

Little Creek Reservoir

Cranstons Mill Pond

Subwatershed 101

Non-Tidal Mainstem

Tidal Mainstem

Subwatershed 106

Chickahominy River

Jolly Pond Rd.

Centerville Rd.

BW-2

BW-1

BW-3

BW-4

C2

C4

C3

C1

C7



Yarmouth Creek Watershed Tidal and Non-Tidal Mainstem Subwatersheds 101 and 106

Watershed	Boat Walk Erosion	Developable Parcel (1997 Zoning) A1
Subwatershed	Potential Channel Stabilization/Restoration	B1
Hydrology	Potential Conservation Areas	LB
Roads	Trash/Debris	M1
Parcels	Bald Eagle	M2
Buildings	Sensitive Fish	MU
NWI Wetlands	KIE Plant	R1
		R2
		R3
		PSA

2000 0 2000 4000 Feet



LOWER SUBWATERSHEDS

Subwatershed 101

Overall Characterization

Currently, this subwatershed is classified as SENSITIVE with 2.2% impervious cover. Based on the zoning the subwatershed is projected to remain in the SENSITIVE category at 6.8% impervious cover provided the zoning does not change. This subwatershed has little development, and is primarily hunting land and rural residential. Much of the uplands have been logged except for the steep slopes along



stream channels, where the remaining buffers are in good condition. The upper part of the subwatershed contains a few trash dumping locations and degraded stream channels and consequently scored the lowest habitat score in the entire watershed. The lower portion of the subwatershed contains a bald cypress swamp that supports a heron rookery.

General Characteristics

<i>Drainage Area</i>	220 acres
<i>Length of Mapped Streams</i>	1.98 miles

Current Land Use and Stream Classification in Subwatershed 101

<i>1996 Impervious Cover</i>	2.2%
<i>Initial Stream Classification</i>	Sensitive
<i>Current Stream Condition</i>	Good

Future Land Use and Stream Classification in Subwatershed 101

<i>Buildout Impervious Cover</i>	6.8%
<i>Projected Stream Classification</i>	Sensitive
<i>Developable Area</i>	149.9 acres
<i>Developable Area %</i>	68%

Conservation Areas in Subwatershed 101

<i>Existing RPA wetland area</i>	6.5 acres
<i>Existing RPA wetland %</i>	3%

Presence of RTE species: None identified

Wetlands (from NWI): 11.2 acres of wetland (5% of subwatershed), mainly riparian

Other Conservation Areas: Habitat for a heron rookery and a small contiguous forest.

General Stream Conditions in 101

Habitat Assessment: The habitat assessment revealed one location with poor habitat scores and several trash dumps present in the upper portion of the watershed. The lower stream reaches however were in good condition and generally had good floodplain connection. Stream buffers generally have not been logged in this subwatershed because of steep slopes.

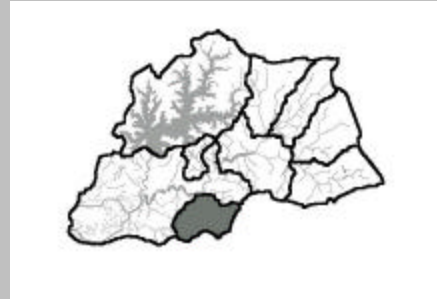
Stormwater Management in Subwatershed 101

Due to the limited amount of development in subwatershed 101, there are no identified opportunities for the use of stormwater management.

Subwatershed 106

Overall Characterization

Subwatershed 106 is currently in the SENSITIVE category with 0.4% impervious cover. Under the current zoning, the subwatershed is projected to have a buildout imperviousness of 3.5%, meaning the subwatershed would remain in the SENSITIVE category. This subwatershed is very lightly developed with good areas of fairly young forest and good stream conditions. Instream habitat diversity is somewhat limited by the lack of woody debris due to the young age of forest. Impervious cover is not likely to increase significantly here, and there is the potential for preserving tracts of contiguous forest.



