

PART I

SECTION 1: Watershed Description

Section 1 describes the Dragon Run watershed's setting, its role in local history and culture, and its unique natural resources. The potential source of conflict is change in land ownership that threatens to fragment productive farm and forest land and natural habitat. The community's vision for the watershed is to preserve the traditional land uses – forestry, farming, hunting – and the unique natural resources. This section highlights both the differences of opinion on how to address the threat to the watershed and the common ground that defines the community's vision.

As one of the Chesapeake Bay watershed's most pristine waterways, the Dragon Run "encompasses some of the most extensive and unspoiled swamp forest and woodland communities in Virginia" (Belden, Jr. et al, 2001). Effectively bisecting Virginia's Middle Peninsula located between the York and Rappahannock Rivers, this fresh and brackish water stream (**Figure 1**) meanders forty miles along and through nontidal and tidal cypress swamp. The watershed is mainly undeveloped, almost entirely privately owned, and encompasses approximately 140 square miles (90,000 acres) of rural landscape – mostly forests, farms, and wetlands. The spring-fed Dragon Run flows through portions of Essex, King and Queen, Middlesex, and Gloucester Counties, emptying into the estuarine Piankatank River and ultimately the Chesapeake Bay.



Figure 1. The Dragon Run

The Dragon Run plays a central role in the Middle Peninsula's culture and identity. Its intriguing name is frequently borrowed by local enterprises and establishments and is often overheard in community conversations. Since European settlement in the early 1600's and Native American inhabitation up to 10,000 years before that, natural resources have been the bedrock of the watershed's economy. For older generations, forestry, farming, hunting, trapping and fishing were the primary ventures. Today, forestry and farming continue to generate wealth and drive the watershed's economy. Upholding an ancient tradition, hunters range over prime hunting grounds stalking prized game. These land uses, together with extensive swamps, are the main reasons that the Dragon Run remains wild and secluded.

The watershed's wilderness is both expansive and unique. The Dragon Run contains the northernmost example of the Baldcypress-Tupelo Swamp natural community in Virginia and the best example north of the James River (Belden, Jr. et al., 2001). Moreover, 14 rare species and 5 rare natural communities are found here (**Appendix A**). Based on his investigations of the watershed's aquatic communities, one researcher

observes that the Dragon Run is a “100 year old time capsule,” resembling coastal plain streams in the Chesapeake Bay region at the turn of the 20th century (Garman, 2003).

The Dragon Run’s unique character evokes strong feelings to protect the pristine watershed in both long-time residents and first-time visitors alike. Although development pressure in the watershed is currently low, the potential for significant land ownership changes (>25% in 10 years due to aging and absentee corporate landowners) threatens to disrupt the rural character and fragment productive farm and forest land. Likewise, habitat fragmentation jeopardizes the Dragon Run’s unique natural communities. Landowner opinions about how to address these threats vary widely, ranging from the belief that “the Dragon takes care of itself” by its wild nature and voluntary landowner stewardship to enacting and enforcing regulations with “teeth.”

The difference in point of view between property rights advocates and conservationists centers on how to maintain a pristine watershed into the future. Yet, as the Dragon Run Special Area Management Plan unfolds, the community is learning that substantial common ground exists for proactively preserving the Dragon Run for future generations that safeguards both natural resources and traditional uses of the land and water, including the property rights of landowners.

SECTION 2: Planning Approach

Section 2 describes the Dragon Run Steering Committee’s planning approach. The Dragon Run Watershed Special Area Management Plan (SAMP), a partnership between the Virginia Coastal Program and the Dragon Run Steering Committee of the Middle Peninsula Planning District Commission, is designed to address both the differing viewpoints and the common ground that exist concerning the future of the watershed. The Steering Committee’s approach to the SAMP is to stimulate and coordinate community involvement in the proactive development and implementation of goals, objectives, and action plans for a watershed management plan. The Steering Committee finds that the watershed approach is the most effective way to manage natural resources and traditional land uses. A Memorandum of Agreement describing the goals and objectives of the SAMP was signed by Essex, Gloucester, King and Queen, and Middlesex Counties and the Middle Peninsula Planning District Commission. The Steering Committee and its Advisory Group then developed watershed action plans designed to achieve those goals and objectives.

The Dragon Run Watershed Special Area Management Plan (SAMP), a partnership between the Virginia Coastal Program and the Dragon Run Steering Committee of the Middle Peninsula Planning District Commission, is designed to address both the differing viewpoints and the common ground that exist concerning the future of the watershed. The project began in January 2002 with a grant from the Virginia Coastal Program under authority of the National Oceanic and Atmospheric Administration (NOAA). Enabled by the federal Coastal Zone Management Act of 1972 as amended, SAMPs aim to protect significant coastal resources through a collaborative, multi-level planning process to develop and implement new enforceable policies.

