

A G E N D A

JAMES CITY COUNTY BOARD OF SUPERVISORS

WORK SESSION

June 27, 2006

4:00 P.M.

A. CALL TO ORDER

B. ROLL CALL

C. BOARD DISCUSSION

1. Long Range Capital Financing Analysis - Davenport Financial
2. Emergency Preparedness
3. Powhatan Creek Watershed Management Plan Update

D. ADJOURNMENT

062706bosws.age

MEMORANDUM

DATE: June 27, 2006

TO: The Board of Supervisors

FROM: John E. McDonald, Manager of Financial and Management Services

SUBJECT: Long-Range Capital Financing Analysis Presentation

Messrs. David Rose and Courtney Rogers of Davenport & Company LLC will make a presentation on the County's Long-Range Capital Financing Program. A copy of the company's presentation is attached.

John E. McDonald

JEM/nb
davenptpres.mem

Attachment

MEMORANDUM

DATE: June 27, 2006

TO: The Board of Supervisors

FROM: Michael D. Woolson, Watershed Planner

SUBJECT: Powhatan Creek Watershed Management Plan - Update and Action on Deferred Priorities

By resolution dated February 26, 2002, the Board of Supervisor adopted eight goals and 21 of 24 priorities from the draft Powhatan Creek Watershed Management Plan. Seventeen of the priorities (Nos. 1, 5, 6, 8, 9, 12, and 14 through 24) were "adopted, in concept". Three priorities (Nos. 7, 10, and 13) were "adopted, in concept for further staff development." One priority (No. 2) was "accepted for further review of potential implementation effects only." Three priorities (Nos. 3, 4, and 11) were "deferred, subject to further review."

At the request of the Board of Supervisors, Development Management staff will provide a brief history of the plan, summarize implementation of the plan to date, and overview those priorities which were accepted for further review and deferred by the Board of Supervisors in February 2002.

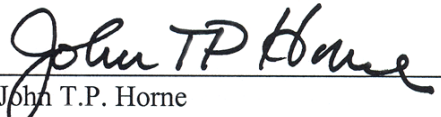
In addition to this introductory memorandum, materials provided for the Work Session include:

- A PowerPoint presentation;
- The *"Powhatan Creek Watershed Management Plan Summary Document,"* which provides an overview of the watershed study and lists all eight goals and 24 priorities as originally presented to the Board for adoption; and
- The *"Powhatan Creek Watershed Management Plan - Staff Action Plan."* This is a working document which is routinely updated by staff, Watershed Planner, and Chief Stormwater Engineer showing progress on those priorities which were adopted in 2002.

Following the presentation, the Work Session will be open for discussion and the Board can indicate what action it desires to take, if any, on those priorities not originally adopted.

Michael D. Woolson

CONCUR:


John T.P. Horne

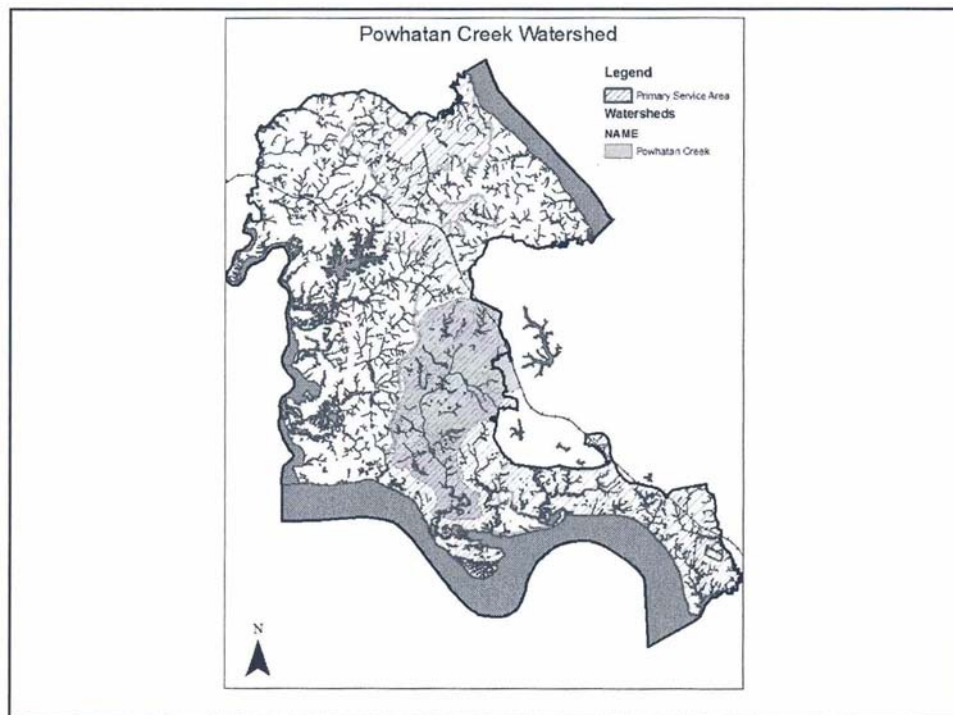
MDW/gs
powcreekupdate.mem

Attachments

Powhatan Creek Watershed Management Plan Update

Board of Supervisors Work Session

June 27, 2006



Powhatan Creek Watershed Management Plan Update

BOS Award of Contract, Powhatan and Yarmouth
Study – June 2000

- Stakeholder Meeting – November 2000
- Baseline Watershed Assessment – January 2001
- Stream & Floodplain Assessment – January 2001
- Conservation Area Report – January 2001
- Stakeholder Meeting – April 2001
- Stormwater Master Plan – May 2001
- Watershed Management Plan – November 2001

Powhatan Creek Watershed Management Plan Update

BOS adoption by resolution, February 26, 2002

8 of 8 goals

- 21 of 24 priorities
 - “Adopted in concept” (# 1, # 5, # 6, # 8, # 9, # 12, # 14 through # 24)
 - “Adopted in concept for further staff development” (# 7, # 10, # 13)
 - “Accepted for further review of potential implementation effects only” (# 2)
 - “Deferred, subject to further review” (# 3, # 4, # 11)

Powhatan Creek Watershed Management Plan Update

Implementation

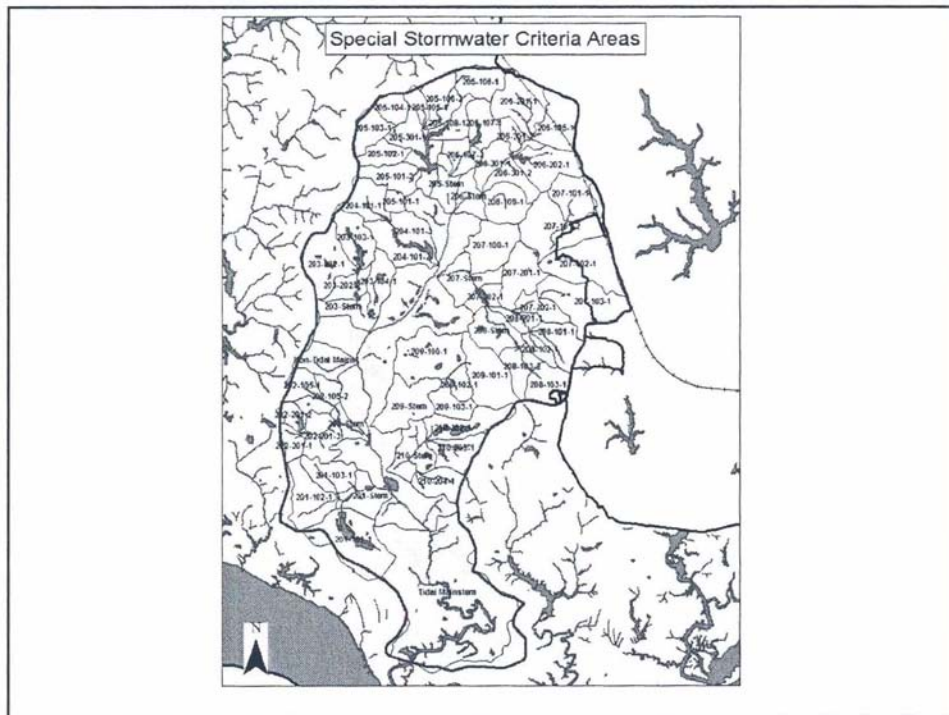
Legislative Actions – Staff reviews rezoning and special Use permit applications for consistency with watershed management plan goals, priorities and recommendations from subwatershed maps.

- Examples: RTE species area; BMP retrofit locations; priority stream restoration sites; priority conservation areas; better site design; contiguous forest areas; special stormwater criteria; regional BMPs; and target watershed education areas

Powhatan Creek Watershed Management Plan Update

Implementation

By-Right Development - Staff reviews plans of development to ensure it complies with special stormwater criteria, if applicable to the project. Special Stormwater Criteria (SSC), as adopted by resolution by the BOS on December 14th 2004, only applies to select subwatersheds and catchments within the Powhatan Creek watershed.



Powhatan Creek Watershed Management Plan Update

Implementation

JCC Staff

- RPA Extensions – Chesapeake Bay Preservation Ordinance, revised January 2004
- Better Site Design – consensus document completed; currently in implementation phase
- Stream Restoration – 2 currently under design
- BMP Retrofits – 4 completed or under construction

Powhatan Creek Watershed Management Plan Update

Implementation

JCC Staff, continued

- Off-site Open Space Program
- Regional BMP construction
- BMP Homeowner Education program – PRIDE program
- Watershed Education – PRIDE program

Powhatan Creek Watershed Management Plan Update

Implementation

JCC Staff, continued

- Priority Conservation Area acquisition opportunities
Special Stormwater Criteria program development
- Adopted by BOS, December 2004
- Long-term Maintenance of Stormwater Facilities -
Currently under study

Powhatan Creek Watershed Management Plan Update

Acceptance by Design Community

- Know the watershed management plan has been adopted
- Know the expectations
- Considerable discussions needed to clarify whether projects are meeting expectations

Powhatan Creek Watershed Management Plan Update

Priority # 2 – Implement new RPA based upon perennial streams and other environmentally sensitive areas.

Board Action – Accepted for further review of potential implementation effects only.

- RPA Extensions
 - Mainstem buffer increase from 100 feet to 300 feet
- Intermittent stream buffer*
- Isolated wetland buffer*

* Not aggressively pursued due to a lack of clarity in priority

Powhatan Creek Watershed Management Plan Update

Priority # 7 – Special Stormwater Criteria in sensitive stream and conservation areas.

Board Action – Adopted, in concept for further staff development

- Program developed with a group of stakeholders
- BOS approval, December 2004

Powhatan Creek Watershed Management Plan Update

Priority # 10 – Long term maintenance of stormwater facilities, stormwater utility.

Board Action – Adopted, in concept for further staff development

- Programmatic study is currently under way as part of the Stormwater Utility

Powhatan Creek Watershed Management Plan Update

Priority #13 – Better Site Design

Board Action – *Adopted, in concept for further staff development*

- Implementation phase is currently under way

Powhatan Creek Watershed Management Plan Update

Priority # 3 – Prohibit re-zoning which increases impervious cover in sensitive sub-watersheds.