General Characteristics

<i>Drainage Area</i>	548 acres
<i>Length of Mapped Streams</i>	4.69 miles

Current Land Use and Stream Classification in Subwatershed 106

<i>1996 Impervious Cover</i>	0.4%
<i>Initial Stream Classification</i>	Sensitive
<i>Current Stream Condition</i>	Good

Future Land Use and Stream Classification in Subwatershed 106

<i>Buildout Impervious Cover</i>	3.5%
<i>Projected Stream Classification</i>	Sensitive
<i>Developable Area</i>	422 acres
<i>Developable Area %</i>	77%

Conservation Areas in Subwatershed 106

<i>Existing RPA wetland area</i>	16.6 acres
<i>Existing RPA wetland %</i>	3%

Contiguous Forest: Forest is young but contiguous, potential for preservation, the majority of the subwatershed is forested

Wetlands (from NWI): 39.8 acres of wetland (7% of subwatershed), mostly riparian. Most of the wetlands are associated with the floodplain.

Other Conservation Areas: None identified

Table 106-1. Yarmouth Creek Subwatershed 106 Priority Conservation Areas						
Rank	ID	Approx. Area* (acres)		Description	Score	Management Recommendations
		Total	Developable			
7 out of 8	C7	830	610	Tidal mainstem and subwatershed 106; young contiguous forest and potential RTE habitat	48	Acquisition/easement, to maintain contiguous forest; Conservation easement to maintain hunting and selective logging
<p>*These are approximate areas calculated using GIS and rounded to the nearest tenth. Total area represents the total acreage within the conservation area boundary. The developable area within those conservation areas was calculated by subtracting unbuildable land and built-out land from the total area. Unbuildable land included the NWI wetlands, open water, the existing RPAs (not including RPA buffer), stream valleys (a 100-foot buffer on either side of all streams), and slopes greater than 25% (derived from 5-foot contour lines). Because this estimate was based on limited data and certain assumptions were made about how to estimate this area, it should only be used as a planning tool only and not as an actual guide for development.</p>						

General Stream Conditions in Subwatershed 106

Habitat Assessment: The upper stream reaches were in good condition as were the lower reaches. Habitat quality was only limited by the lack of large woody debris in the watershed due to the young surrounding forest. Fish were not monitored in this watershed.

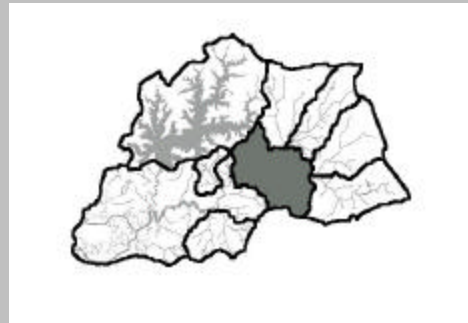
Stormwater Management in Subwatershed 106

No opportunities exist because of the limited development.

NON-TIDAL MAINSTEM OF YARMOUTH CREEK

Overall Characterization

The non-tidal mainstem is currently in the SENSITIVE category with 1.1% impervious cover. Under the current zoning it is projected to have a buildout imperviousness of 3.3% and would remain in the SENSITIVE category. The non-tidal mainstem portion of Yarmouth Creek is very lightly developed and includes areas of direct drainage to Yarmouth Creek to just below



Cranston's Pond. Cranston's Pond takes up a large portion of this area and the dam may be a barrier to fish migration. The extensive forested areas consist of mixed pines and dry-site hardwoods and the forest, as well as the streams, are in good to excellent condition. The shell-marl ravine forest is likely to exist here, and is potential habitat for rare or disjunct plant species. According to Virginia Division of Natural Heritage, a small population of a globally rare plant is located below Deer Lake though it was not located during our assessment. One conservation area of 740 acres was identified above Cranston's Pond. This conservation area contains some contiguous forest as well as bald cypress stands, which are a potential location for a heron rookery.