One of the fundamental elements of a SAMP is that a strong regional entity must exist that is willing to sponsor the planning program. In the Dragon Run watershed's case, that regional entity is the Middle Peninsula Planning District Commission through its Dragon Run Steering Committee. Formed in 1985, the Dragon Run Steering Committee consists of landowners and local elected officials and is the key vehicle for cooperation and coordination among the four counties concerning watershed issues. The Steering Committee's approach to the SAMP is to stimulate and coordinate community involvement in the proactive development and implementation of goals, objectives, and action plans for a watershed management plan.

Another major element of a SAMP is that conflict exists concerning the area's proposed uses. The Steering Committee believes that the best approach is to proactively head off conflict before it grows by enabling stakeholders to openly discuss the issues. Potential conflicts in the Dragon Run watershed are: 1) the differences between conservation and property rights advocates; and 2) the private use of land versus the public use of the water. The Steering Committee finds that the watershed approach is the most effective way to manage natural resources and traditional land uses.

In this spirit, the Dragon Run Watershed SAMP (**Figure 2**) began with public planning forums in December 2001 and January 2002. Newspaper announcements were published and representatives from many sectors of the community were specifically invited. These planning forums led to two primary outcomes: 1) the development and confirmation of common themes for watershed issues; and 2) the establishment of a SAMP Advisory Group representing a broad cross-section of the community.

Building upon the foundation established by the planning forums, the SAMP Advisory Group developed a mission statement (see **Section 3**). The Advisory Group developed a list of three goals, each with several objectives. With minor modifications, the Steering Committee approved the goals and objectives, which were incorporated into a Memorandum of Agreement (**Appendix B**). Each county – Essex, Gloucester, King and Queen, and Middlesex - and the Middle Peninsula Planning District Commission signed the Agreement during the late summer and fall of 2002 and will consider the actions (see **Section 4**) recommended by the Steering Committee. The actions address the goals and objectives in the Memorandum of Agreement.

