the Dragon Run area. Multiple levels of review and refinement of the ordinance are suggested, similar to the way that the SAMP planning work has proceeded to date.

Suggested Public Review and Approval Process for the Protection Zone:

- Initial development of the draft district language by the DRSAMP Advisory Group
- Review, refinement and approval of a draft ordinance by the Advisory Group
- Recommendation to the Dragon Run Steering Committee
- Review, refinement and approval of draft ordinance by the Steering Committee
- Recommendation to each county's Planning Commission, planning staff and Boards of Supervisors
- Review and refinement by each county and its citizenry as part of their normal public hearing and approval process
- Check-in with the Dragon Run Steering Committee for final reconciliation of differences among the four counties
- Final adoption of the proposed zoning district by each county's elected governing body

In addition, the process should be accompanied by a comprehensive outreach and public information effort to help residents in the area understand the changes that are being proposed to the land use regulations for the Dragon Run.

A key consideration in the development of this type of overlay zoning district is regulatory integration. It is crucial that any proposed zoning district for the Dragon Run take into account the full regulatory context of the area and be designed to

integrate into it accordingly. For example, as discovered in the first phase of this Land Use Policy Audit, there are important differences among the four counties' regulatory policies within the watershed. The Resource Management Area of the Chesapeake Bay Protection ordinances is differently applied in the watershed by the four counties. The counties also have varying levels of subdivision, erosion control and storm water management regulations. Most significantly, the counties all have different underlying residential densities and permissible land uses within the watershed. A careful, integrative approach is required to effectively design a zoning district that would take the current regulatory context and transform it into a unified set of standards that would best meet the DRSAMP goals. Furthermore, it is important that the standards in the new zone be comprehensive - that they account for all the major land use and development considerations that can have an impact on the Dragon Run. The specific design of performance standards in the proposed zoning district could include a number of elements:

Potential Components to be Included in an Overlay District Zone:

- Purpose and Intent
- District Boundaries
- Administration and Enforcement
- Permitted Uses and Use limitations
- Lot Size and Lot Coverage requirements
- Setback and Location standards
- Development Density and Intensity requirements
- Supplemental standards for Waste Disposal, Erosion or Sediment Control
- Maintenance and Stewardship requirements
- Procedures for periodic review & Amendments

Summary of Level 3.

- Each county adopts a new Dragon Run Protection District that covers the portion of the Dragon Run watershed within its jurisdiction.
- The new district requires both a zoning map and zoning text amendment and includes a set of land use and development standards that clearly implement the comprehensive plan policies adopted under Level 2.

- The new district's definitive list of permissible uses, acceptable densities and development standards is integrated with the existing regulatory context of each county.

3.0 POTENTIAL LAND USE POLICY CHANGES and INNOVATIVE LAND USE TOOLS

The strategic approach outlined above implies careful progress towards a common goal, within the context of an open, collaborative public process. The progress of the Dragon Run Steering Committee through the DRSAMP has been characterized by the free discussion and critique of innovative ideas among local officials, landowners, planners and technical experts. Many specific ideas for policy changes and improvements have already been discussed by the Steering Committee and its Advisory Group and have been tested for local applicability.

The purpose of the following lists of specific policy recommendations is not to suggest a definitive set of policy changes that are ideally suited for each county in the watershed at this time. Any such final policy changes should grow out of a full review process among the local communities in the watershed, as supported by the Dragon Run SAMP process. Instead, the following examples provide a starting point for the focused discussions to develop the specific policies. They are based on the opportunities for coordinating overall land planning in the watershed, as brought out in the first phase of this Land Use Policy Audit and summarized in the preceding Technical Memorandum. Whether or not these individual components would be finally adopted by each county would be decided by the extensive review process proposed above and would ultimately be based on the collective goals for the Dragon Run, balanced with each county's political sensitivity and regulatory framework.

3.1 Sample Land Use Policies and Standards

Level 1: Examples of General Land Use Policies for Including in the Dragon Run Watershed Management Plan

- Recognize the overall value of maintaining the traditional rural character and forested and farmed landscape of the Dragon Run.
- Recognize the specific benefits of the Dragon Run watershed for the production of food and forestal products, as a valued natural resource, for wildlife habitat, for maintaining water quality, as well as for scenic and aesthetic purposes
- Continue to protect the exceptional environmental setting of the Dragon Run
- Maintain the integrity of the Dragon Run watershed for its biological functions and drainage
- Protect the integrity of large areas of forested and farmed land from fragmentation and conversion to extensive residential and commercial development

- Actively promote and support voluntary measures to protect agricultural and forestry resources and landowner stewardship of these resources
- Seek effective ways to protect open space in the watershed while preserving landowner rights to maintain an economic return from their property
- Integrate natural resource protection and pollution control efforts with other programs, policies and Comprehensive Plans of jurisdictions within the watershed
- Promote a comprehensive public educational effort to help spread understanding and stewardship of the Dragon Run's unique resources, including the publication of a "Dragon Run Landowner Stewardship Manual"

Level 2. Examples of Specific Land Use Policies for a Model "Dragon Run Planning Area"

- Limit rezoning of parcels in the Dragon Run Planning Area to more intense uses in order to protect the rural character and integrity of farming and forestry resources in the watershed
- Limit extension of public utilities and central water or sewer provision in the Dragon Run Planning Area
- Discourage overall development densities in the Planning Area that exceed one dwelling unit per 25 acres as incompatible with protection of the traditional farming and forestry land uses and the natural resources of the Dragon Run
- Promote a low-density, clustered pattern of development for any new residential development in the Planning Area to protect open space and critical natural resources
- Adopt buffer standards from wetlands, surface waters and important natural areas that are integrated with Chesapeake Bay Protection buffers and fulfill the goals of protecting critical natural resources in the Dragon Run area
- Adopt and enforce standards for site development, construction and maintenance that minimize any adverse impacts to environmental resources on the site
- Ensure that marinas, boat docks and other shoreline access structures are only permitted as Special Exception uses with standards to ensure maintaining the existing natural function and scenic character of the shoreline