Board Action – *Deferred, subject to further review*

Occurs in sub-watersheds 201, 202, 205, 208, 209, tidal mainstem, non-tidal mainstem

- No staff action to date
- Major land use implications

**Partial List of
Subdivisions**

Powhatan Shores
Chanco's Grant
Jamestown Hundred
Fieldcrest
St. George's Hundred
Landfall
New Town
Ford's Colony
Greensprings
Monticello Woods
District Park
Fox Ridge
Adam's Hunt
Springhill
Fairway Villas
Powhatan Secondary
Longhill Station
Deer Run



Powhatan Creek Watershed Management Plan Update

Priority # 4 – Cluster down – The ability to reduce lot sizes in low density zoning areas to create additional open space.

Board Action – Deferred, subject to further review

- Occurs in sub-watersheds 201, 202, 205, 208, 209, non-tidal mainstem, tidal mainstem
- Ordinances already allow and encourage clustering
- Most new residential development is cluster design
- Better Site Design will consider the need for enhanced clustering provisions

**Partial List of
Subdivisions**

Powhatan Shores
Chanco's Grant
Jamestown Hundred
Fieldcrest
St. George's Hundred
Landfall
New Town
Ford's Colony
Greensprings
Monticello Woods
District Park
Fox Ridge
Adam's Hunt
Springhill
Fairway Villas
Powhatan Secondary
Longhill Station
Deer Run



Powhatan Creek Watershed Management Plan Update

Priority #11 – Impervious cover limit of 10%.

Board Action – Deferred, subject to further review

- Occurs in sub-watersheds 208 and 209
- Limited realistic opportunity due to previous land use approvals
- Current impervious cover already 10%+

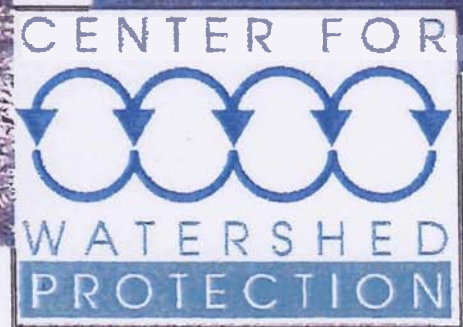
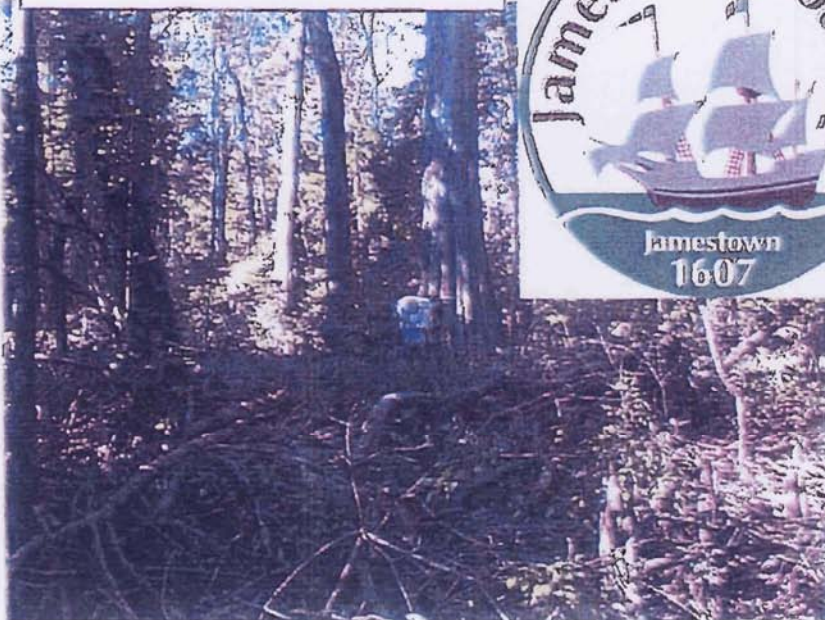
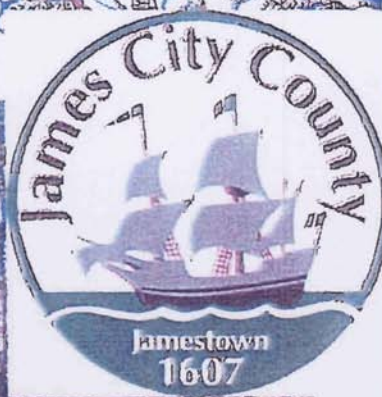
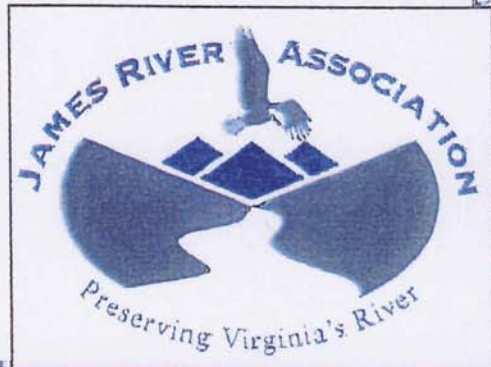
**Partial List of
Subdivisions**

New Town
Ford's Colony
Monticello Woods
Powhatan Secondary



Powhatan Creek Watershed Management Plan Update

Discussion and Board Action, if desired



Powhatan Creek Watershed Management Plan Summary Document

December 2001

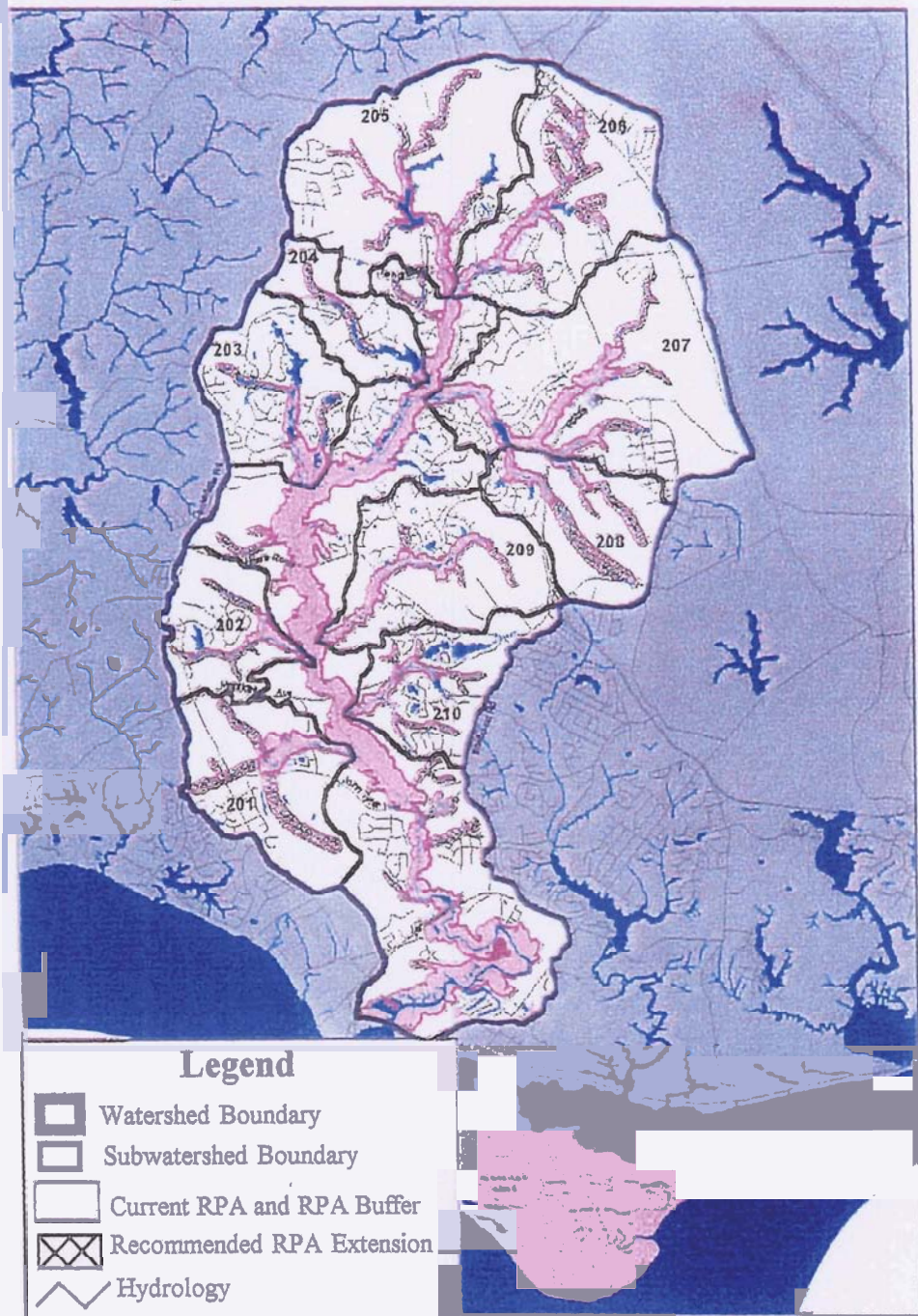
I. Project Background

The 22 square-mile Powhatan Creek watershed is truly a state and national treasure, with its historic past and present biodiversity. The mouth of the creek discharges to the James River near Jamestown Island, the site of the first permanent English settlement in North America, and a major tourist destination. The scenic Powhatan Creek is also notable for its exceptional biodiversity and bottomland wetlands. It was recently ranked as having the greatest significance for biodiversity and natural areas in the Lower Peninsula of Virginia (Clark, 1993). Rare, threatened or endangered plants such as the small whorled pogonia, Virginia least trillium, and false hopsedge are found here. Bald eagle habitat and an important heron nesting colony are located within Powhatan Creek's expansive floodplain wetlands. Over 54 species of fish are found in freshwater and tidal creeks. Eagles, osprey, waterfowl and a blue heron rookery can be found in the diverse mosaic of wetlands, forests, and beaver dam complexes throughout the watershed.

Rapid development seen in the last two decades poses a threat to water quality and natural habitats in Powhatan Creek. Impervious cover is an indicator of the extent and pattern of growth in the watershed, and this growth pattern over the years is very revealing. In 1970, watershed impervious cover was estimated to be 3%, but grew to 8% in 1998, 9.8% in 2000, and is projected to reach a maximum of 15.5% in the future. Prior research has shown that stream and wetland quality begins to decline when the amount of impervious cover in a watershed exceeds 10%. Stream habitat surveys show early and clear signs of stress in headwater streams.

In response to staff and public concerns about Powhatan Creek, James City County hired the Center for Watershed Protection and the James River Association to produce a watershed plan for Powhatan Creek. The process by which the watershed management plan was developed began in the summer of 2000 and has resulted in the completion of three special studies and the final watershed plan. This document summarizes the watershed plan and was produced by the Center in coordination with JRA and James City County staff and local stakeholders.

Figure 1. Powhatan Creek Watershed.