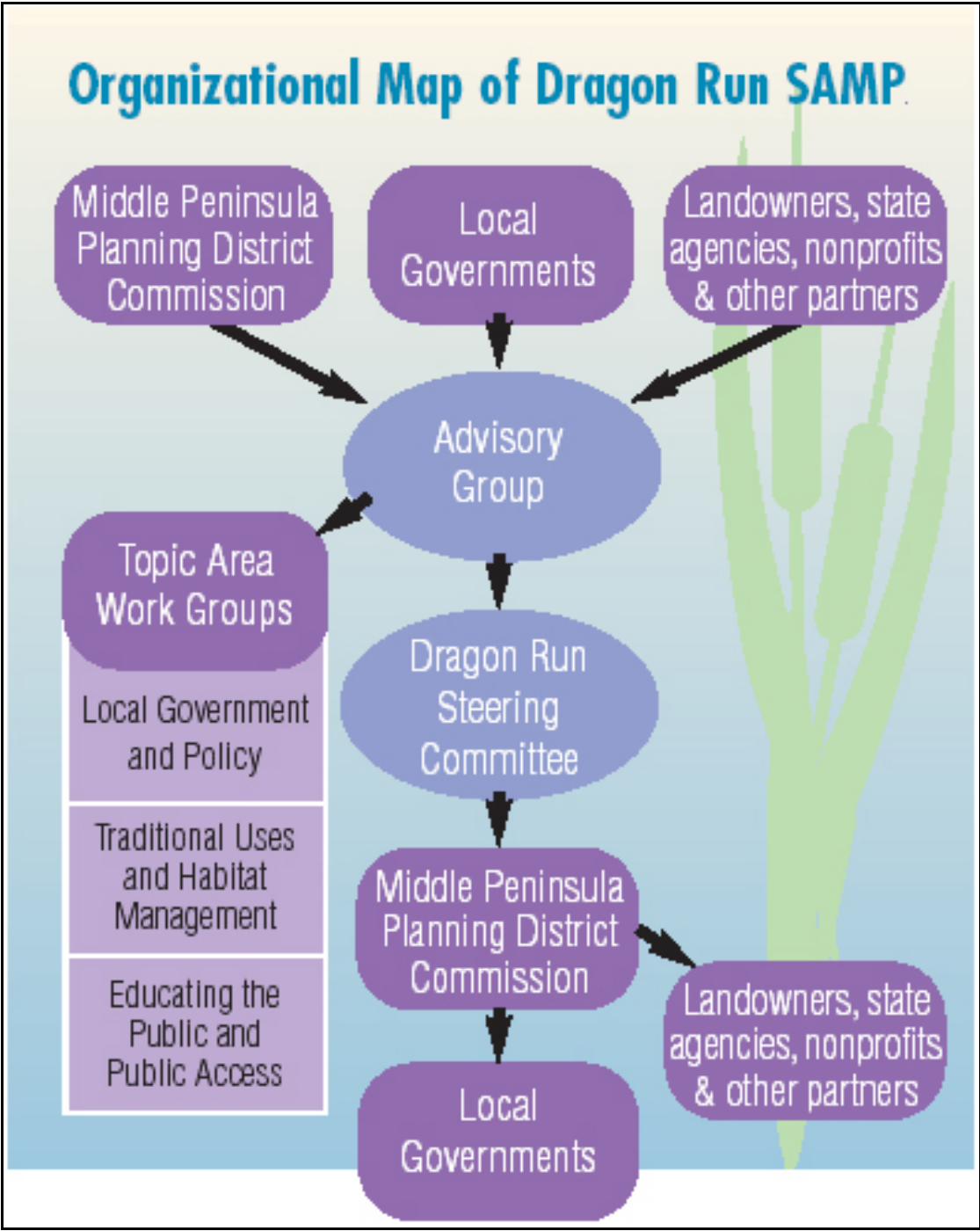


Figure 2. Organizational Map of the Dragon Run SAMP

SECTION 3: Goals and Objectives

Section 3 contains the mission, goals and objectives featured in the Memorandum of Agreement. This section serves as the basis for the proposed actions in Section 4.

MISSION

To support and promote community-based efforts to preserve the cultural, historic, and natural character of the Dragon Run, while preserving property rights and the traditional uses within the watershed.

GOAL I

Establish a high level of cooperation and communication among the four counties within the Dragon Run Watershed to achieve consistency across county boundaries.

OBJECTIVE A

Develop a plan to address the inevitable future development pressure to change the traditional use of land in the Dragon Run Watershed.

OBJECTIVE B

Achieve consistency across county boundaries among land use plans and regulations in order to maintain farming and forestry and to preserve natural heritage areas by protecting plants, animals, natural communities, and aquatic systems.

OBJECTIVE C

Provide ongoing monitoring of existing plans and planning tools in order to assess traditional land uses and watershed health and take action necessary to preserve the watershed.

OBJECTIVE D

Comprehensively implement Best Management Practices (BMPs) for water quality, wildlife habitat, and soil conservation.

GOAL II

Foster educational partnerships and opportunities to establish the community's connection to and respect for the land and water of the Dragon Run.

OBJECTIVE A

Encourage experience-based education consistent with the Stewardship and Community Engagement goals of the Chesapeake 2000 Agreement.

OBJECTIVE B

Promote the community and economic benefits of the Dragon Run derived from its natural characteristics and traditional uses such as farming, forestry, hunting and fishing.

GOAL III

Promote the concept of landowner stewardship that has served to preserve the Dragon Run Watershed as a regional treasure.

OBJECTIVE A

Address the potential dilemma of preserving the watershed's sense of peace and serenity by protecting open space and reducing fragmentation of farms, forests, and wildlife habitat versus the landowners' rights in determining or influencing future land use.

OBJECTIVE B

Educate landowners about the regional importance of the Dragon Run.

SECTION 4: Actions

Section 4 explains and justifies the actions proposed to achieve the goals and objectives in Section 3. The proposed actions are:

<i>Underway/Completed</i>
1. Memorandum of Agreement
2. Establish Baseline Watershed Information
3. SAMP Project Awareness Campaign
<i>Recommended</i>
1. Land Use and Resource Preservation
A. Designate a Unified "Dragon Run Planning Area"
B. Implement Tools to Preserve Farm, Forest, and Natural Resources
C. Address Public and Landowner Access Issues
D. Control Invasive Species
2. Education and Landowner Stewardship
3. Encourage and Support Sustainable Economic Development
4. Monitor Plan Implementation

The actions in this **Section** address the Goals and Objectives in **Section 3**. Notations after each action indicate links to goals and objectives and responsibilities.

ACTIONS UNDERWAY OR COMPLETED

1. Memorandum of Agreement

The Middle Peninsula Planning District Commission entered into an agreement (**Appendix B**) with the Counties of Essex, Gloucester, King and Queen, and Middlesex to participate in the Dragon Run SAMP. The agreement established the signatories' acceptance of the goals and objectives of the SAMP (see **Section 3**) and willingness to consider the Steering Committee's recommendations for actions (**Section 4**).

This action addresses Goal I(B), II

Responsibility: Middle Peninsula Planning District Commission, Local Governments

2. Establish Baseline Watershed Information

The Dragon Run Steering Committee has identified the following studies that have been completed or are underway to help to establish baseline watershed information:

Title (citation)	Description
<i>Natural Areas of the Chesapeake Bay Region: Ecological Priorities</i> (Jenkins, 1974)	Natural area survey throughout the Chesapeake Bay watershed; Dragon Run ranks 2 nd of 232 in importance
<i>County comprehensive plans, land use policies and ordinances</i>	Maps and narratives addressing environmental and land use policies
<i>Dragon Run Access Plan</i> (MPPDC, 1994)	Describes access to the Dragon Run and factors influencing its availability
<i>Dragon Run Watershed Management Plan</i> (DeHardit et al., 1996)	Evaluates watershed and land use issues; offers recommendations; not implemented
<i>Dragon Run Land/Water Quality Preservation Project</i> (MPPDC, 2001)	Comprehensive evaluation of water quality using historical and recent data
<i>A Natural Heritage Inventory of the Dragon Run Watershed</i> (Belden, Jr. et al., 2001)	Survey of rare species and natural communities for the main stem and adjacent wetlands
<i>Dragon Run Management Framework</i> (MPPDC, 2002)	GIS CD-ROM and report with 18 data sets; evaluates economic contributions of traditional uses
<i>Dragon Run Watershed Land Use Policy Audit</i> (MPPDC, 2003)	Evaluates existing land use policies; recommends improvements to protect natural resources and traditional uses
<i>Living Resources Inventory of the Dragon Run</i> (Garman et al., 2003)	Survey and analysis of fish and benthic macroinvertebrate communities
<i>A Natural Heritage Inventory of 14 Headwater Sites in the Dragon Run Watershed</i> (Belden, Jr. et al., 2003)	Survey of rare species and natural communities for headwaters

Title	Description
<i>Virginia Dept. of Environmental Quality Water Quality Monitoring (ongoing)</i>	Ambient water quality monitoring at U.S. 17 and Rt. 603
<i>U.S. Geological Survey Gaging Station (ongoing)</i>	Real-time gage height and discharge by volume at Mascot, Virginia

This action addresses Goal I(A,C)

Responsibility: Middle Peninsula Planning District Commission, universities, state and federal agencies

3. SAMP Project Awareness Campaign

Middle Peninsula Planning District Commission staff delivered presentations, brochures, and fact sheets to Boards of Supervisors, Planning Commissions, and community groups that explained key components of the SAMP project and critical watershed issues.

This action addresses Goal II(B), III(B)

Responsibility: Middle Peninsula Planning District Commission, Dragon Run Steering Committee

RECOMMENDED ACTIONS

1. Land Use and Resource Preservation

Currently, the watershed is 99% wetlands, forests, and farms (MPPDC, 2002) that support a variety of unique natural resources, including rare and threatened species (Belden, Jr. et al., 2001). To protect the unique natural resources and traditional land uses of the Dragon Run, it is crucial to work proactively to implement strong land use policies while development pressure and land use intensity are still low, rather than wait to react to intensifying development pressure (MPPDC, 2003). The Dragon Run Steering Committee **recommends** that counties proactively strengthen and better coordinate their land use policies within the watershed.

A. Designate a Unified “Dragon Run Planning Area”

All of the four counties share the goals of protecting traditional uses, rural character, and natural resources in the Dragon Run. Yet, none of the counties identifies the Dragon Run watershed as a distinct planning area. Based on the Dragon Run Land Use Policy Audit (MPPDC, 2003), the Dragon Run Steering Committee **recommends** a watershed approach to achieve better coordination of land use policies by designating the Dragon Run as a special planning area with a step-by-step implementation strategy.

Step 1	Adopt Watershed Management Plan
Step 2	Amend Comprehensive Plan
Step 3	Amend Zoning Ordinance

Step 1. Each county would adopt the Dragon Run Watershed Management Plan as an addendum to its comprehensive plan, requiring a simple amendment and a public hearing. This action would **not** require an amendment to the future land use maps. The purpose of Step 1 would be to formally acknowledge that the Dragon Run watershed deserves distinctive treatment.

By adopting the Watershed Management Plan, the counties would agree to the following policies:

- Recognize the overall value of maintaining the traditional rural character and forested and farmed landscape of the Dragon Run watershed
- Preserve the ecological integrity of the Dragon Run watershed
- Acknowledge the community and economic benefits of the Dragon Run watershed: for the production of agricultural and forest products; as a valued natural resource; for wildlife habitat; for maintaining water quality; and for scenic and aesthetic values
- Continue to fully enforce existing regulations and policies
- Protect forested and farmed land from fragmentation due to conversion to more intensive development
- Encourage a low-density, clustered pattern of development for new residential development in the watershed to protect open space and natural resources
- Seek techniques to protect open space in the watershed without infringing upon landowner rights to maintain an economic return from their property
- Identify land uses that are incompatible or competitive with traditional resource-based land uses (e.g. forestry, farming, hunting, fishing) and consider limiting them within the watershed
- Limit rezoning 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 and sewer in the watershed
- Explore the feasibility of limiting major residential development in the watershed by aligning the Comprehensive Plan and Zoning Ordinance with provisions in the Subdivision Ordinance that limit major subdivisions
- Publish citizen stewardship materials that explain pertinent ordinances, policies, and regulations in easy-to-understand language

Step 2. Each county would create and map a specially designated “Dragon Run Planning Area” within its comprehensive plan. Placing detailed land use policies such as permitted uses, development density, and utility service into the plan text and the official Future Land Use map would stress that protection of the Dragon Run is an important priority in each county.

Specific goals, policies, and actions, based on a thorough review and analysis by the Dragon Run Steering Committee and its SAMP Advisory Group, would be summarized in a proposed “Model Comprehensive Plan Amendment for the Establishment of the Dragon Run Planning Area.” Considerable staff and public input (e.g. public hearings) would address inconsistencies in land use policies across jurisdictions.