Level 3. Examples of Regulatory Standards for a Dragon Run Protection Zone

- Limit incompatible land uses (such as landfills, reservoirs or intensive residential, commercial or industrial uses) within the watershed through a table of permitted and conditional uses for the Dragon Run Protection Zone
- Create a “sliding scale” for permitted residential density in the Protection Zone that will yield an overall development density of no more than one dwelling per 25 acres - a sliding scale allows variable densities, based on parcel size with smaller parcels typically having higher permissible densities than larger parcels
- Limit the expansion of non-conforming uses in the Protection Zone that are incompatible with the goals and intent of the zone
- Require mandatory clustering (or a formula for provision of private open space) as part of any minor subdivision
- Limit impervious cover to no more than 10% - 25% of a developed lot, depending on lot size, in order to protect groundwater, maintain natural drainage patterns and reduce flooding potential.
- Restrict the use of natural features on a site, such as wetlands or floodplain, from being used in density calculations for development so that density is calculated on a “net usable area” basis (similar to recommendations made by the Dragon Run Steering Committee in the draft 1996 Watershed Management Plan)
- Apply the Resource Management Area (RMA) of the Chesapeake Bay Preservation Protection ordinance throughout the watershed
- Require design guidelines for development of permitted streamside recreational structures, such as boardwalks, screen houses, boat docks and marinas to ensure that they preserve the natural and scenic qualities of the stream banks

3.2 Examples of Innovative Land Use Tools from Other Jurisdictions

Although the Dragon Run is an unusually pristine natural resource within a uniquely beautiful landscape, it also represents one of a number of “treasured places” in Virginia that local communities have cared about and taken steps to protect from degradation. The following examples from Virginia and elsewhere on the East Coast represent inspirations and potential models of how other communities have used innovative planning tools to protect natural resources, traditional land uses and rural character.

Regional Agreements

The Southern Watersheds Area Management Plan (SWAMP) in Virginia is the result of agreements between the Cities of Chesapeake and Virginia Beach to preserve farmland and open space in the undeveloped, southern portions of their jurisdictions.

Albemarle County, VA developed a citizen petition, sponsored by the Board of Supervisors to use the State’s “Exceptional Water” designation to protect Moorman’s River’s unique environmental setting.

South Carolina’s Charleston Harbor Project is an ecosystem-based regional planning effort for a large watershed. It involves coordinating planning and zoning regulations across portions of eighteen municipalities and three counties within the watershed.

The ACE Basin in South Carolina is a multi-jurisdictional regional partnership to protect the Ashepoo, Cumberhee and Edisto River watersheds and support compatible economic development in the region.

Fourteen Counties in North and South Carolina have developed a “Strategic Regional Open Space Network” and are working on a broad-based planning effort to implement regional open space preservation agreements.

Comprehensive Plan Policies

Northampton County, VA is developing a new method of analyzing environmentally sensitive resources and wildlife habitats using GIS-based “gap analysis”. This data will be incorporated into a series of “sensitive natural area” overlays as the basis of new plan and zoning designations in the county.

Clarke County, VA has a separate Groundwater Protection Plan as part of its comprehensive plan, that describes groundwater resources in the county and institutes land use policies to protect them from degradation.

Essex County, VA's comprehensive plan states a policy of not allowing major subdivisions (more than 5 lots) within its "Countryside" zone (including portions of the Dragon Run watershed).

Albemarle County, VA's comprehensive plan includes policies for creation of a countywide "biodiversity committee" and development of an action plan and educational process to "protect areas of significant biological resources."

Zoning and other Regulatory Tools

Fauquier County, VA has a sliding scale for its RA and RC zones ranging from 1 lot permitted on parcels less than 1 acre, up to 10 lots for parcels 205 acres and above in size (plus one additional lot for each additional 50 acres).

Fauquier County, VA also provides that division of land into lots 50 acres or greater is exempt from subdivision requirements.

Middlesex County, VA has a "Resource Husbandry" district in portions of the Dragon Run watershed that has strict standards controlling residential development, such as allowing only minor subdivisions of 1 lot for tracts over 50 acres, only with Board of Supervisors approval, and only based upon a finding that the land is unsuitable for farming or forestry use.

Northampton County, VA's sliding scale "Bonus Lot" provisions (A-2 Zone) allow 2 lots for parcels of 7 to 9.9 acres and go up to 8 lots for parcels of 160 acres or greater. Bonus lots must be a minimum of 20,000 square feet and the remainder of the parcel can be developed at a density of 1 lot per 20 acres.

Isle of Wight County, VA has a Rural Preservation District that requires 50% of the land in a subdivision be protected. **Fauquier County's** zoning requires 85% of the property be permanently protected in its designated rural areas.

Northampton County, VA also has mandatory "Open Space Ratios" in its conservation and agricultural zones. For example, in the A-2 zone, 75% of the property must remain open and undeveloped in order to limit fragmentation of prime farmland. This land may be either non-common or common open space but must have deed restrictions placed on it to restrict further development.

Clarke County, VA has a "Stream Protection Overlay District" that is designed to apply special regulations to the riparian buffer area no less than 100 feet wide on each side of perennial streams and wetlands adjacent to those streams.

Clarke County, VA also has separate ordinances or zoning districts that control specific environmental resources, such as a Septic System Ordinance and a Spring Conservation Overlay District.