II. Goals of the Management Plan

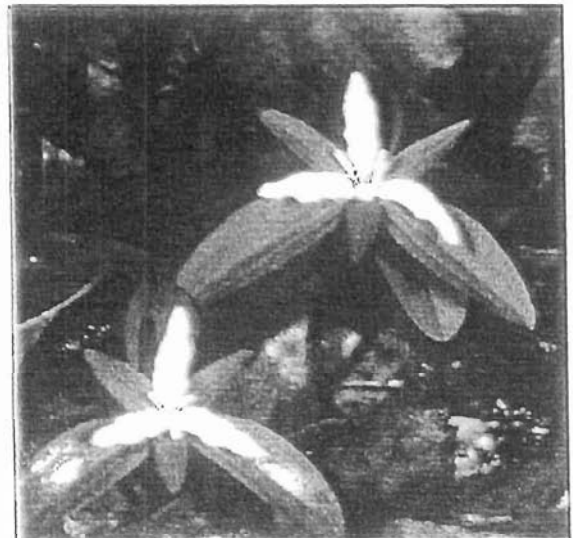
Watershed residents and other stakeholders played a vital role in the creation of this watershed management plan. It was important to involve the citizens, businesses, and other interested parties in the development of this watershed plan, since they will have to live with the decisions that are made. The stakeholders brought to the table the issues which were important to them. Their participation has given them a stake in the outcome and helps to ensure plan implementation. Two public meetings were held with watershed stakeholders; the first covered the baseline assessment and fieldwork which was performed by the Center, the second engaged participants in the process of setting goals for the subwatersheds as well as the watershed as a whole. The eight overall watershed protection and restoration goals identified by the stakeholders are listed in the text box below.

Stakeholder Goals

1. Prevent further degradation of water quality in Powhatan Creek and maintain the outstanding quality of tidal and nontidal mainstem wetlands. Extend Resource Protection Areas (RPA) to protect all perennial streams and connected wetlands.
2. Maintain biological and habitat diversity and promote habitat connectivity by protecting wildlife and riparian corridors between watersheds, subwatersheds, and the tidal and non-tidal portions of Powhatan Creek.
3. Develop an "affordable and effective" watershed management plan that can be implemented by James City County.
4. Establish a transparent and stream-lined permitting process, and provide cost effective and incentive based regulations or guidelines for "green" development.
5. Improve the existing mechanisms for completing stormwater maintenance and retrofitting, and develop a mechanism for adequate long-term funding
6. Link the unique history and culture of Jamestown and Colonial Williamsburg with Powhatan Creek watershed protection. Implement the majority of the watershed plan by the 2007 Jamestown Anniversary.
7. Promote watershed awareness and active stewardship among residents, community associations, businesses, and seasonal visitors through educational programs, recreational opportunities, and participatory watershed activities.
8. Restore the physical integrity of degraded headwater streams where possible and protect the high quality streams from the negative morphological effects associated with increased urbanization.

Principal Effects of Impervious Cover in Powhatan Creek Watershed

- Changes in hydrology of streams, wetlands and floodplains
Increased pollutant loads delivered in urban stormwater (bacteria, sediment, nutrients)
- Channel erosion in headwater streams
Water level fluctuations that degrade wetlands and rare, threatened, or endangered plant species habitat
- Favor the establishment of invasive plant species
- Fragmentation of contiguous forests
- Increased flooding



Virginia least trillium is a flower whose relatives you may have seen living in the mountains of Virginia. In Powhatan Creek, it often occurs associated with small springs or seeps which emanate from the hillsides near streams. It is considered rare in Virginia and is subject to changes in stream flow which result from urbanization. According to experts from The College of William and Mary, it is thought that the population in small headwater streams acts to recharge the populations along the mainstem which come and go with ponding caused by beavers. The seeds from these plants along small streams act as a seed source and are carried by stormflow to areas lower down in the watershed. Consequently, harm to the smaller upland streams can result in loss of the trillium seed source for the watershed.

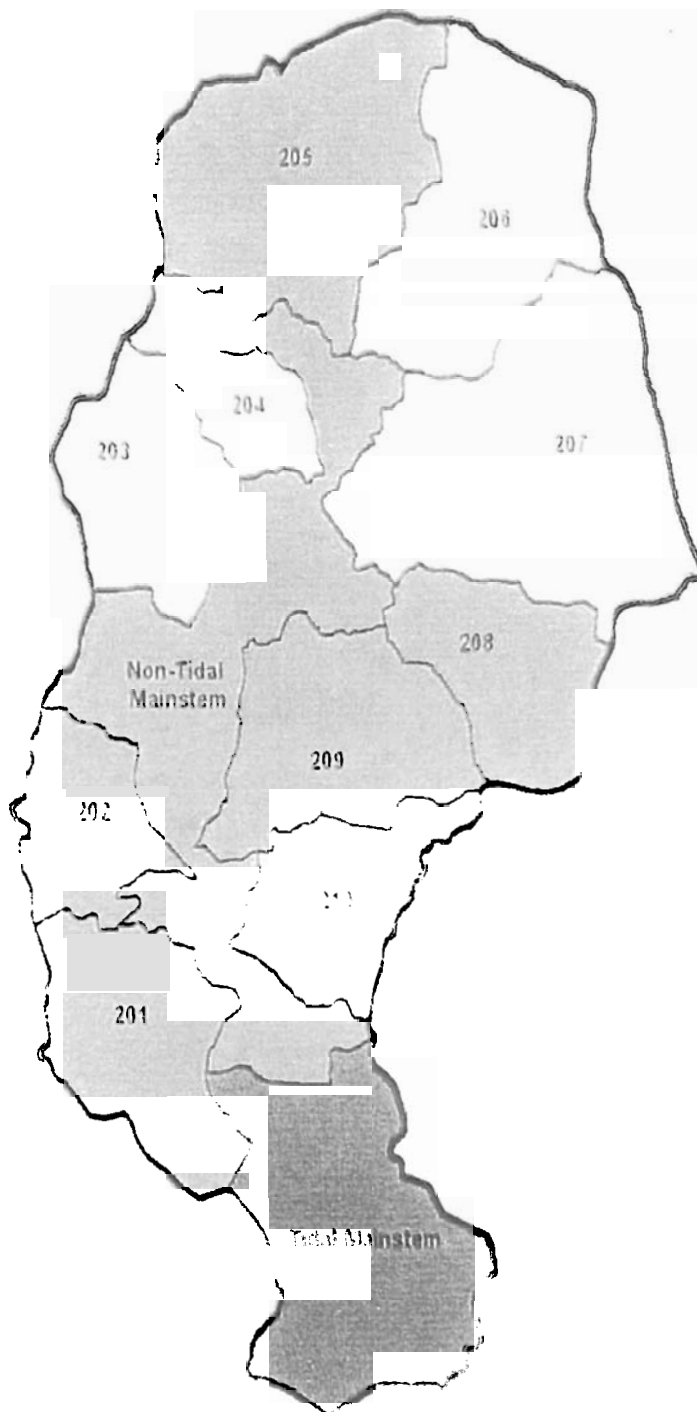
III. Methodology

The Powhatan Creek watershed was divided into 12 subwatersheds ranging in size from one to four square miles in area (Figure 2). Current and future land use and impervious cover were analyzed for each subwatershed in order to set expectations for water quality and habitat conditions. Field conditions and conservation areas were evaluated to check expectations developed in the land use and impervious cover analysis. It was determined that Powhatan Creek includes:

- a mix of relatively high quality subwatersheds with considerable biodiversity;
- a number of subwatersheds where stream conditions and habitat diversity have already been impacted by large regional stormwater ponds; and
- a high quality wetland complex along the mainstem.

It was also determined that all the subwatersheds, if built out according to the zoning categories, would be classified as impacted in the future. Together with the results of our conservation area fieldwork and the stream habitat assessment, draft goals were created for subwatersheds based on science and the existing and potential future land use.

Much of the biodiversity in the watershed is found in the 1700 acres of floodplain, which is an extensive complex of wooded swamps, natural seeps, freshwater wetlands and tidal marshes. At the same time, there is a



LEGEND

- Watershed Boundary
- Sensitive Subwatershed
- Impacted Subwatershed
- Resource Protection Subwatershed

Powhatan Creek Subwatershed Classification

3000 0 3000 Feet



concern about the ability of this resource to continue to function as it has in the past while absorbing more development. It may be necessary to ensure these continued benefits for this and future generations by setting aside and better protecting some of these areas for the future health, biodiversity and integrity of the watershed.

A sensible philosophy was devised by the Center along with stakeholders to protect the high quality streams and conservation areas using land use and conservation tools. At the same time, the plan provides for additional development in degraded subwatersheds, with a goal of preventing further degradation by using stormwater retrofits, effective stormwater management, stream restoration, on-lot stormwater management and watershed education programs. In cases where development is going to occur in sensitive watersheds, special stormwater criteria, where impervious cover and stormwater runoff are reduced, have been created in order to reduce the impacts. In addition, the mainstem tidal section was designated as a Sensitive Resource Area, which reflects the need for special tools to help protect the significant natural resources of this area. The stakeholder process helped develop a broad consensus for these goals and added even more specific goals for both the entire watershed and individual subwatershed planning units. A summary of the individual subwatershed goals is as follows:

Table 1. Subwatershed Goals			
Subwatersheds	Current Status/ Future Goal	Watershed Goals	Tools
201, 202, 205, 208, 209, Mainstem nontidal	Sensitive/ Sensitive <i>less than 10% impervious cover</i>	Preserve important conservation areas, sensitive streams and contiguous forest	Conservation easements, land acquisition, limit rezoning, open space transfer; when development does occur – cluster and use Special Stormwater Criteria (SSC)
203, 204, 206, 207, 210	Impacted/ Impacted <i>10-25% impervious cover</i>	Reduce pollutant sources, improve pond aesthetics and uptake, restore degraded streams and protect streams from further degradation	Direct development here, implement watershed education and stewardship programs, stormwater retrofits, on-lot stormwater practices, and stream restoration, consider up-zoning
Mainstem Tidal	Impacted/ Impacted <i>13.6% impervious cover</i>	Sensitive Resource Area Minimize increases in impervious cover, maintain high quality of wetland habitat, maintain buffers for the preservation of marsh wildlife communities and water quality	Increase buffer, cluster to preserve buffer, open space design, limit up-zoning, open space trading

IV. Recommendations

Recommendations made in the watershed plan include actions which have minimal cost and other actions which have significant cost (see Table 2). Watershed protection requires a multi-faceted approach which combines land use decisions with on-the-ground implementation, education, and protection of watershed functions. This

approach strives for permanent protection, and attempts to minimize long-term costs by implementing proactive, preventative solutions. Long-term protection of water quality, open space, fisheries, quality of life and biodiversity have quantifiable community benefits including increased property values and enhanced quality of life.

Another key component of this watershed plan is measuring and monitoring the success of the plan. In Powhatan Creek, this consists of monitoring the effects of management measures on stream channel stability, water quality, rare, threatened and endangered species and impervious cover. This will enable county staff to learn from the successes and challenges of plan implementation and craft better strategies in the future.