General Characteristics

<i>Drainage Area</i>	1072 acres
<i>Length of Mapped Streams</i>	5.22 miles

Current Land Use and Stream Classification in the Non-Tidal Mainstem Portion

<i>1996 Impervious Cover</i>	1.1%
<i>Initial Stream Classification</i>	Sensitive
<i>Current Stream Condition</i>	Good

Future Land Use and Stream Classification in the Non-Tidal Mainstem Portion

<i>Buildout Impervious Cover</i>	3.3%
<i>Projected Stream Classification</i>	Sensitive
<i>Developable Area</i>	835.7 acres
<i>Developable Area %</i>	78%

Conservation Areas in the Non-Tidal Mainstem Portion

<i>Existing RPA wetland area</i>	88.3 acres
<i>Existing RPA wetland %</i>	8%

Contiguous Forest: Yes, some contiguous forest in the conservation area above Cranston's Pond, includes bald cypress stand.

Presence of RTE Species: According to Virginia Division of Natural Heritage, a globally-rare plant species exists below Deer Lake (Clampitt, 1991). There is also good potential for areas of shell-marl ravine forest which is potential habitat for rare or disjunct species.

Wetlands (from NWI): 120.9 acres of wetlands (11% of subwatershed), mostly riparian. Good quality wetlands associated with the stream floodplain.

Other Conservation Areas: Potential for heron rookery

Table NT-1. Yarmouth Creek Non-Tidal Mainstem Priority Conservation Areas						
Rank	ID	Approx. Area* (acres)		Description	Score	Management Recommendations
		Total	Developable			
3 out of 8	C4	740	570	Non-tidal mainstem, Boy Scout property. Contiguous forest, potential heron rookery above Cranston Mill Pond; globally rare plant identified (1993) at Camp Chickahominy	57	High development potential; recommend conservation easement, RPA extension, BSD to protect streams are clustering for larger buffers
<p>*These are approximate areas calculated using GIS and rounded to the nearest tenth. Total area represents the total acreage within the conservation area boundary. The developable area within those conservation areas was calculated by subtracting unbuildable land and built-out land from the total area. Unbuildable land included the NWI wetlands, open water, the existing RPAs (not including RPA buffer), stream valleys (a 100-foot buffer on either side of all streams), and slopes greater than 25% (derived from 5-foot contour lines). Because this estimate was based on limited data and certain assumptions were made about how to estimate this area, it should only be used as a planning tool only and not as an actual guide for development.</p>						

General Stream Conditions in the Non-Tidal Mainstem Portion

Habitat Assessment: The habitat assessment showed upland streams in good condition and good habitat was found in larger streams flowing into Cranston’s Pond. The dam which forms Cranston’s Pond is a possible barrier to fish migration. The fish survey found 16 species of fish, including the least brook lamprey and the tadpole madtom, which are relatively sensitive in this area.

Stormwater Management in the Non-Tidal Mainstem Portion

No stormwater management opportunities exist in this subwatershed because very little development has occurred.

Channel Stabilization in the Non-Tidal Mainstem

There is one channel stabilization project that was identified in the non-tidal mainstem. The channel stabilization project is associated with a drainage channel along Cranston Mill Pond Rd. A description of the potential project is located in Table NT-2.

Table NT-2. Channel Stabilization Opportunities in Subwatershed NT-2			
Site	Description	Type of Effort	Priority
NT-2	Drainage channel along Cranston Mill Pond Rd. experiencing erosion and headcutting.	Channel stabilization	Medium

TIDAL SEGMENT OF YARMOUTH CREEK

Overall Characterization

The non-tidal mainstem is currently in the SENSITIVE category with 0.3% impervious cover. Under the current zoning it is projected to have a buildout imperviousness of 1.8% and would remain in the SENSITIVE category. The tidal section of Yarmouth Creek watershed has almost no development and much of the land here is privately owned and leased for hunting. This area contains extensive freshwater tidal marsh dominated by wild rice, pickerelweed



and a variety of other herbaceous species as well as areas of bald cypress swamp. The uplands are forested with a mix of pines and hardwoods. A natural areas inventory identified much of the tidal portion as having high significance for biodiversity because of the existence of three RTE species. The tidal section provides a good breeding ground for fish, and contains high habitat diversity, quality streams, wetlands and forest, as well as numerous sloughs and inlets. Four potential conservation areas have been identified: 480 acres of mature contiguous forest, 890 acres of tidal marsh, 170 acres that contains a bald cypress swamp and heron rookery, and a 300 ft buffer that serves as important habitat for ospreys, eagles and animal species using the marsh.