Pennsbury Township in Chester County, PA has an “Open Space Design Option” in its zoning ordinance that permits density bonuses if a subdivision plan includes permanently protected open space (requires a conditional use permit).

Bedminster Township in Bucks County, PA has Environmental Performance Zoning that excludes natural features on a site from being used in calculating allowable densities under the ordinance.

Frederick County, MD requires that a “Forest Conservation Plan” be submitted with any minor subdivision in order to specify how forestry resources will be protected from degradation under the plan of subdivision.

4.0 ILLUSTRATIVE SCENARIOS OF POLICY RECOMMENDATIONS

The following maps and site plans suggest some potential scenarios of how land use policies can affect the landscape of the Dragon Run over time. They presume that low-density rural residential development will happen eventually over time in the watershed and that the character and pattern of that development can be shaped by the prevailing land use policies in the jurisdictions at the time. Overall, the scenarios illustrate the “Potential Impact of Current Land Use Policies and Regulations on the Watershed Over Time.” They are at two scales:

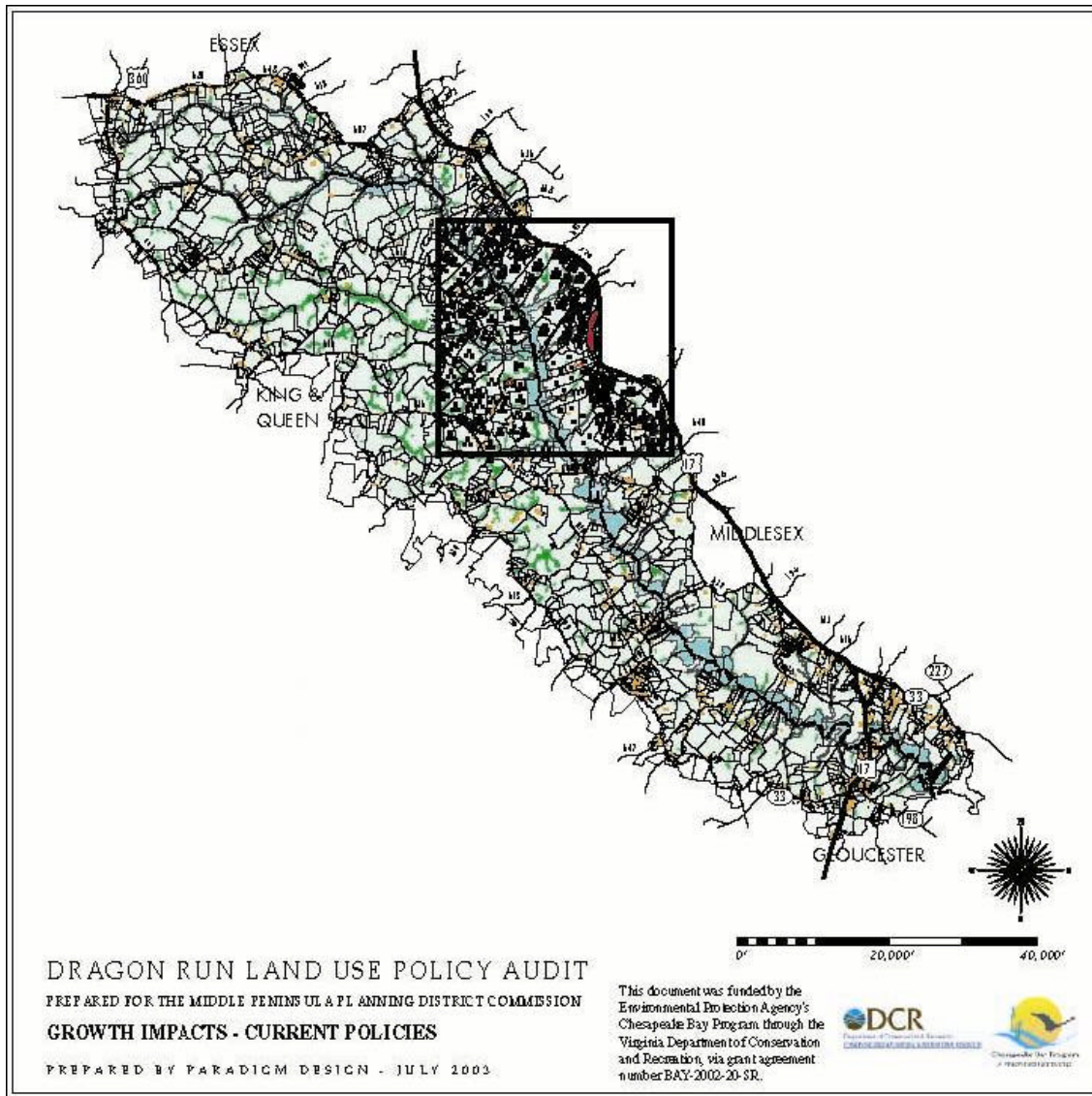
1. Watershed Scale (detail of the central portion of the watershed)
2. Individual Site or Landholding Scale (typical 100-acre farm site)

The purpose of these maps is to better analyze how current inconsistencies in land use policies and regulations across the watershed could affect the pattern of traditional uses in the wake of potential future development pressures.

Map 1. Study Area

Map 1 shows the area that was selected for a more detailed study of growth impacts and policy implications in the subsequent scenarios. The area represents a segment of the watershed incorporating portions of three counties and totaling approximately 16,000 acres. It is a fairly typical portion of the Dragon Run area that includes both large and small landholdings and a variety of parcel configurations.