Table 2. Priorities and Costs for Watershed Protection and Restoration in Powhatan Creek

Priority	Protection Tool or Evaluation Measure <i>Potential Responsible Party</i>	<i>JCC Costs</i>
1	Use of subwatershed maps with locations of conservation areas, stormwater retrofits, stream restoration sites to review future development projects, negotiate proffers, and review re-zoning requests. <i>JCC Planning, Development Management, Environmental Division</i>	Minimal
2	Implement new RPA boundary based on perennial streams and increase width of mainstem buffer. <i>JCC Environmental Division</i>	Minimal
3	Prohibit re-zoning which increases impervious cover in sensitive subwatersheds. <i>Planning Commission</i>	Minimal
4	Cluster down - Ability to allow reduction in lot sizes in low density zoning areas to create additional open space. <i>JCC Planning</i> .	Small
5	Open Space Trading or Fee-in-lieu -- to acquire conservation areas and mainstem buffers (reduced open space requirement in more developed subwatersheds in exchange for protection of conservation areas and the mainstem buffer). <i>JCC Planning, James River Association</i>	Minimal
6	Purchase conservation easements in conservation areas and along mainstem buffers. <i>JCC Planning, Development Management, JRA, Williamsburg Land Conservancy</i>	Very Expensive
7	Special stormwater criteria in sensitive stream areas and conservation areas. <i>JCC Environmental Division</i>	Small
8	Hire a watershed planner/restoration coordinator to assist with implementation of the plan. <i>Environmental Division</i>	Expensive
9	Retrofit 8 stormwater BMPs over the next 5-6 years to improve water quality and stream channel protection. <i>JCC Environmental Division / Watershed Planner/ Restoration Coordinator</i>	Expensive
10	Long term maintenance of stormwater facilities / stormwater utility. <i>Planning Commission/JCC Environmental Division</i>	Expensive
11	Impervious cover limit of 10% for Sensitive subwatersheds. <i>JCC Planning</i>	Small
12	Expand BMP homeowner education program to include lawn care and conversion, pet waste, car washing and other watershed behaviors. <i>JCC Environmental Division/ Friends of Powhatan Creek</i>	Small

Table 2 Continued. Priorities and Costs for Watershed Protection and Restoration in Powhatan Creek		
Priority	Protection Tool or Evaluation Measure <i>Potential Responsible Party</i>	JCC Costs
13	Better site design zoning changes. <i>JCC Planning</i>	Small
14	Encourage Better Site Design across watershed - workshop with developers and planning staff. <i>Center for Watershed Protection/JCC Environmental Division/JRA (streamlined review process)</i>	Minimal
15	Golf course management task force to discuss potential improvements in turf management/nutrients, pesticides, buffer protection, stream crossings and invasive species. <i>Fords Colony/JCC Environmental Division/Friends of Powhatan Creek</i>	Minimal
16	Restore three stream sections over 5 years. <i>JCC Environmental Division Watershed Planner/Restoration Coordinator</i>	Expensive
17	Monitor the effects of the Special Stormwater Criteria (SSC), JCC's regular criteria and the stream restoration efforts on stream channels. <i>JCC Environmental Division and Greg Hancock, William and Mary</i>	Small
18	Plan for and monitor the protection of the rare, threatened and endangered species in New Town - monitoring should continue through the development process. <i>JCC Environmental Division and Donna Ware, William and Mary</i>	Small
19	RPA signage with new development. <i>JCC Environmental Division</i>	Small
20	Powhatan Creek Watershed signs which link the 2007 Event post at mainstem bridge crossing. <i>JCC Environmental Division</i>	Small
21	Program for assisting landowners in buffer creation. Work with schools to establish a seedling grow-out station. <i>JCC Environmental Division - Restoration Coordinator, JRA, Friends of Powhatan Creek</i>	Small
22	Target a portion of Open Space acquisition fund to conservation areas in Powhatan Creek. <i>JCC Parks and Recreation Division</i>	Minimal
23	Re-compute impervious cover for all subwatersheds in 5 years to help determine success of plan. <i>JCC GIS Department or CWP</i>	Small
24	Future regional stormwater facilities (2-3 over 5 years). <i>JCC Environmental Division</i>	Expensive

V. Special Studies

- Three special studies were performed to gain a better scientific understanding of the stream system; these included the *Stream and Floodplain Assessment*, the *Conservation Area Study*, and the *Stormwater Management Masterplan*. The *Stream and Floodplain Assessment* consisted of an instream habitat survey for the majority of the non-tidal watershed and reported on stream channel stability and habitat conditions in each of the subwatersheds. The conservation area study identified the presence of Rare, Threatened or Endangered (RTE) species, contiguous forest and high quality wetlands and identified potential threats and impacts to their existence. The stormwater

master plan developed specific stormwater criteria for subwatersheds, identified existing stormwater practices for retrofit possibilities, and located potential regional stormwater facilities. Summary findings are presented below; more detailed reports of each study are available.

Stream Assessment

Stream habitat surveys show early and clear signs of stress in headwater streams. The influence of watershed development on the mainstem and tidal creek has been more difficult to detect, but these changes may be masked by the very recent nature of development, the extensive influence of beaver activity and the stormwater and open space requirements adopted by James City County in the past.

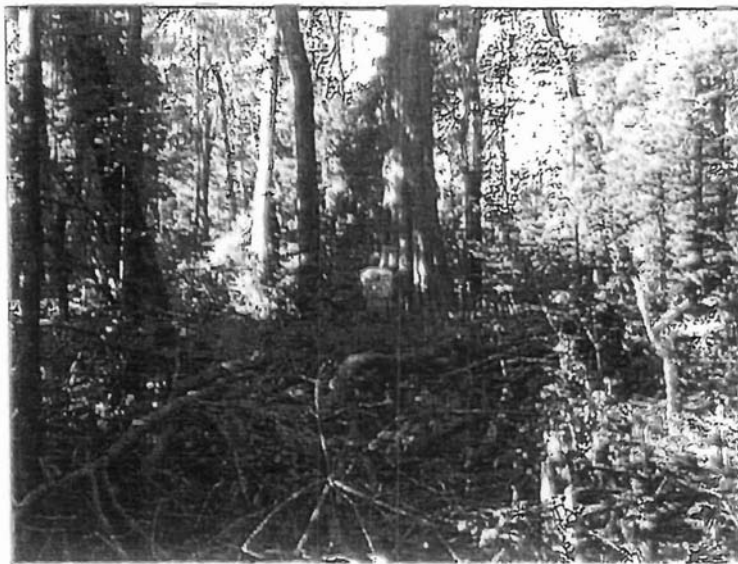
Outcomes

- 4 subwatersheds in excellent condition
- 3 subwatersheds in good condition
- 4 subwatersheds in fair condition
- 6 potential locations for stream restoration

****Further details can be found in the *Powhatan Creek Stream Habitat and Floodplain Assessment* (Brown, 2001).**

Conservation Areas Study

Based on field surveys, current Resource Protection Area (RPA) boundaries (state regulated areas) do not protect all vulnerable streams or conservation areas. The boundaries may need to be expanded or another mechanism must be developed to protect these areas. Of critical concern are populations of rare, threatened and endangered species, such as Small whorled pogonia, Virginia least trillium, New Jersey rush, false hopsedge, and Torrey's peat moss, which are widely dispersed across the watershed, and often located outside RPA boundaries. These species are highly vulnerable to watershed development. In addition, while extensive floodplain forest areas are protected within the RPA, upland forest areas are becoming smaller and more fragmented, and may deserve greater emphasis in land conservation. In previously developed areas with only a small buffer on the mainstem floodplain wetlands, invasive species have intruded into the



Bald Cypress trees are one of nature's wonders. They often live in wetlands and swamps and have extensive roots systems which help create the slow water conditions that they need by slowing the water with their knees (the knees can be seen in the foreground of the picture). The wetlands which they are a part of, help to purify the water by detaining the water allowing pollutants to be filtered out.

Many of our natural cypress swamps have been lost due to development, timber harvesting and loss of wetlands.

wetland complex; these include Japanese knotweed, microstegium and phragmites.

Outcomes

- 17 priority conservation areas and management recommendations
- 17 areas for land acquisition or easement (1800 total acres)
- Locations where the RPA protection should be extended
- Recognition of the need for additional buffer to protect the high quality wetland complex of the tidal and non-tidal mainstem of Powhatan Creek (300 ft. minimum)

Seventeen high-quality conservation areas were identified in the Powhatan Creek watershed through the conservation area study and these specific locations were prioritized for protection. The protection of conservation areas is vital to maintaining the biological integrity of the watershed and has intrinsic community benefits including increased property values and enhanced quality of life. Pictures of some of the important conservation/natural areas are provided throughout this document.

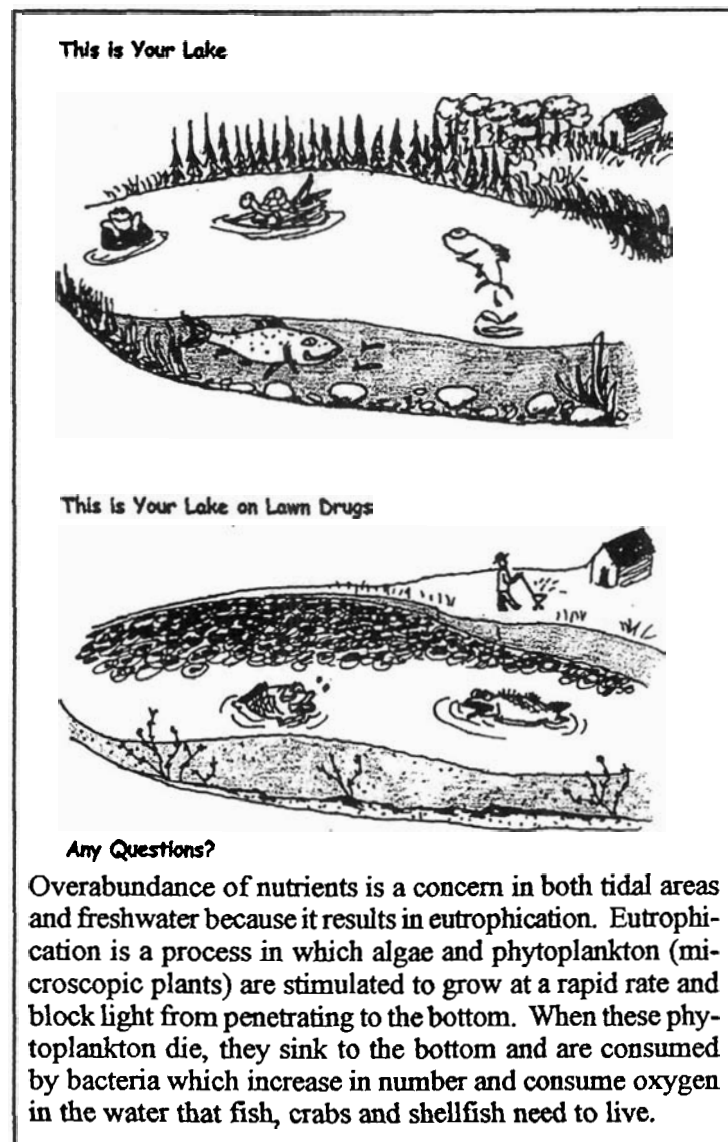
Stormwater Management

While JCC has strong stormwater management criteria, the existing management practices are not enough to protect highly sensitive and pristine subwatersheds from degradation. If development is to occur in these areas, special precautions and techniques should be used to protect the integrity of these areas. In areas with existing regional stormwater management, additional stormwater practices may not be needed, though on-site techniques such as rain gutter disconnection should be encouraged. The remaining areas can be developed within the current JCC stormwater management criteria.