Step 3. Each county would adopt a model “Dragon Run Protection Zone” within its zoning ordinance involving both zoning map and zoning text amendments. The Dragon Run Protection Zone would apply beyond the main channel to the entire watershed.

This step would require considerable staff and public input (e.g. public hearings) to devise a unified set of standards (e.g. permissible uses, acceptable densities, development standards) that integrates with the existing regulatory scheme and that meets the goals of the Special Area Management Plan (see **Section 3**).

This action addresses Goal I(A,B,C), III(A)

Responsibility: Middle Peninsula Planning District Commission, Dragon Run Steering Committee, Local Governments

B. Implement Tools to Preserve Forest, Farm, and Natural Resources

A variety of tools exist with which to preserve forest and farmland (**Figure 3**) and unique natural resources within the Dragon Run watershed. These tools are highly flexible, rely mostly upon voluntary actions, and can provide ecological and cultural benefits. The Dragon Run Steering Committee **recommends** the implementation of an appropriate combination of the following tools (see **Appendix C** for description):

Tool	Responsibility
Conservation Easements	Landowners, non-profits, state and local governments
Purchase of Development Rights (PDR)	Local governments
Purchase of Agricultural Conservation Easements	Non-profits and federal, state and local governments
Enforcement of Chesapeake Bay Preservation Act and Other Ordinances	Local governments
Agricultural and Forestal Districts	Local governments
Land Use Assessment	Local governments
Utilize Farm Programs and Forest Stewardship Plans	State and federal agencies; local governments; landowners
Sliding Scale Property Tax Rate	Local governments
Sliding Scale Zoning	Local governments
Local “Right-to-Farm”	Local governments
State Forest	Department of Forestry
Virginia Natural Area Preserves System	Landowners, Natural Heritage Program
Virginia Estuarine and Coastal Research Reserve System	Chesapeake Bay National Estuarine Research Reserve

The Dragon Run Steering Committee also **recommends** the conservation of natural heritage resources and associated conservation sites as designated by the Virginia Natural Heritage Program (DCR, 2003a).

This action addresses Goal I(A,B,C), III(A)



Figure 3. Farming in the Dragon Run watershed.

C. Address Public and Landowner Access Issues

Public access to the Dragon Run is limited because property adjacent to the navigable stream is almost entirely privately owned. In most cases, access must be arranged by landowner consent. While generally effective, this informal arrangement has sometimes frustrated landowners and recreation-seekers alike. Private landowners express frustration with trespassers and with users who do not practice “leave no trace” recreation. In contrast, those seeking recreation are hindered by sparse access to the pristine river.

Landowners have expended time and money to resolve trespassing and vandalism problems, ranging from posting signs to instituting a formal program requiring verbal or written permission prior to visitation. Liability is often cited as a landowner concern. Virginia’s landowner liability law (Code of Virginia §29.1-509), however, dismisses a landowner’s liability when recreational users access their property with permission, express or implied, if no fee is charged to the user. Furthermore, if a landowner grants an access easement to a government agency or authority, then the landowner is held harmless from all liability and the easement holder is responsible for providing and paying for the cost of all legal services required as a result of a claim or suit.

As demand for public access has increased, recreation-seekers have encountered access limitations. Land-based public access exists at three locations: 1) Rappahannock Community College in Glens (hiking); 2) Virginia Coastal Reserve in Mascot (education); and 3) Friends of Dragon Run property in Mascot (hiking/birding) with parking on a Virginia Department of Transportation unpaved lot. Fishing spots are limited to traditional access points, such as bridges. Also, the boating distance between traditional access points equates to nearly an entire day, causing logistical problems for novice paddlers. Occasionally, the sheriff’s department must dispatch a rescue team to retrieve boaters who are lost in the dark. Organizations that offer guided paddling trips effectively manage access with trip planning and suitability, proper equipment and safety information, appropriate consideration for private property, and response to the unexpected (e.g. medical emergencies, cold water immersion).

The Dragon Run Steering Committee seeks to balance reasonable public access to publicly owned waters with private property rights, preservation of the watershed's sense of peace and seclusion, and the watershed's ecological integrity that are highly prized by landowners and visitors alike. The following is a list of **proposed** actions:

- Erect signage notifying boaters/recreationists of trespassing issues and the physical dangers of boating in a wilderness area
Responsibility: Dragon Run Steering Committee
- Provide land-based access as an alternative to boat-based access
Responsibility: Middle Peninsula Chesapeake Bay Public Access Authority, Virginia Coastal Reserve (Virginia Institute of Marine Science), Virginia Dept. of Forestry, local governments, non-profit organizations
- Supervise or manage public access sites
Responsibility: Middle Peninsula Chesapeake Bay Public Access Authority, Virginia Coastal Reserve (Virginia Institute of Marine Science), Virginia Dept. of Forestry, Virginia Dept. of Transportation, local governments, non-profit organizations
- Assess recreational carrying capacity/access to determine appropriate recreational "load"
Responsibility: Dragon Run Steering Committee

This action addresses Goal I(A,C), II(A), III(A)

D. Control Invasive Species

Recent state legislation establishing the policy-setting Virginia Invasive Species Council signifies an era of formal concern about invasive or non-native species and their impacts on the integrity of Virginia's native ecosystems. Invasive species are purposely or accidentally introduced from other regions or countries and often physically displace or consume native species because they have few competitors or predators. The Dragon Run Steering Committee **recommends** that a Dragon Run Invasive Species Initiative be established in the watershed.