This study area was enlarged to a scale of 1"=5,000' for the subsequent analysis (maps 2 and 3) to show potential impacts in detail. These maps also show the existing 100-year floodplain and existing wetlands in the area. All the base data is from the Middle Peninsula Planning District Commission's Dragon Run Management Framework, (January 2002).



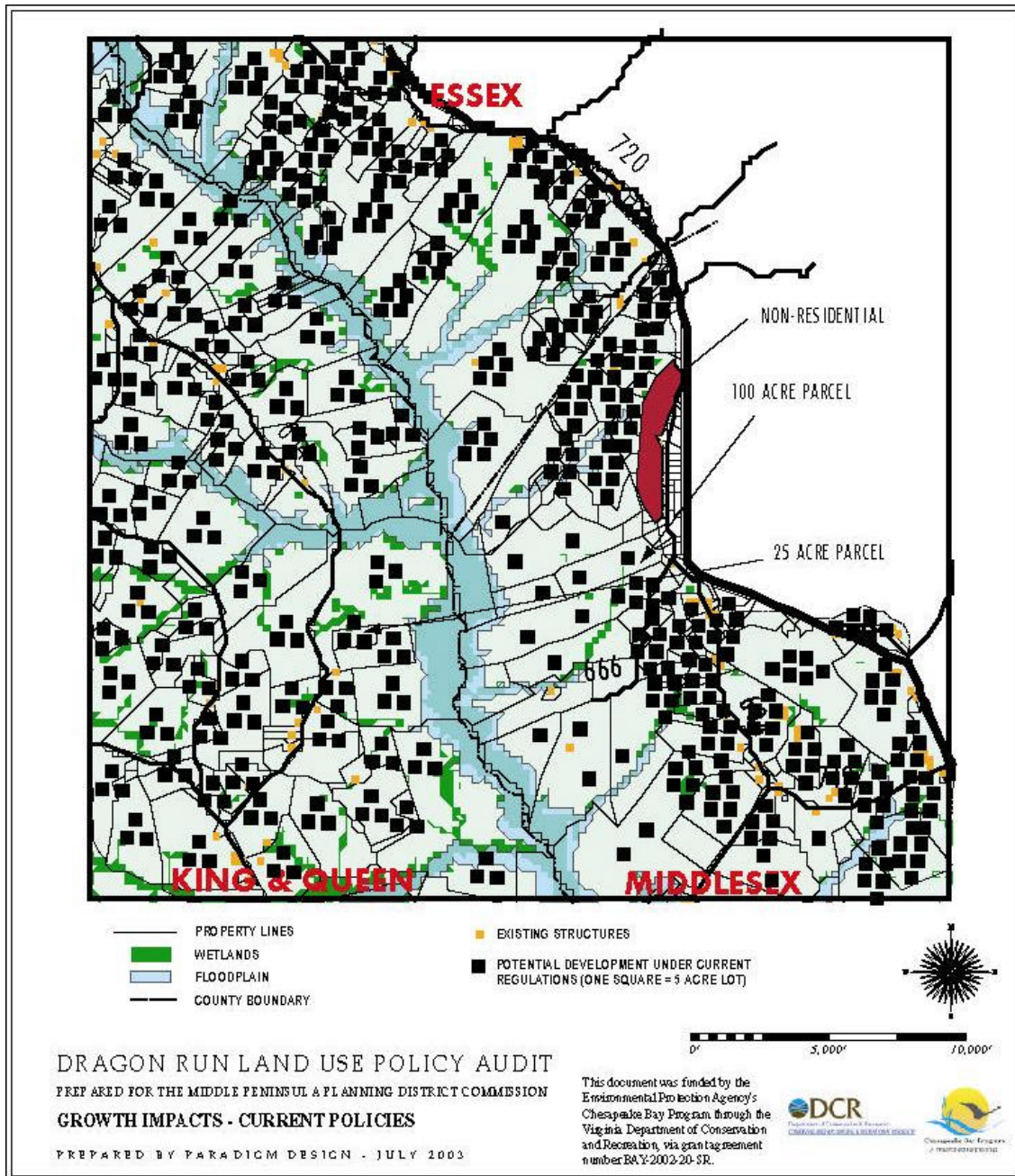
Map 1. Key Map of Study Area

Map 2. Growth Impacts – Current Policies

Map 2. shows a potential scenario for the building out of a portion of the watershed under the current land use policies of each county. Following are some assumptions that went into the design of this scenario:

1. Development is shown as 5-acre residential building lots. Five acres was chosen as a typical average lot size that is permitted in all the zoning districts in the area, with the exception of the Dragon Run Conservation District and the Resource Husbandry District, both in Middlesex County.
2. The development is shown “as of right” – that is, within the permitted subdivision requirements for “minor subdivisions” in each of the jurisdictions (6 lots in Middlesex, 3 lots in King & Queen and 5 lots in Essex).
3. In reality, only a portion of the 5-acre lots would be developed with a house and improvements and the remainder would probably remain open. However, the main purpose of this scenario is to show potential fragmentation of the farm and forested land in the watershed. Because of this, each lot is shown as a solid 5-acre block, to emphasize how this pattern would fragment the large blocks of farm or forest around it.
4. The lots are located in a generally random pattern, without any specific criteria for clustering or preserving open space. They are generally clumped together, rather than fully dispersed, however, under the assumption that the development would happen in such a way as to minimize road or driveway costs.

As shown in the map the potential buildout under the current land use policies, although very low in total density, still has the potential to disrupt the rural character of the region and fragment the large blocks of forested and farmed land in the watershed.