Outcomes

- Special Stormwater Criteria (SSC) for stream protection and conservation areas
8 priority stormwater retrofits
- 5 locations for potential regional facilities
Stormwater criteria specifically for the tidal mainstem of Powhatan Creek to address water quality issues
Locations for areas where the current stormwater criteria should be used
- Locations for areas where no additional stormwater management is needed

****Further details can be found in the *Powhatan Creek Stormwater Master Plan* (Zielinski, 2001).**



VI. How Can You Help?

There are many actions that citizens of the Powhatan Creek Watershed can take to help protect and restore this unique resource. In addition to donating time or expertise to one of the many volunteer programs in the watershed, there are specific actions a person can take at home or work to reduce the amount of runoff and pollution that enters the streams of Powhatan Creek Watershed. While the stormwater management and stream restoration projects are excellent ways to protect and restore the watershed, the collective actions of individuals can also make an enormous difference. Here are some ways to help:

Convert part of your lawn to native vegetation and/or use native plants in landscaping because they are heartier and are more tolerant of pests. If you do have a lawn, make sure you do a soil test to see how much, if any, fertilizer your lawn needs. The James City County-Virginia Cooperative Extension Office can assist with soil testing. Use organic fertilizers and apply sparingly. You can make your own fertilizer by collecting and composting yard waste, or simply leave grass clippings on the lawn. If a pesticide is needed, apply it at the correct time and rate. If you must use chemicals or fertilizer, check the weather forecast for rain, so they don't wash away. Keep fertilizers and pesticides off sidewalks and driveways.

Here's the Scoop-
Pick Up Pet Poop!



Pet Waste

Animal waste adds both nutrients and harmful bacteria to local waters, especially in populated areas where there are high numbers of pets in a small area. So pick up after your pets! Flush your dog waste, containerize your cat litter, and dispose of it properly.

Septic Systems

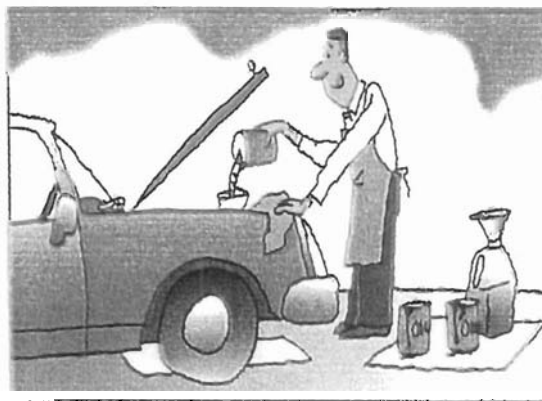
Keep your septic system clean and maintained. James City County requires that septic tanks be pumped once every five years. Put only water, low-phosphate organics, food waste and human waste down your drains. Minimize use of caustic and chlorine products, as these may kill the essential bacteria that break down the sewage in your septic tank.

Rooftop Runoff

Redirect your downspout so that rooftop runoff drains to a porous surface, such as a lawn or other vegetated area. If you do not have well-drained soil, you can direct the runoff to a **french drain** or **dry well**. Or, use a rainbarrel to store the water for later use in irrigation or household cleaning.



Your efforts will make a difference!



Car Washing

Home car washing can be a major contributor to phosphorus pollution as a result of soapy water running into storm drains, carrying with it soap, oil, sludge and road film. Wash your car on your grass instead of in your driveway, and use non-phosphate soaps. Or take it to a commercial car wash that treats its wastewater. Also, be careful when changing your oil or other fluids, clean up spills right away, and take used motor oil to a recycling center.

Household Cleaners

Many common household products are harmful to septic systems and may be a significant source of water pollution. Fortunately, there are safe and readily available alternatives to these chemicals. For example: borax is a good substitute for bleach, lemons or baking soda can be used in place of a garbage disposal deodorizer, and a vinegar and water mixture makes a good substitute for window cleaner.

The Powhatan Creek Watershed Management Plan is available for review on James City County's web site, at www.james-city.va.us. If you are interested in viewing copies of the three special reports mentioned in this summary document, please contact the James City County Department of Development Management at 757-253-6671. For information about the James River Association or the Center for Watershed Protection, visit their web sites, respectively, at www.jamesriverassociation.org, or www.cwp.org.

MEMORANDUM

COPY

DATE: February 26, 2002

TO: The Board of Supervisors

FROM: John T. P. Horne, Development Manager

SUBJECT: Adoption, In Concept, of Powhatan Creek Watershed Management Plan

This memorandum contains staff recommendations regarding adoption of selected draft plan recommendations. The draft plan contains eight goals, identified by the Stakeholders and outlined below. The attached resolution would adopt these goals.

1. Prevent further degradation of water quality in Powhatan Creek and maintain the outstanding quality of tidal and nontidal mainstem wetlands. Extend Resource Protection Areas (RPA) to protect all perennial streams and connected wetlands.
2. Maintain biological and habitat diversity and promote habitat connectivity by protecting wildlife and riparian corridors between watersheds, sub-watersheds, and the tidal and non-tidal portions of Powhatan Creek.
3. Develop an "affordable and effective" watershed management plan that can be implemented by James City County.
4. Establish a transparent and stream-lined permitting process, and provide cost effective and incentive based regulations or guidelines for "green" development.
5. Improve the existing mechanisms for completing stormwater maintenance and retrofitting, and ~~develop a mechanism~~^{provide} for adequate long-term funding.
6. Link the unique history and culture of Jamestown and Colonial Williamsburg with Powhatan Creek watershed protection. Implement the majority of the watershed plan by the 2007 Jamestown Celebration. 7
7. Promote watershed awareness and active stewardship among residents, community associations, businesses, and seasonal visitors through educational programs, recreational opportunities, and participatory watershed activities.
8. Restore the physical integrity of degraded headwater streams where possible and protect the high quality streams from the negative morphological effects associated with increased urbanization.

To implement these goals, the Plan identifies 24 priorities/tools. The attached resolution would adopt, in concept, 21 of those priorities/tools. Table E-2 (Attachment 1) is a copy from the draft plan. Staff has extended the table to show the proposed implementation schedule for each priority/tool. Staff has changed the implementation schedule since it was last presented to the Board.

Staff recognizes that any tool that involves code changes will require separate public hearings and will be fully discussed at that time. Many of the listed tools require considerable refinement by staff and stakeholders prior to any request to the Board for final approval. Approval of the attached resolution does not constitute final Board approval of the details of specific tools. It does, however, constitute conceptual approval of implementation of that type of tool. Staff will rely on that conceptual approval in setting work plans and priorities for staff action.

Staff recommends adoption of the attached resolution.



John T. P. Horne

JTPH/gs
pow.priorities.costs.goals.mem

Attachments



MEMORANDUM

DATE: February 27, 2002
TO: John T. P. Horne, Development Management Manager
FROM: Jennifer A. Barker, Secretary to the Board *JAB*
SUBJECT: Board of Supervisors Agenda Item: 2/26/02

<u>ITEM #</u>	<u>SUBJECT</u>	<u>ACTION</u>
F-2	James City County Road Construction Revenue Sharing	Adopted
H-2	Adoption of Eight Goals and 21 Priorities Recommended in the Draft Powhatan Creek Watershed Management Plan	Adopted as amended

cc: John McDonald
~~Darryl~~ Cook (H-2)

RESOLUTION

ADOPTION OF EIGHT GOALS AND 21 PRIORITIES RECOMMENDED IN THE DRAFT

POWHATAN CREEK WATERSHED MANAGEMENT PLAN

WHEREAS, James City County employed the Center for Watershed Protection to prepare a Watershed Management Plan to protect the Powhatan Creek Watershed; and

WHEREAS, the Watershed Stakeholders identified eight goals; and

WHEREAS, the draft plan contains 24 priorities/tools for protecting the Powhatan Creek Watershed.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby adopts, the following eight goals identified by the Powhatan Creek Watershed Stakeholders. All goals will be evaluated for reasonableness and cost effectiveness at the time of implementation.

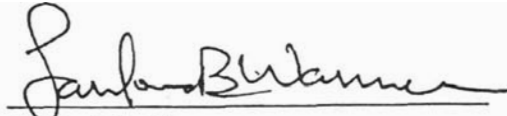
1. Prevent further degradation of water quality in Powhatan Creek and maintain the outstanding quality of tidal and non-tidal mainstem wetlands. Consider extending Resource Protection Areas (RPA) to protect all perennial streams and connected wetlands.
2. Maintain biological and habitat diversity and promote habitat connectivity by protecting wildlife and riparian corridors between watersheds, sub-watersheds, and the tidal and non-tidal portions of Powhatan Creek.
3. Develop an "affordable and effective" watershed management plan that can be implemented by James City County.
4. Establish a transparent and stream-lined permitting process, and provide cost-effective and incentive-based regulations or guidelines for "green" development.
5. Improve the existing mechanisms for completing stormwater maintenance and retrofitting, and provide for adequate long-term funding.
6. Link the unique history and culture of Jamestown and Colonial Williamsburg with Powhatan Creek watershed protection. Implement the majority of the watershed plan by the 2007 Jamestown Celebration.
7. Promote watershed awareness and active stewardship among residents, community associations, businesses, and seasonal visitors through educational programs, recreational opportunities, and participatory watershed activities.
8. Restore the physical integrity of degraded headwater streams where possible, and protect the high quality streams from the negative morphological effects associated with increased urbanization.

BE IT FURTHER RESOLVED that the Board hereby takes the following actions with respect to the 24 Priorities/Tools as set forth in Table E-2 in the accompanying staff memorandum.

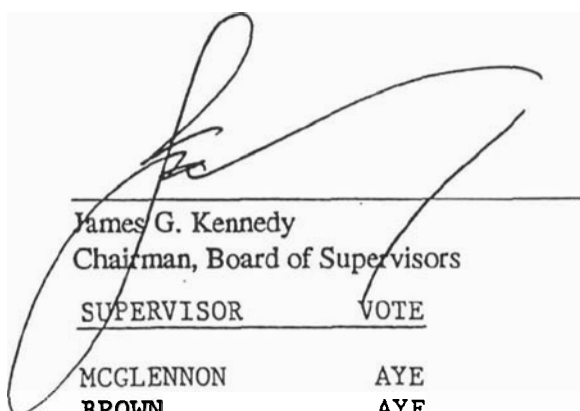
Priority/Tool

1. Adopted, in concept
2. Accepted for further review of potential implementation effects only
3. Deferred, subject to further review.
4. Deferred, subject to further review.
5. Adopted, in concept
6. Adopted, in concept
7. Adopted, in concept for further staff development
8. Adopted, in concept
9. Adopted, in concept
10. Adopted, in concept for further staff development
11. Deferred, subject to further review.
12. Adopted, in concept
13. Adopted, in concept for further staff development
14. Adopted, in concept
15. Adopted, in concept
16. Adopted, in concept
17. Adopted, in concept
18. Adopted, in concept
19. Adopted, in concept
20. Adopted, in concept
21. Adopted, in concept
22. Adopted, in concept
23. Adopted, in concept
24. Adopted, in concept

ATTEST:



Sanford B. Wanner
Clerk to the Board



James G. Kennedy
Chairman, Board of Supervisors

<u>SUPERVISOR</u>	<u>VOTE</u>
-------------------	-------------

MCGLENNON	AYE
BROWN	AYE
GOODSON	AYE
HARRISON	AYE
KENNEDY	AYE

Adopted by the Board of Supervisors of James City County, Virginia, this 26th day of February, 2002.