This initiative could include the following elements:

1. Form Dragon Run Invasive Species Initiative with scientific and policy experts
Responsibility: Dragon Run Steering Committee staff, state and federal agencies, universities, non-profit conservation organizations
2. Assess status of existing invasive species or potential for new invasive species
Responsibility: Dragon Run Invasive Species Initiative
3. Encourage the creation of state-level policies by seeking representation on the Virginia Invasive Species Council's Advisory Committee
Responsibility: Virginia Invasive Species Council, Dragon Run Invasive Species Initiative

4. Establish education program to reduce the potential for species introduction
Responsibility: Dragon Run Invasive Species Initiative
5. Establish monitoring and control program
Responsibility: Dragon Run Invasive Species Initiative

Examples of common or potentially devastating invasive species that could affect the relatively intact natural communities in the Dragon Run are: blue catfish (*Ictalurus furcatus*); common reed (*Phragmites australis*); zebra mussel (*Dreissena polymorpha*); Asiatic dayflower (*Murdannia keisak*); and Japanese stiltgrass (*Microstegium vimineum*). Blue catfish, common reed, Asiatic dayflower and Japanese stiltgrass occur in the Dragon Run. These invasive species should be monitored and, to the extent practicable, controlled or excluded from the watershed.

This action addresses Goal I(C), II, III(B)

2. Education and Landowner Stewardship

In order to enhance and solidify the community’s connection to and respect for the land and water of the Dragon Run, public education must be a central element of the Special Area Management Plan. Education should target citizens and stakeholders and focus on the unique ecological and recreational values in the watershed, the community and economic benefits of traditional land uses, and the need to preserve both through exemplary stewardship and proactive planning for the watershed’s future. The Dragon Run Steering Committee **recommends** that a comprehensive education program be established to communicate the regional importance of the Dragon Run watershed to its citizens and to demonstrate the link between decisions about land management and the watershed’s integrity and quality.

Education Program Components	Responsibility
Hands-on Experiences	Dragon Run Steering Committee
Community Watershed Festival	Dragon Run Steering Committee
Watershed Stewardship Awards	Dragon Run Steering Committee
Watershed Boundary Signs	Dragon Run Steering Committee
Promote Use of Forest Stewardship Plans	Dragon Run Steering Committee; local governments; Dept. of Forestry
Promote Use of Farm Programs	Natural Resources Conservation Service; Virginia Cooperative Extension; Soil and Water Conservation Districts; Farm Service Agency; Virginia Farm Bureau
Promote Action-based Projects	Dragon Run Steering Committee; local governments; citizens

Hands-on Experiences

The Dragon Run Steering Committee **recommends** the use of hands-on experiences to produce an understanding and appreciation of the Dragon Run, targeting:

- State and federal legislators, Boards of Supervisors, Planning Commissions, and county staff
- Landowners, hunt clubs, land management consultants, and farmers and foresters who rent or lease land
- Chamber of Commerce, service clubs, civic and church groups, and non-profit organizations
- State and federal agency representatives
- Schools, 4-H Club, Scouts, class projects
- General public

The recommended approach encompasses a variety of methods and materials. Education would focus on field experiences that incorporate activities designed to address critical watershed issues (e.g. wetland and habitat values, biodiversity, water quality and quantity, riparian buffers).

This action addresses Goal II(A,B), III(B)

Community Watershed Festival

A component of the education program should be a community watershed festival as a celebration of the watershed's natural, cultural, and historic heritage. The festival would **not** serve as a promotional tool to attract visitors. Displays and activities highlighting natural and cultural heritage would be featured. The Dragon Run Steering Committee **recommends** the festival as a way to increase citizen awareness of watershed issues and as an opportunity to acknowledge citizens for exemplary watershed stewardship.

This action addresses Goal II(B), III(B)

Watershed Stewardship Awards

The Dragon Run Steering Committee **recommends** the establishment of watershed stewardship awards that would honor landowners and land managers who have demonstrated commendable stewardship within the watershed. Awards would be bestowed annually at the watershed festival for a variety of categories that may include: forestry; farming; hunting; commercial enterprises; conservation; education; planning; and science. The awards program should serve as an incentive to implement exemplary land stewardship practices.