Map 2. Growth Impacts - Current Policies

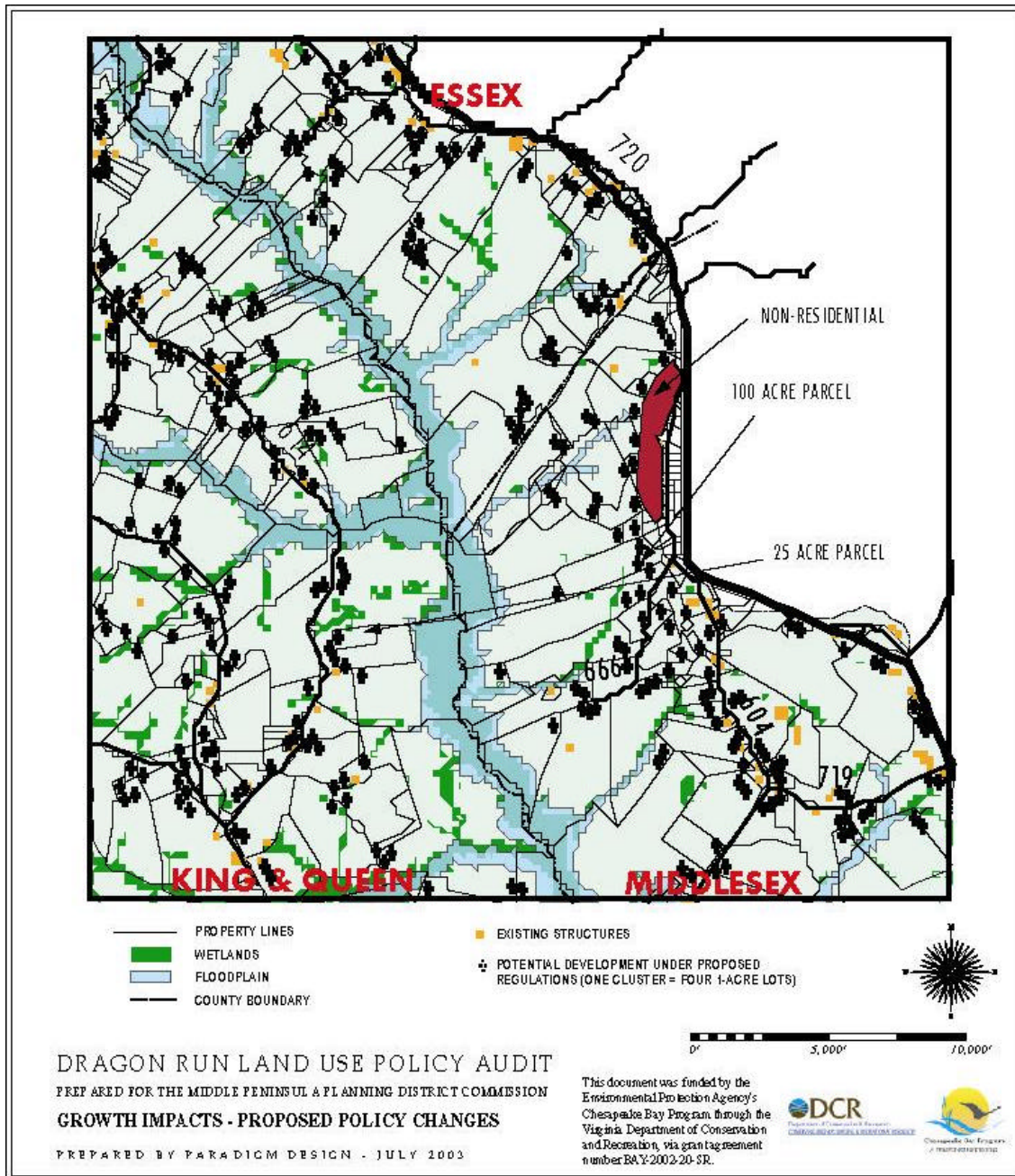
Map 3. Growth Impacts –Recommended Policy Changes

Map 3 shows how the buildout potential for the study area could be improved by potential changes in the land use policies and regulations. The map shows a development pattern based on a number of proposed new land use policies:

1. Development regulations have been made consistent for all counties in the watershed
2. The area is zoned for open space conservation – a maximum density of 1 unit per 25 acres is permitted and there is a mandatory clustering of development with a requirement for the majority of the developed tract to be reserved as permanent open space.
3. Minor subdivisions are permitted “as of right,” provided they are designed under the provisions for clustering and preserving open space. The maximum number of lots permitted for a minor subdivision is four, with some incremental increases for very large parcels (over 200 acres).
4. There are criteria in the regulations that call for clustering, connecting open space with adjacent parcels, avoiding sensitive areas and protecting wildlife habitat.
5. Development typically occurs in clusters of four 1-acre lots, according to the criteria in the zoning ordinance and subdivision regulations.

The scenario shown in Map 3 has several benefits over that shown in Map 2. These include the preservation of large blocks of farm and forested land, reduced visual impact through the use of clustered development, protection of wildlife corridors and habitat and a conservation of the open rural character of the region.

While the scenarios in both of the above maps are somewhat abstracted and simplified for the purposes of analysis, they show the potential for dramatic impacts of land use regulations when applied at the scale of a whole landscape. While specific proposals for land use regulations can vary, it is useful to keep in mind their potential for landscape-scale change when applied to a fragile environment like that of the Dragon Run.