Powhatan Creek Watershed Management Plan

Staff Action Plan

April 26, 2002

Last Updated: June 14, 2006

Introduction

By resolution dated February 26, 2002 the James City County Board of Supervisors approved the eight goals and 21 of 24 priorities as recommended in the Powhatan Creek Watershed Management Plan. This is a staff action plan for the Powhatan Creek Watershed Management plan. It provides a detailed overview of the actions taken for each of the goals and priorities as outlined in the study and the person(s) responsible for carrying out each priority. The watershed management plan is a compilation of four reports developed by The Center for Watershed Protection. There were also two stakeholder meetings held jointly with the CWP, the James River Association, and James City County.

The four studies that assessed the status of Powhatan Creek are: the Baseline Watershed Assessment, the Stream and Floodplain Assessment Report, the Conservation Area Report, and the Stormwater Master plan. These four reports, plus input from the stakeholder meetings, were the basis for crafting the management plan. Specific management plans for each of the twelve sub-watersheds have been developed using the eight tools of watershed protection. Each sub-watershed plan serves as a blueprint for guiding development and for protecting and restoring Powhatan Creek.

The eight overall watershed protection and restoration goals identified through the stakeholder process are:

1. Prevent further degradation of water quality in Powhatan Creek and maintain the outstanding quality of tidal and non-tidal mainstem wetlands. Extend Resource protection Areas (RPA) to protect all perennial streams and connected wetlands.
2. Maintain biological and habitat diversity and promote habitat connectivity by protecting wildlife and riparian corridors between watersheds, sub-watersheds, and the tidal and non-tidal portions of Powhatan Creek.
3. Develop an "affordable and effective" watershed management plan that can be implemented by James City County.
4. Establish a transparent and streamlined permitting process, and provide cost effective and incentive based regulations or guidelines for "green" development.
5. Improve the existing mechanisms for completing stormwater maintenance and retrofitting, and develop a mechanism for adequate long-term funding.
6. Link the unique history and culture of Jamestown and Colonial Williamsburg with Powhatan Creek watershed protection. *Implement the majority of the watershed plan by the 2007 Jamestown Celebration* (emphasis added).
7. Promote watershed awareness and active stewardship among residents, community associations, businesses, and seasonal visitors through educational programs, recreational opportunities, and participatory watershed activities.
8. Restore the physical integrity of degraded headwater streams where possible and protect the high quality streams from the negative morphological effects associated with increased urbanization.

The staff action plan that follows is intended to be a detailed “living, working” document to track our progress of full implementation of the approved Powhatan Creek Watershed Management Plan. The action plan is routinely reviewed and updated by the Watershed Planner and Chief Stormwater Engineer of the County as it becomes known that assigned individuals have achieved a milestone, progress item or if major action item is completed.

***Staff Action Plan for the Approved
Powhatan Creek Watershed Management Plan***

24 Priorities for Watershed Protection within the Powhatan Creek Watershed. 21 adopted.

1) Use of the sub-watershed maps to review future development projects, negotiate proffers, and review rezoning requests.

- a) Board of Supervisors adopted on February 26, 2002.
 - i) Occurs watershed wide.
 - ii) Responsible staff:
 - (1) Mike Woolson
 - (a) Plan review using sub-watershed maps set forth in the study
 - (b) Review rezoning requests
 - (2) Planning Division
 - (a) Negotiate proffers
 - (b) Review rezoning requests
 - (3) Darryl Cook, Scott Thomas
- b) Anticipated Time Frame:
 - As needed on an individual project basis.
- c) ***Actual Milestone Achievements:***
 - ***Legislative case reviews, 2002.***
 - ***Legislative case reviews, 2003.***
 - ***Legislative case reviews, 2004.***
 - ***Legislative case reviews, 2005.***
 - ***Legislative case reviews, 2006.***

2) Implement the new RPA based upon perennial streams and other environmentally sensitive areas per CBLAD.

- a) Board of Supervisors accepted for further review of potential implementation effects only, February 26, 2002.
 - i) Occurs watershed wide
 - ii) Responsible staff:
 - (1) Darryl Cook (Mike Woolson)
 - (a) Define the RPA extension areas (in watershed study)
 - (i) Define "perennial stream"
 - (ii) Use new CBLAD regulations to determine new extents of CBPA's
 - (iii) Use latest GIS information to determine perennial streams and other sensitive areas per CBLAD.
 - (b) Identify affected properties (from GIS)
 - (i) How many properties are affected under old guidelines for RPA
 - (ii) How many properties area affected under new guidelines for RPA
 - (c) Draft "Staff Impact Memo" for new CBPA regulations
 - (d) Ordinance change
 - (2) Real Estate
 - (3) Wayland Bass, Scott Thomas
- b) Anticipated Time Frame:
 - RPA extensions by 6/3/02
 - ChesBay Ordinance revisions mandated by the State
 - Affected properties by 6/17/02
 - Draft Staff Impact Memo by 7/12/02
 - Staff Impact Memo to BOS 8/2/02 for 8/13/02 BOS meeting
 - Final ChesBay Ordinance amendment no later than 3/1/03

c) **Actual Milestone Achievements:**

- *Draft Chesapeake Bay Preservation Ordinance, October 2002*
- *Draft perennial stream protocol by PBS&J, November 2002*
- *Final perennial stream protocol by PBS&J, December 2002*
- *Final CBPA Ordinance to BOS, February 25, 2003 – delayed by CBLAD*
- *CBPA amendment adopted by BOS, November 25, 2003, Ordinance 183-A. Effective January 1, 2004.*
- *Chesapeake Bay Board established April 14, 2004.*
- *Environmental Division staff Perennial Stream training, CBLAD, April 2004 (classroom & field training on NC protocol).*
- *CBLAD acceptance of revised perennial stream scoring March 2005.*
- *RPA Working map, December 2004.*
- *Updates to the RPA Working Map as needed on a per project basis.*

3) **Prohibit re-zoning which increases impervious cover in sensitive sub-watersheds.**

- a) Board of Supervisors *deferred action*, subject to further review, February 26, 2002
- i) Occurs in sub-watersheds 201, 202, 205, 208, 209, tidal mainstem, non-tidal mainstem
- ii) Responsible staff:
- (1) Planning
- (a) Ordinance change
- (2) Mike Woolson, Darryl Cook, Scott Thomas
- b) Anticipated Time Frame:
- No action taken at this time.
- c) **Actual Milestone Achievements:**
- *No action taken at this time.*

4) **Cluster down – The ability to reduce lot sizes in low density zoning areas to create additional open space.**

- a) Board of Supervisors *deferred action*, subject to further review, February 26, 2002
- i) Occurs in sub-watersheds 201, 202, 205, 208, 209, tidal mainstem, and non-tidal mainstem
- ii) Responsible Staff:
- (1) Planning
- (a) Ordinance change
- (2) Mike Woolson, Darryl Cook, Scott Thomas
- b) Anticipated Time Frame:
- No action taken at this time.
- c) **Actual Milestone Achievements:**
- *No action taken at this time.*

5) **Open Space Trading or Fee-in-lieu – to acquire conservation areas and mainstem buffers (reduced open space requirements in certain watersheds in exchange for protection of conservation area and the mainstem buffer).**

- a) Board of Supervisors adopted on February 26, 2002
- i) Occurs in sub-watersheds 203, 204, 206, 207 and 210
- ii) Responsible Staff:
- (1) Darryl Cook
- (a) Set up advisory committee for BOS consideration
- (b) Draft policy for advisory team consideration
- (c) Draft revisions for advisory team consideration
- (d) Final policy statement for staff review
- (e) Final policy statement
- (2) Michael Woolson, Scott Thomas, Wayland Bass

b) Anticipated Time Frame:

Advisory committee selections for BOS consideration by 6/30/02
 Draft policy changes by 7/31/02
 1st meeting with advisory team 8/02
 Draft revisions by 9/30/02
 2nd meeting with advisory team 10/02
 Final draft of policy statement for staff review by 11/1/02
 Final policy statement 12/02
 Policy effective 1/1/03

c) **Actual Milestone Achievements:**

- *No action taken at this time, will be taken into account during the Special Stormwater Criteria process*
- *Met with College of William and Mary to discuss background research on other programs throughout the Country, 6/9/03.*
- *Completed offsite open space program in conjunction with Special Stormwater Criteria task group, March 2004.*

6) **Purchase conservation easements in conservation areas and along mainstem buffers.**

a) Board of Supervisors adopted on February 26, 2002

i) Occurs in sub-watersheds 201, 202, 205, 208, 209, tidal mainstem, and non-tidal mainstem

ii) Responsible Staff:

(1) John Horne

(a) Priority list of conservation and buffer areas (from Study)

(2) Mike Woolson

(a) Apply for grants

(3) Darryl Cook, Scott Thomas

b) Anticipated Time Frame:

Priority list by 6/30/02

Conservation easements on 300 acres by 6/30/03

Conservation easements on 250 additional acres by 6/30/04

c) **Actual Milestone Achievements:**

- *Developed priority list, June 2002*

7) **Special Stormwater Criteria in sensitive stream areas and conservation areas.**

a) Board of Supervisors adopted for further staff development on February 26, 2002

i) Occurs in sub-watersheds 201, 202, 203, 205, 208, 209, tidal mainstem and non-tidal mainstem

ii) Responsible Staff:

(1) Scott Thomas (Darryl Cook)

(a) Set up Engineering Review Team for BOS consideration

(b) Draft program objectives for presentation to ERT

(c) Draft revisions for ERT presentation

(d) Final draft for staff review

(e) Final policy statement

(2) Mike Woolson, Wayland Bass

b) Anticipated Time Frame:

Advisory team selection for BOS consideration 6/30/02

Draft program for ERT by 7/31/02

1st meeting with ERT 8/02

Draft revisions by 9/30/02

2nd meeting with ERT 10/02

Final draft policy for staff review by 11/1/02

Final policy statement 12/02

Program implementation by 1/1/03

c) Actual Milestone Achievements:

- *Draft Staff Proposal for Task Group, August 7, 2002*
- *2nd draft, February 5, 2003*
- *Staff presentation to BOS work session, March 25, 2003. BOS authorization to proceed with SSC task group. Invitations to SSC Task Group sent out 5/28/03.*
- *6/20/03 Meeting 1 (Introduction, overview, review WMP)*
- *7/18/03 Meeting 2 (Review of draft SSC Guidelines CWP)*
- *8/15/03 Meeting 3 (County BMP Manual revisions)*
- *10/17/03 Meeting 4 (County BMP Manual revisions). Completed revisions to County BMP manual.*
- *11/21/03 Meeting 5 (Better Site Design/Low Impact Development)*
- *1/16/04 Meeting 6 (Better Site Design/Low Impact Development)*
- *2/20/04 Meeting 7 (Offsite Open Space program)*
- *3/19/04 Meeting 8 (Offsite Open Space program). Completed offsite open space program.*
- *4/22/04 Meeting 9 (SSC Brainstorming Session)*
- *5/21/04 Meeting 10 (SSC Preparatory)*
- *7/16/04 Meeting 11 (SSC Draft)*
- *8/20/04 Meeting 12 (SSC Pre-final)*
- *9/17/04 Meeting 13 (SSC Final)*
- *10/15/04 Meeting 14 (Ending Session)*
- *11/23/04 BOS Work Session*
- *12/14/04 BOS Meeting & Approval (5-0 vote)*
- *Implementation & Application, 2005.*
- *Implementation & Application, 2006.*