This action addresses Goal II(B), III(B)

Watershed Boundary Signs

The Dragon Run Steering Committee **recommends** placing watershed boundary signs along frequently traveled highway and secondary roads to increase community awareness of the location and importance of the Dragon Run watershed. By indicating

the watershed boundary, the signs would alert citizens that they are in the watershed. Teamed with other educational efforts, the signs should lead to citizen awareness that their land management practices influence the health of the watershed.

This action addresses Goal II, III(B)

Promote Forest Stewardship Plans

The watershed is more than 80% forested and has intact riparian buffers. Since forested riparian buffers provide effective water quality protection and wildlife habitat, forested lands exhibit low nutrient input to adjacent streams relative to other land uses in the watershed (MPPDC, 2001). Therefore, forest stewardship plans have the potential to significantly influence the health and profitability of the watershed's forests. To benefit landowners and the local economy and to preserve the rural landscape and the natural resources in the watershed, the Dragon Run Steering Committee **recommends** promotion and implementation of forest stewardship plans prior to timber harvesting.

Forest stewardship plans are ecosystem management plans that combine ecological function with landowner goals to attain a vision for a particular property. The Department of Forestry's Forest Stewardship Plans leverage professional resources across disciplines to provide an inventory, recommendations and reference information that address landowners' specific goals and objectives, which may include: wildlife enhancement; aesthetics; recreation; water quality protection; forest regeneration; financial investment and incentives; and fire, pest, and disease control. The Virginia Department of Forestry prepares Forest Stewardship Plans for up to 200 acres at no cost to landowners. Beyond 200 acres, the Department charges fees, so it may be cost-effective for a consulting forester to develop a Forest Stewardship Plan.

This action addresses Goal I(A,B,D), II(B), III(A)

Promote Farm Programs

Agricultural lands make up 18% of the watershed and have the potential to contribute sediments, nutrients, and bacteria to ground and surface water. Existing state and federal farm programs (see **Appendix D** for description) can positively influence the health and profitability of the watershed by providing incentives for employing Best Management Practices or for taking marginal land out of agricultural production. To benefit farming operations, water quality, wildlife habitat, and the rural landscape and character of the watershed, the Dragon Run Steering Committee **recommends** promotion and implementation of programs, such as:

Program	Responsibility
Conservation Reserve Program (CRP)	Natural Resources Conservation Service
Conservation Reserve Enhancement Program (CREP)	Natural Resources Conservation Service, Soil and Water Conservation Districts, Farm Service Agency
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Service

Program	Responsibility
Farm and Ranch Lands Protection Program	Natural Resources Conservation Service
FarmLink Program	Virginia Farm Bureau
Forest Land Enhancement Program (FLEP)	Natural Resources Conservation Service; Dept. of Forestry
Wetland Reserve Program	Natural Resources Conservation Service
Wildlife Habitat Incentives Program (WHIP)	Natural Resources Conservation Service

It should be noted that the existence and availability of these programs changes depending on funding. Also, Virginia Cooperative Extension provides considerable technical assistance to farmers and actively promotes these programs.

This action addresses Goal I(A,B,D), II(B), III(A)

Promote Action-based Projects

Action-oriented projects can sustain enthusiasm for watershed activities by involving community members in active resource stewardship. For example, James City County’s program entitled “Protecting Resources in Delicate Environments” strives “to improve water quality...by teaching residents about the importance of watershed protection while providing residents and neighborhoods with specific watershed restoration and protection tools (James City County, 2003).” The Dragon Run Steering Committee **recommends** encouraging action-based projects, such as:

- Trash pickup (e.g. Adopt-a-Highway, Adopt-a-Stream)
- Development of nature trails
- Construction of rain gardens to capture roof runoff
- Stream bank stabilization
- Stream restoration

This action addresses Goal I(C,D), II(A), III(B)

3. Encourage and Support Sustainable Economic Development

While natural resource-based industries have been and continue to be at the core of the watershed’s economy, external economic forces threaten to fragment these traditional uses and alter the rural landscape. The Dragon Run Steering Committee **recommends** that sustainable natural resource-based development be pursued to strengthen the region’s economy and boost the quality of life, while supporting the traditional land uses that preserve the Dragon Run watershed and its resources.

Support Sustainable Forestry and Farming

Agriculture is Virginia’s top sales industry, makes up 11.2% of Virginia’s Gross State Product, and creates about 10% of the state’s jobs (DACS, 2003). Similarly, forestry supports “one of the largest manufacturing industries in the state ranking first in employment, first in wages and salaries, and accounts for \$1 out of every \$8 of value added through manufacturing (DOF, 2003).” Forestry (**Figure 4**) and farming are key industries in the Dragon Run watershed.



Figure 4. Forestry in the Dragon Run watershed.

As the tax base expands with rapid population growth (>14.4% in 3 of 4 watershed counties), the demands for public services also grow, often at a faster rate than tax revenues. Many rapidly growing counties have found their ability to provide adequate public services outstripped by the rapid demand for those services.