General Characteristics

<i>Drainage Area</i>	2912 acres
<i>Length of Mapped Streams</i>	11.76 miles

Current Land Use and Stream Classification in the Tidal Mainstem Portion

<i>1996 Impervious Cover</i>	0.3%
<i>Initial Stream Classification</i>	Sensitive
<i>Current Stream Condition</i>	Good

Future Land Use and Stream Classification in the Tidal Mainstem Portion

<i>Buildout Impervious Cover</i>	1.8%
<i>Projected Stream Classification</i>	Sensitive
<i>Developable Area</i>	1382.6 acres
<i>Developable Area %</i>	47%

Conservation Areas in the Tidal Mainstem Portion

<i>Existing RPA wetland area</i>	1244.7 acres
<i>Existing RPA wetland %</i>	43%

Contiguous Forest: Yes, 480 acres of mature forest are located within 3 parcels.

Presence of RTE Species: Three rare, threatened or endangered species have been confirmed by Virginia Natural Heritage for the tidal section of Yarmouth Creek: the bald eagle, sensitive joint-vetch, and narrow-leaved spatterdock. Some potential exists for RTE species in heath-bald areas where drought tolerant plants are found. In general, the forest is composed of young trees because of past and present timber management.

Wetlands (from NWI): 1171.8 acres of wetlands including tidal freshwater marsh, and cypress swamps (40% of subwatershed).

Other Conservation Areas: A heron rookery also exists in the upper portion of the tidal section close to where the creek becomes non-tidal, and a pristine freshwater tidal marsh comprises approximately 890 acres of the tidal mainstem portion of the watershed. A 300 ft buffer has also been placed on the map that represents an important area for wildlife habitat and a goal in the voluntary PDR program in JCC.

Rank	ID	Approx. Area* (acres)		Description	Score	Management Recommendations
		Total	Developable			
1 out of 8	C2	480	320	Tidal mainstem; best mature contiguous forest in the watershed. Potential RTE habitat on steep slopes	63	Continued landowner stewardship; potential conservation easements & restrictions on timber harvesting
2 out of 8	C1	890	80	Mouth of Yarmouth Creek & Chickahominy River. Contains tidal wetlands, 3 known RTE species	58	Majority of wetlands within RPA; recommend target upland areas for conservation easements or acquisition
4 out of 8	C3	170	100	Upper portion of tidal mainstem; Heron rookery and bald cypress stand	54	Partially protected by RPA, however uplands unprotected; consider acquisition/easement of surrounding area
<p>*These are approximate areas calculated using GIS and rounded to the nearest tenth. Total area represents the total acreage within the conservation area boundary. The developable area within those conservation areas was calculated by subtracting unbuildable land and built-out land from the total area. Unbuildable land included the NWI wetlands, open water, the existing RPAs (not including RPA buffer), stream valleys (a 100-foot buffer on either side of all streams), and slopes greater than 25% (derived from 5-foot contour lines). Because this estimate was based on limited data and certain assumptions were made about how to estimate this area, it should only be used as a planning tool only and not as an actual guide for development.</p>						

General Stream Conditions in the Tidal Mainstem Portion

Initial habitat Assessment: The habitat in the tidal mainstem is reported to be high quality wetlands and tidal sloughs that serve as an important breeding ground for tidal fish species.

Stormwater Management in the Tidal Mainstem Portion

No stormwater management opportunities exist in this subwatershed because very little development has occurred here.

Boat Wake Erosion in the Tidal Mainstem Portion

Boat wake erosion is a significant issue in the lower tidal mainstem portion of Yarmouth Creek. Locations where the problem was particularly pervasive are included in the Tidal subwatershed map. The recommendation is, at a minimum to post information at local boat ramps that explains the susceptibility of small tidal creeks to erosion and post no wake areas where there are significant problems. Worth mentioning is the fact that the shoreline erosion can result in loss of habitat and spawning grounds for gamefish and contribute to reducing water depth in the tidal creeks.

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