8) Hire a watershed planner/restoration coordinator.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide
 - ii) Responsible Staff:
 - (1) Darryl Cook, Scott Thomas
- b) Anticipated Time Frame:

Hire Watershed Planner by April 1, 2002

c) Actual Milestone Achievements:

- *Hired Michael Woolson, CLA, March 2002. Mike was previously field inspector for the Environmental Division.*

9) Stormwater retrofits.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs in sub-watersheds 201, 202, 205, 206, 207, and 210
 - ii) Responsible Staff:
 - (1) Wayland Bass (Michael Woolson)
 - (a) Priority list of retrofits (from Study)
 - (b) Rank retrofit list according to maximum water quality benefit
 - (c) For each retrofit, the following sequence should occur:
 - (i) Preliminary engineering report
 - (ii) Construction plans for each retrofit
 - (iii) Bid project
 - (iv) Award project
 - (v) Construction oversight
 - (2) Darryl Cook, Scott Thomas

b) Anticipated Time Frame:

- Priority list by 6/1/02
- Two retrofits completed by 6/30/03
- Two retrofits completed by 6/30/04
- Two retrofits completed by 6/30/05
- Two retrofits completed by 6/30/06
- Two retrofits completed by 6/30/07

c) **Actual Milestone Achievements:**

- *Priority list completed, June 2002*
- *WJCC Courthouse Bioretention Demonstration project, completed November 2003.*
- *Greensprings Plantation (PC-064), ranked 2nd, retrofit completed 2005.*
- *R205-2, Fox Ridge (PC-003), ranked 3rd, completed October 2003.*
- *R207-4, Longhill Connector, ranked 1st, pursuing opportunities with College of William & Mary in conjunction with Dillard SWM issues. Clough Harbor & Assoc. under contract to perform engineering feasibility study (\$9500, PO 240397)*
- *R207-4 Feasibility Study completed, report dated July 2004*
- *R207-4 permitting through the Corps of Engineers, stalled pending Eastern State Hospital stream restoration.*
- *Powhatan Plantation (PC-121) repair design completed 2005, construction 2006.*

10) Long term maintenance of stormwater facilities, stormwater utility.

a) Board of Supervisors adopted for further staff review on February 26, 2002

i) Occurs watershed wide, County wide

ii) Responsible Staff:

(1) Wayland Bass (Scott Thomas)

(a) Waiting on report from Amec

(i) Will develop sub-action plan later based upon Amec study recommendations

(2) Darryl Cook, Mike Woolson

b) Anticipated Time Frame:

Report from Amec due 9/02

Remaining timeline dependent upon Amec study

c) **Actual Milestone Achievements:**

- *Phase 1 report by AMEC completed*
- *Stormwater advisory committee formed (SWAC)*
- *Phase 2 Action Plan report issued, "Stormwater Utility Feasibility Study, Phase 2 Report" by AMEC and SWAC*
- *BOS work session, Nov 26, 2002, for direction on financing stormwater costs based on Phase 2 report.*
- *Public meeting, Dec 6, 2002 to discuss stormwater utility*
- *BOS work session, Jan 28, 2003 to recommend and design a stormwater utility. No action taken by Board.*
- *County – General Services & Environmental Division cooperative: Maintenance activities performed on County-owned BMPs (2004 – 2005); about 30 facilities*
- *County budget FY 2007 – 2008 calls for further study.*

.) Impervious cover limit of 10%.

a) Board of Supervisors *deferred action*, subject to further review, February 26, 2002

i) Occurs in sub-watersheds 208 and 209

ii) Responsible Staff

(1) Planning

(2) Mike Woolson

- (3) Darryl Cook, Scott Thomas
- b) Anticipated Time Frame
 - No action at this time
- c) **Actual Milestone Achievements:**
 - *No action at this time*

12) Expand BMP homeowner education program to include lawn care and conversion, pet waste, car washing and other watershed behaviors.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide, County wide
 - ii) Responsible Staff:
 - (1) Scott Thomas and Mike Woolson (Beth Davis, John Horne)
 - (2) Darryl Cook
 - (3) Cooperative Extension, Colonial Soil and Water Conservation District, HR Storm, CBLAD, VaDCR
- b) Anticipated Time Frame:
 - Watershed issues and options on County website and local paper by 8/31/02
 - Fall 2002, kickoff event for PRIDE
 - Riparian Buffer information by 1/31/03
 - Watershed stewardship kit by 1/31/03
 - Watershed unit for Middle School curriculum by 4/30/03
- c) **Actual Milestone Achievements:**
 - *PRIDE wetland planting workshop, May 11, 2002*
 - *PRIDE website activation, October 2002*
 - *PRIDE Demonstration #1 and program launch, Heron Run, Season's Trace, shoreline erosion control and riparian buffer restoration demonstration project, October 19, 2002*
 - *PRIDE brochure completed, October 2002*
 - *PRIDE Demonstration #2, St. Thomas Hundred at St. George's Hundred, PRIDE sign, March 8, 2003*
 - *Mini-grant program launched March 8, 2003*
 - *PRIDE – release of BMP ratings report online, March 8, 2003*
 - *Michael Woolson and Scott Thomas met with the James City Clean County Commission (JC4) to discuss the Powhatan Creek Watershed Management Plan and the PRIDE program. Discussed overlap of watershed education with the recycling program and suggested future interaction and coordination between programs.*
 - *MDW and SJT – classroom presentation to 8th graders at James Blair Middle School, May 2003*
 - *PRIDE Demonstration #3, Small Stream Bank Stabilization at Steeplechase, May 17, 2003*
 - *MDW presentation at HRPDC "Watershed Management Planning Workshop", May 22, 2003.*
 - *Added Beth Davis, Environmental Education Coordinator to PRIDE team, October 1st 2003.*
 - *PRIDE Demonstration #4, Rain Garden at King of Glory Lutheran Church, October 18, 2003.*
 - *Rain Garden presentation at Virginia Native Plant Society, John Clayton Chapter Meeting, March 17, 2004.*
 - *Rain Garden presentation and panel of experts, Spring Into Gardening Workshop, March 20, 2004.*
 - *PRIDE Demonstration #5, BMP planting and bio-log installation at Powhatan Creek Park & Blue-way, Jamestown Road, March 27, 2004.*

- *PRIDE Demonstration #6, William & Mary SHARPE students, Earth Day celebration, Powhatan Creek Watershed Storm Drain Inlet Stenciling demonstration project, April 17 & 24, 2004.*
- *PRIDE Demonstration #7 Rain Garden/Rain Barrel Workshop and project at JCC Firehouse # 5, October 9 & 16th 2004.*
- *PRIDE Demonstration #8 4-H Center stream restoration, May 12th 2005.*
- *PRIDE Demonstration #9, Pond Buffer at Longhill Gate, April 29th 2006.*

13) **Better Site Design.**

- a) Board of Supervisors adopted for further staff development on February 26, 2002
 - i) Occurs County wide
 - ii) Responsible Staff:
 - (1) Scott Thomas (Roundtable) and Michael Woolson (Implementation)
 - (a) Ordinance changes
 - (2) Darryl Cook, Planning
- b) Anticipated Time Frame:

To be determined, timed with the Comprehensive Plan update
- c) **Actual Milestone Achievements:**
 - *Implementing Tools for Watershed Protection workshop with MAC/IECA, April 2002.*
 - *August 2002 – Coordinated JCC Builders for the Bay Roundtable with CWP & ACB. Roundtable scheduled for October 30th 2002.*
 - *October 1st 2002 – Invitations sent out for JCC BFB roundtable.*
 - *October 21, 2002 – Conference call, JCC Dev Mgmt meeting. Decided to postpone due to Comp Plan process ongoing. Postpone for 6 to 9 months.*
 - *October 30th 2002 – Letter from PHBA to Sanford Wanner.*
 - *Marvin Sowers and Scott Thomas attended VDOT stakeholder meeting on April 29, 2003 in Suffolk to solicit input for upcoming changes to the Subdivision Street Standards. Refer to letter by John Horne, dated April 29, 2003, for various planning and stormwater changes proposed by JCC.*
 - *March 4, 2003 – Virginia Better Site Design Case study issued for JCC and Richmond Counties (report dated October 2002)*
 - *May 8, 2003 – DMT meeting for internal coordination of BSD roundtable.*
 - *September 12, 2003 – Conference call for initial setup and coordination of BSD roundtable. CWP, JCC Dev Mgmt, JCC Planning, JCC Environmental. Tentative kick-off meeting scheduled for December 3, 2003. Formulation of invite letter, draft agenda, COW, stakeholder list.*
 - *November 14, 2003 – Roundtable date delayed due to CWP coordination issues and pending Chesapeake Bay ordinance revisions.*
 - *11/21/03 SSC Meeting 5 (Better Site Design/Low Impact Development)*
 - *December 3, 2003 – BSD roundtable coordination meeting at AES with local engineers, developers and homebuilders association. Discussed all aspects of BSD roundtable. BSD Roundtable rescheduled for Friday January 23rd 2004.*
 - *December 19th 2004 – Invitations sent for JCC BFB Roundtable.*
 - *1/16/04 SSC Meeting 6 (Better Site Design/Low Impact Development)*
 - *BFB-BSD Roundtable Kick-off Meeting held Friday January 23rd 2004.*
 - *BFB-BSD Roundtable 2nd meeting held Friday March 12th 2004.*
 - *BFB-BSD Lot Subcommittee meeting scheduled for May 5, 2004.*
 - *BFB-BSD Natural Areas Subcommittee meeting scheduled for May 5, 2004.*
 - *BFB-BSD Streets and Parking Lots Subcommittee meeting scheduled for May 6, 2004.*

- *BFB-BSD Roundtable Meeting Thursday August 5th 2004.*
- *BFB-BSD Roundtable Meeting November 16, 2004.*
- *SJT – Presentation of Roundtable process at WPI – March 30 & 31st 2005*
- *Final Consensus Report Issued (dated November 2004).*
- *Implementation Task Group formed, May 2006.*

14) Encourage Better Site Design across watershed – a workshop with developers and planning staff.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs County wide
 - ii) Responsible Staff
 - (1) Center for Watershed Protection (Roundtable)
 - (2) Scott Thomas, Mike Woolson
- b) Anticipated Time Frame:

To be determined, timed with Yarmouth Creek Study Roundtable with CWP on October 29, 2002.
- c) *Actual Milestone Achievements:*
 - *Better Site Design Roundtable with Builders for the Bay, scheduled October 2002, rescheduled, future date in 6 to 9 months*
 - *JCC Environmental Division involved with Norfolk USACOE LID stormwater task group.*
 - *11/21/03 SSC Meeting 5 (Better Site Design/Low Impact Development)*
 - *1/16/04 SSC Meeting 6 (Better Site Design/Low Impact Development)*
 - *BSD Roundtable Kick-off Meeting held Friday January 23rd 2004.*
 - *BFB-BSD Roundtable 2nd meeting held Friday March 12th 2004.*
 - *BFB-BSD Lot Subcommittee meeting scheduled for May 5, 2004.*
 - *BFB-BSD Natural Areas Subcommittee meeting scheduled for May 5, 2004.*
 - *BFB-BSD Streets and Parking Lots Subcommittee meeting scheduled for May 6, 2004.*
 - *BFB-BSD Roundtable Meeting Thursday August 5th 2004.*
 - *BFB-BSD Roundtable Meeting November 16, 2004*
 - *Final Consensus Report Issued (dated November 2004)*