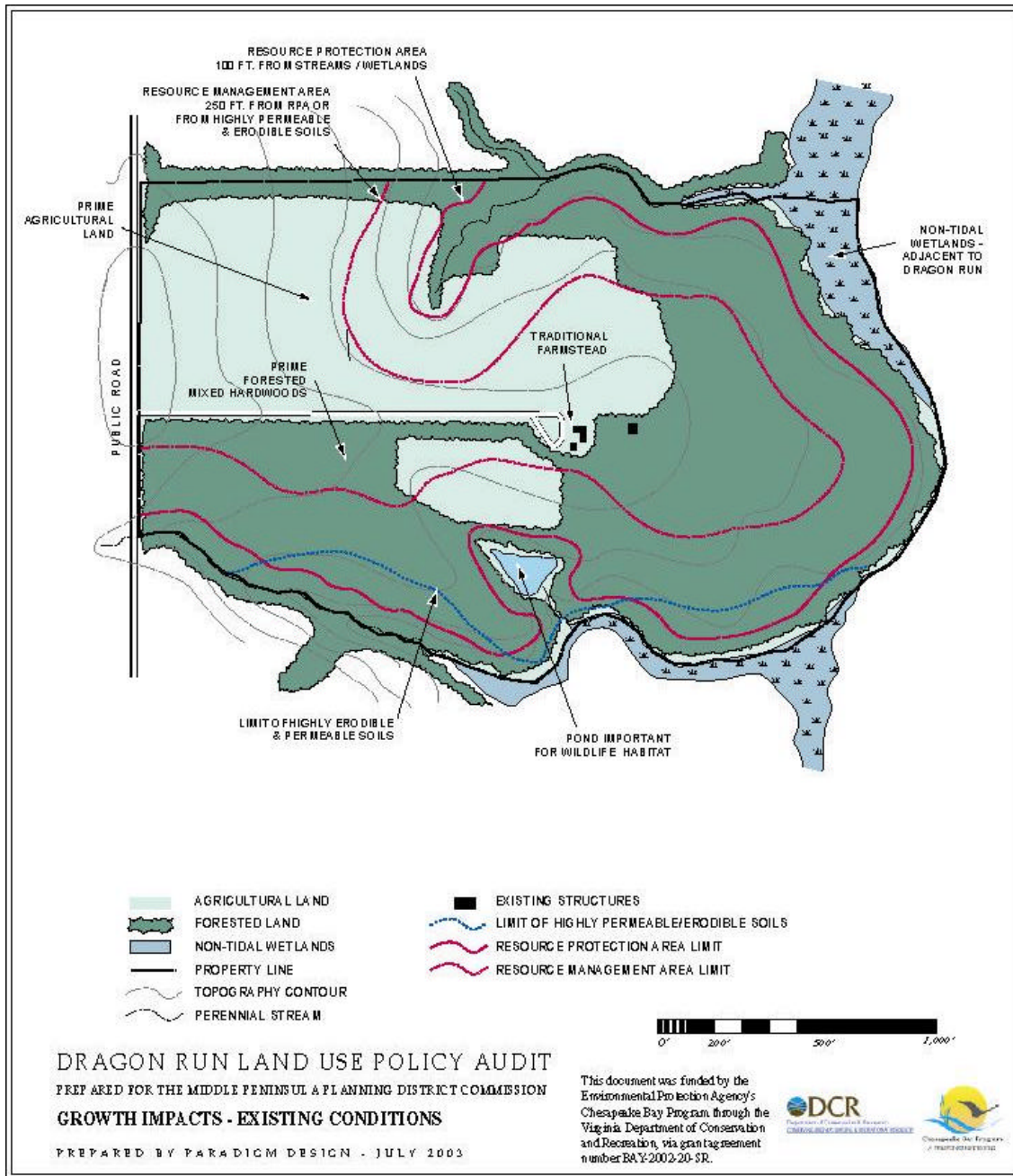
Map 3. Growth Impacts - Recommended Policy Changes

Map 4. Growth Impacts -Existing Conditions

The following three maps deal with the impacts of land use policies at the site scale. The first map in this series shows a prototypical farm in the Dragon Run area. It consists of 100 acres of prime forested land and farm land bordered by a non-tidal wetland area that is part of the Dragon Run stream system.

There is a traditional farmhouse and farm buildings on a localized ridge line in the center of the farm, accessed by an unpaved farm road. This typical situation represents the traditional land use in the watershed - one that is responsible not only for the rural character and the resource-based economy of the region, but also for its scenic and unspoiled rural quality as well.

The subsequent maps show the impacts of land use regulations on the potential development of this typical farm.