In contrast, agricultural and forestal land have been shown to demand a low cost of public services (\$0.23 relative to \$1.00 generated in taxes in Northampton County, VA [American Farmland Trust, 2002]). Yet, farm and forest land continue to disappear at a rapid rate, giving way to suburban-style development.

For the natural resource-based industries to continue to thrive, the watershed communities **should** develop a regional capacity to produce value-added forest and farm products to capture additional value locally. With funding from the Virginia Coastal Program, the Dragon Run Steering Committee is sponsoring a study of potential sustainable economic development opportunities within the watershed. The study will involve local and regional experts in natural resource-based industries and demonstrate how sustainable natural resource-based development can generate wealth within the community.

This action addresses Goal I(A,B,C), II(B), III(A)

Responsibility: Dragon Run Steering Committee, local governments, business/industry

Encourage Sustainable Nature-based Tourism

Nature-based tourism and agritourism can help to diversify and strengthen the economy of a region that is rich in natural resources, such as the Middle Peninsula. Nature-based tourism is the fastest growing sector of the U.S. tourism industry and Virginia is one of the top 10 destinations for travelers (DGIF, 2002b). The Dragon Run Steering Committee **recommends** encouraging and supporting appropriate nature-based tourism and agritourism to benefit from these trends.

The Dragon Run watershed contains several sites on the newly established Virginia Birding and Wildlife Trail that is designed for car travel (DGIF, 2002a). In addition, the Virginia Ecotourism Association has developed a certification course using standards that avoid negative impacts on the resources that attract tourism. Supporting these initiatives in nature-based tourism could benefit the economy and, in turn, the natural resources of the watershed. For example, surveys along the Great Texas Coastal Birding Trail indicate that travelers spend ~\$1,000 per person per trip, two-thirds of which flows directly into the local economy. More importantly, rural communities that are not able to promote their destinations are gaining economic stimulation from their association with the Trail. Meanwhile, the Trail increased awareness of the importance of the region's natural resources and the need to conserve them (DGIF, 2002b).

This action addresses Goal I(A,B,C), II(B), III(A)

Responsibility: Dragon Run Steering Committee, local governments, business/industry

4. Monitor the Implementation of the Watershed Management Plan

An important element of any planning effort is monitoring plan effectiveness. The Dragon Run Steering Committee **recommends** that a monitoring program be developed that assesses the results of watershed management plan implementation to ensure that the plan is effectively implemented.

The monitoring program should assess factors and parameters that are easily compared to the baseline information in the watershed management plan. Examples include: designation of watershed planning area; acres enrolled in farm and forest programs; land use/land cover; water quality; number of educational trips; invasive species; amount and type of public access; and number of action-based projects. Furthermore, the Dragon Run Steering Committee should coordinate and provide oversight for the monitoring program. For instance, the Steering Committee could draft an agreement with localities whereby the Committee reviews development applications in the watershed and offers advisory comments to the localities. Stable funding for staff support will continue to be a key component of Steering Committee activities.

The results of the monitoring program should be used to refocus efforts on actions that have not been fully implemented. The monitoring program may also highlight successes and identify new or unforeseen needs (e.g. funding for new projects).

This action addresses Goal I(C)

Responsibility: Dragon Run Steering Committee, local governments

HOW DO ACTIONS SUPPORT GOALS AND OBJECTIVES?

Actions in this **Section** support the goals and objectives stated in **Section 3** as shown in **Table 1**. For example, Recommended Action 1A: *Land Use: Designate a Unified “Dragon Run Planning Area”* (pp. 16-18) supports:

- ▶ Goal I (p. 12): Establish a high level of cooperation and communication between the four counties within the Dragon Run Watershed to achieve consistency across county boundaries.
 - Objective A: Develop a plan to address the inevitable future development pressure to change the traditional use of land in the Dragon Run Watershed.
 - Objective B: Achieve consistency across county boundaries among land use plans and regulations in order to maintain farming and forestry and to preserve natural heritage areas by protecting plants, animals, natural communities, and aquatic systems.
 - Objective C: Provide ongoing monitoring of existing plans and planning tools in order to assess traditional land uses and watershed health and take action necessary to preserve the watershed.
- ▶ Goal III (p. 13): Promote the concept of landowner stewardship that has served to preserve the Dragon Run Watershed as a regional treasure.
 - Objective A: Address the potential dilemma of preserving the watershed’s sense of peace and serenity by protecting open space and reducing fragmentation of farms, forests, and wildlife habitat versus the landowners’ rights in determining or influencing future land use.

Action [Section 4]	Goal (Objective) [Section 3]
Completed/Underway	
1	I (B); II
2	I (A, C)
3	II (B); III (B)
Recommended	
1A	I (A, B, C); III (A)
1B	I (A, B, C); III (A)
1C	I (A, C); II (A); III (A)
1D	I (C); II; III (B)
2	I (A, B, C, D); II (A, B); III (A, B)
3	I (A, B, C); II (B); III (A)
4	I (C)

Table 1. How actions support the Dragon Run SAMP’s goals and objectives.