15) Golf course management task force to discuss potential improvements in turf management/nutrients, pesticides, buffer protection, stream crossings and invasive species.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide, County wide
 - ii) Responsible Staff:
 - (1) Cooperative Extension
 - (a) Establish GC Task Force
 - (2) Mike Woolson, Environmental
- b) Anticipated Time Frame:

Task Force committee selections to be determined for BOS consideration.
- c) *Actual Milestone Achievements:*
 - *No action taken at this time.*

16) Stream restoration.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs in sub-watersheds 201, 206, 207, and 210
 - ii) Responsible Staff:
 - (1) Wayland Bass, Michael Woolson
 - (a) Priority list of stream restoration sites (from Study)
 - (b) Rank restoration sites list according to maximum water quality benefit

- (c) For each restoration site, the following sequence should occur:
 - (i) Preliminary engineering report
 - (ii) Construction plans for each retrofit
 - (iii) Bid project
 - (iv) Award project
 - (v) Construction oversight
 - (2) Darryl Cook, Scott Thomas
 - b) Anticipated Time Frame:
 - Priority list by 6/30/02
 - Coordinating with Corps of Engineers on using Virginia Wetlands Trust Fund to help with costs and design.
 - Eastern State restoration, preliminary design and costs by 1/31/03
 - Steeple Chase restoration, preliminary design and costs by 1/31/03
 - One stream restoration completed by 6/30/03
 - One stream restoration completed by 6/30/04
 - One stream restoration completed by 6/30/05
 - c) *Actual Milestone Achievements:*
 - *Priority list, June 2002*
 - *Ongoing coordination with the Corps of Engineers for Eastern State, Chisel Run and Steeple Chase*
 - *Baseline survey for Eastern State restoration, November 2002*
 - *Verbal agreement with Corps on using the Wetlands Trust Fund the Eastern State restoration, November 2002*
 - *Chisel Run Stream Restoration (Eastern State) preliminary design by PBS&J, February 2003*
 - *Steeple Chase stream restoration walk through with Sunterra, preliminary discussion, February 200, now called Powhatan Plantation.*
 - *Pre-application meeting with the COE on Eastern State and Powhatan Plantation stream restorations, March 18, 2003*
 - *Check dam design by PBS&J for Eastern State, June 2003, rejected by staff*
 - *Concept Design completed for ESH, 2004, Natural Systems Engineering*
 - *Design Plan completed for ESH, 2004, Natural System Engineering*
 - *Memorandum of Agreement with the State for Eastern State Hospital stream restoration, to be signed 2006*
 - *Concept planning for Powhatan Plantation, Summer 2005*
 - *Preliminary design and permitting for Powhatan Plantation, Summer 2006*
 - *Public Notice of Umbrella Mitigation Bank (stream restoration), March 2006*
 - *Umbrella Mitigation Banking Instrument to be signed, Fall 2006*

17) Monitor the effects of the Special Stormwater Criteria, the regular stormwater criteria, and the stream restoration efforts on stream channels.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide
 - ii) Responsible Staff:
 - (1) Mike Woolson
 - (a) Develop guidelines for monitoring efforts
 - (b) Coordinate efforts with William & Mary
 - (2) William and Mary, VIMS, FOPC
- b) Anticipated Time Frame:
 - Guidelines developed by 12/31/02
 - Monitoring efforts start spring of 2003

c) Actual Milestone Achievements:

- *Michael Woolson and Scott Thomas met with Greg Hancock, College of William and Mary, to overview the College's stream monitoring efforts in the Powhatan Creek watershed and to visit a stream monitoring gage station on College Creek.*
- *Met with College of William and Mary to discuss student involvement in monitoring efforts of the Special Stormwater Criteria and other baseline monitoring efforts.*
- *W&M Flow and Water Quality Monitoring projects, 3 BMPs*
- *SSC adoption 12/14/2004*
- *W&M to flow monitor 4 more BMPs (start June 2005)*

18) Plan for and monitor the protection of the RTE species in New Town, monitoring should continue through the development process.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs in sub-watersheds 208 and 209
 - ii) Responsible Staff:
 - (1) William and Mary
 - (a) Develop monitoring program
 - (2) Mike Woolson
- b) Anticipated Time Frame:
 - Develop monitoring protocol, December 2002
 - Contract out monitoring, signed proposal, March 2003
 - Monitoring to begin after construction starts in New Town, May 2003

c) Actual Milestone Achievements:

- *Contacted Dr. Donna Ware, received copy of similar project for Fort A.P. Hill*
- *Draft monitoring contract, November 2002*
- *Funding pulled, no monitoring at this time until further notice, January 2003*
- *Reached agreement with New Town Associates for them to monitor RTE plus stream stabilization from now until three years after final build out.*

19) RPA signage with new development.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs County wide
 - ii) Responsible Staff:
 - (1) Pat Menichino
 - (a) Chesapeake Bay Act enforcement
 - b) Anticipated Time Frame:
 - As needed on an individual project basis

c) Actual Milestone Achievements:

- *RPA signs installed with new development, ongoing*

20) Powhatan Creek Watershed Signs which link the 2007 Jamestown Celebration.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs at mainstem bridge crossings
 - ii) Responsible Staff:
 - (1) Mike Woolson
 - (a) Develop location map
 - (b) Detail out wording, colors, and height for signs (Cawley & Assoc.)
 - (2) Lisa Meddin, Pat Menichino
 - b) Anticipated Time Frame:
 - Sign details by October 31, 2002
 - Coordinating with DCR and VDOT

Signs ordered by December 31, 2002

Signs installed by April 30, 2003

c) Actual Milestone Achievements:

- *Location Map, November 2002*
- *Sign details, wording set by DCR, size and color set by VDOT, November 2002, no further action.*

21) Program for assisting landowners in buffer creation.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide
 - ii) Responsible Staff:
 - (1) Mike Woolson
 - (a) Develop guidelines for a good buffer
 - (i) Develop list of types of buffers
 - (ii) Develop guidelines for each type of buffer
 - (iii) Determine what is a "good" buffer verses "bad" buffer
 - (b) Develop inventory of buffer types, break out between "good" and "bad" for each type per sub-watershed
 - (i) Use latest GIS information to determine inventory of buffer types, no ground truthing yet (not enough manpower to do by the deadline)
 - (c) Develop quantitative goals for each buffer type for each sub-watershed
 - (d) Develop educational plan for buffer landowners
 - (e) Target specific sub-watershed buffer landowners for restoration efforts
 - (f) Apply for riparian restoration grants (when the time is appropriate)
 - (2) Beth Davis
 - (3) Darryl Cook, Pat Menichino, James River Association
- b) Anticipated Time Frame:

Buffer guidelines by 6/30/02
 Inventory of buffer types by 12/31/02
 Landowner education efforts to start on 1/1/03
 Quantitative goals for each buffer type by 2/28/03
 Tangible goals to be determined for fiscal year '03, '04, '05, '06, '07

c) Actual Milestone Achievements:

- *Buffer meeting with CBLAB, VIMS, November 2002*
- *Buffer education/outreach effort on PRIDE website, December 2002, delayed until spring/summer 2006*

22) Acquisition of priority conservation and other sensitive areas.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs in sub-watersheds 201, 202, 205, 208, 209, tidal mainstem and non-tidal mainstem
 - ii) Responsible Staff:
 - (1) John Horne
 - (a) Priority list of other conservation and sensitive areas
 - (2) Mike Woolson
 - (a) Apply for grants
 - (3) Parks and Recreation, Darryl Cook, Scott Thomas, Wayland Bass
- b) Anticipated Time Frame:

Priority list by 6/30/02
 Preserve 300 acres by 6/30/03
 Preserve 250 acres by 6/30/04
- c) **Actual Milestone Achievements:**
 - *Priority list developed, June 2002*

23) Re-compute impervious cover for all sub-watersheds in 5 years.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs watershed wide
 - ii) Responsible Staff:
 - (1) Mapping Division
 - (2) Mike Woolson
- b) Anticipated Time Frame:
 - New impervious cover computations by 6/30/07
- c) **Actual Milestone Achievements:**
 - *No action taken at this time*

24) Future regional stormwater facilities.

- a) Board of Supervisors adopted on February 26, 2002
 - i) Occurs in sub-watersheds 204, 205, 206, 207, and 208, can occur in others
 - ii) Responsible Staff:
 - (1) Wayland Bass, Scott Thomas
 - (a) Priority list of future regional stormwater facilities (from Study)
 - (b) Rank regional stormwater list according to maximum water quality benefit
 - (c) For each regional stormwater facility, the following sequence should occur:
 - (i) Preliminary engineering report
 - (ii) Construction plans for each retrofit
 - (iii) Bid project
 - (iv) Award project
 - (v) Construction oversight
 - (2) Darryl Cook, Mike Woolson
- b) Anticipated Time Frame:
 - Priority list of regional stormwater facilities by 6/30/02
 - One regional facility built by 6/30/03
 - One regional facility built by 6/30/04
 - One regional facility built by 6/30/05
- c) **Actual Milestone Achievements:**
 - *Developed priority list, June 2002*
 - *Study by PBS&J for R205-4 Warhill (Lightfoot BMP) regional facility, September 2002*
 - *Preliminary, in-house study, for regional pond at District Park, February 2003*
 - *R207-4, Longhill Connector, regional retrofit ranked 1st, pursuing opportunities with College of William & Mary in conjunction with Dillard SWM issues. Clough Harbor & Assoc. under contract to perform engineering feasibility study (\$9500, PO 240397)*
 - *R207-4 Feasibility Study completed, report dated July 2004; base mapping being prepared*
 - *Discussion for possible regional basin in Sub-watershed 207.*
 - *R205-4 will be achieved by upgrade of District Park West Pond (PC105) as part of Warhill PPEA project (Phase 3B)*
 - *Pursuing possibility of regional facility behind Captain George's, to serve Carolina Furniture complex and Abe's mini-storage.*
 - *Upgrade of R205-3 approved via Warhill PPEA project plan SP-82-05/SP-143-05. Storm trunk line, forebay and pond upgrades completed in 2006. As-builds and construction certifications provided.*
 - *USACOE letter dated February 15, 2006 on preliminary application for R207-4. Project on hold pending stream & wetland permit issues.*

Other - Miscellaneous

Regular Updates to Friends of Powhatan Creek Watershed Organization:

- Board meeting September 12, 2004
- Board meeting June 12, 2005

Public Presentations:

- Overview of Powhatan Creek Watershed Management Plan, Watershed Protection Institute (WPI), March 30 & 31st, 2005.
- Overview of Powhatan Creek Watershed Management Plan objectives related to Better Site Design, Building a Cleaner James River, April 21 2006.