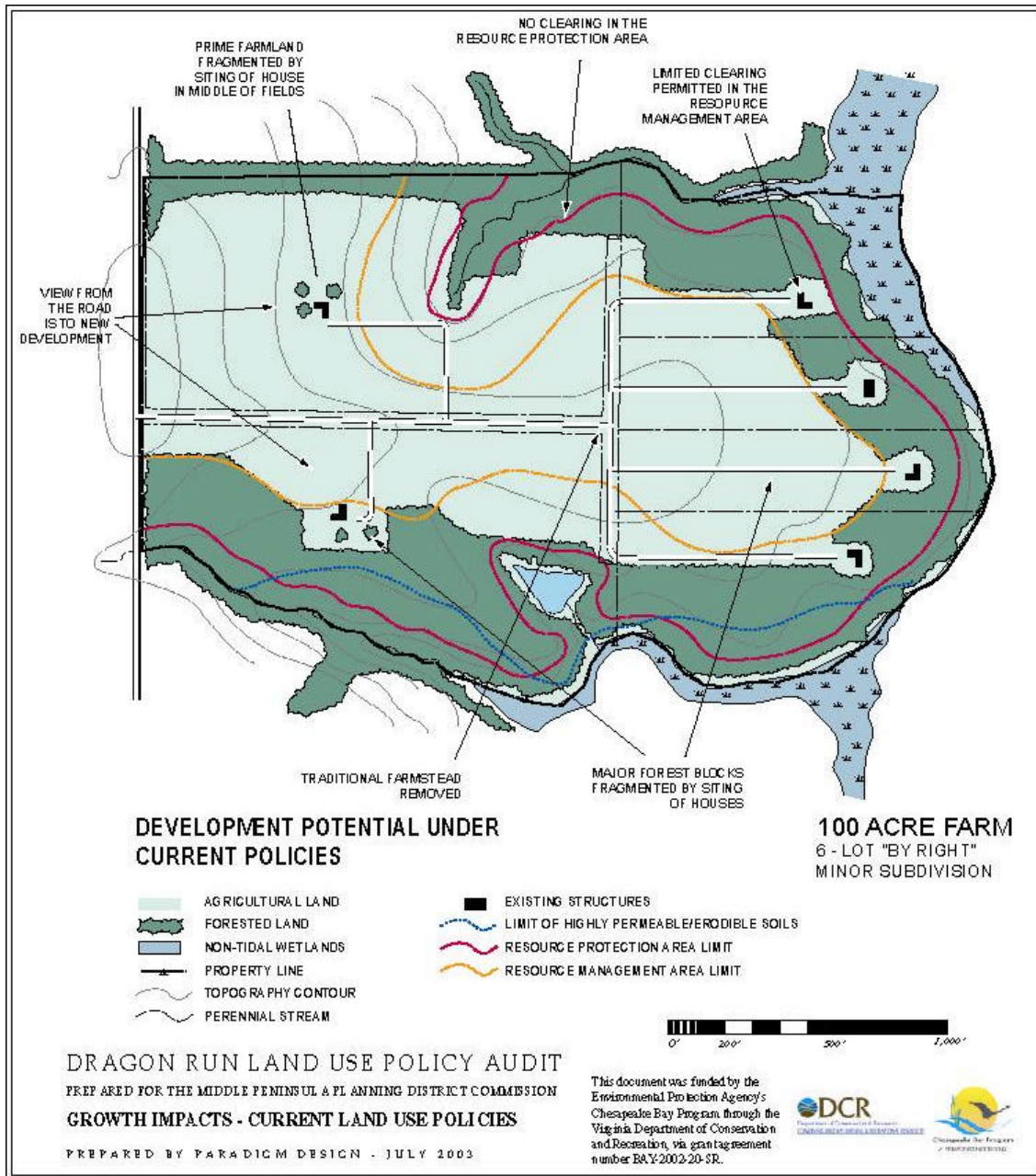
Map 4. Growth Impacts - Existing Conditions

Map 5. Growth Impacts –Current Land Use Policies

This scenario shows the potential development of the typical farm under the general land use policies that prevail in the watershed. Although it is not meant to be representative of any specific county zoning ordinance, the site plan assumes the following land use regulations as typical of the kinds of policies found among the area jurisdictions:

- Minor Subdivision permitting 6 lots “as of right” – The site plan shows four “waterfront lots” of 5-10 acres each and two “farm lots” of 20-30 acres each.
- No development permitted in the Resource Protection Area – residential development and limited clearing permitted in the Resource Management Area. The areas that are not covered by the Chesapeake Bay Protection ordinance have been cleared by the new owners, not for farming or silviculture but to be converted into extensive front lawn areas.
- No specific development guidelines or criteria for Minor Subdivisions have been required – the development can be located anywhere on the property other than areas prohibited under the Chesapeake Bay Protection ordinances.

The resulting site plan shows some of the drawbacks of conventional low-density development patterns. Although the overall development “footprint” is low in this scenario, the original farm and its natural resources have been parceled off into a series of private lots that are too small for effective farming or silvicultural practices. The existing farmstead has disappeared and the traditional rural “view from the road” has been replaced by a more modern view of conventional large lot development. Moreover, the wildlife value of the site has been reduced – wooded habitats have been reduced and disconnected, meadows have been converted to lawns and the extensive wooded buffers to Dragon Run have been greatly reduced.



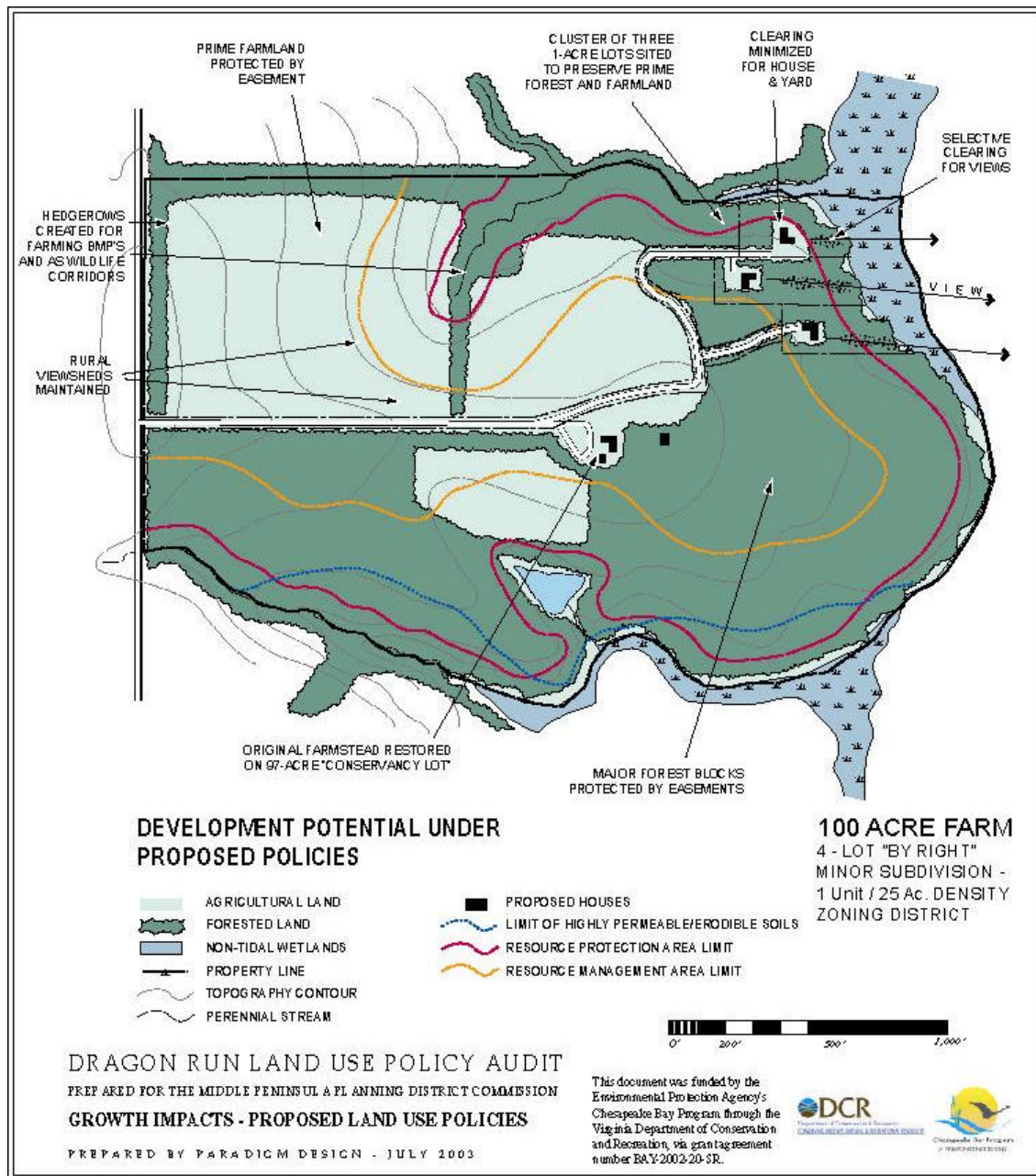
Map 5. Growth Impacts - Current Land Use Policies

Map 6. Growth Impacts –Proposed Land Use Policies

The final map shows an alternative development scenario, based on a strengthened set of land development policies and practices. The site plan shown is illustrative only and is not based on a specific ordinance. However, it serves to illustrate a more sensitive development pattern based on innovative land use policies. Some of the policies illustrated include:

- Minor Subdivision with a maximum of four lots “by right.” The underlying zoning is also very low density (1 unit per 25 acres), which underscores the intent of the comprehensive plan policies which call for very low development in the Dragon Run area.
- The Minor Subdivision requirements call for a mandatory open space provision, with 3 of the 4 permitted lots clustered in 1-2 acre lots and the remaining large lot preserving over 80% of the land in open space.
- The subdivision ordinance also has guidelines that encourage the preservation of land for farming and forestry uses, as well as sensitive house siting and environmental protection, in general. These include:
 - Siting development away from prime farm and forest land and environmentally sensitive areas
 - Preserving existing farm buildings and farmsteads, when practical
 - Preserving existing vegetation, including both large trees and secondary growth, where it forms interconnected wildlife corridors on the site
 - Enhancing on-site vegetation by extending hedgerows and buffers to increase wildlife habitat and improve filtering of overland runoff
 - Aligning drives and roads to avoid significant stands of vegetation and using shared driveways with porous surfaces to minimize impervious area.

In general, the site plan illustrates some of the improvements in development patterns that are possible by implementing a carefully designed set of land use policies and development standards at the level of minor subdivisions. While the standards illustrated generally add to the current set of subdivision regulations in each county, they can be designed so that they are not unusually complicated. Moreover, there is an opportunity to provide more “user-friendly” diagrams and simple guidelines than are currently used, in order to make the new standards easier to implement. Overall, they show a relatively simple set of good development practices that preserve landowners’ rights to develop portions of their properties while protecting the special qualities that have made the Dragon Run such a valued local resource.



Map 6. Growth Impacts - Proposed Land Use Policies

5.0 CONCLUSION

Overall, the illustrated development scenarios, the recommended policy improvements and the strategic actions proposed above represent a coordinated approach to achieving the goals for the Dragon Run area. The three strategic levels that have been described are presented in an ascending order of potential impact and complexity. Level 1., adopting the SAMP Watershed Management Plan by addendum is the simplest, in terms of implementation and procedural steps. Level 2., adopting a new comprehensive plan district and designation represents an intermediate approach whereby general planning policies are adopted but not implemented directly through regulatory revisions. Level 3., adopting a wholly new zoning district is the most complex and politically sensitive, in that it requires a zoning map and text amendment with the potential to alter the regulatory context for several hundred current landowners in the area.

Each level is presented as a strategic approach only and many details would need to be further developed in order to bring any of them to completion. The main objective in presenting these strategic levels is to give the DRSAMP Advisory Group and the Steering Committee an adequate basis of information to decide on an effective strategy to pursue over the coming months.

In addition, the samples of potential land use policies that have been provided are coordinated with the three levels of strategic implementation. Finally, the illustrative development scenarios present a snapshot of how these improvements could help protect the traditional landscape of the Dragon Run over time. Many variants of these basic ideas have been discussed and some have been partially implemented in the course of the Dragon Run Steering Committee's work over the past 15 years. This project presents a comprehensive approach for bringing all the land use components together into a coordinated strategy and provides a "road map" of how to get there over time in order to keep the momentum of the Dragon Run's landmark regional partnership and planning process going in the future.