

James City County Cumulative Impact Analysis

July 2008

**Presented to the James City County Citizens Participation
Team (CPT) for Consideration in the JCC 2008
Comprehensive Plan Update**

Prepared by the James City County Citizens' Coalition (J4C)

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James City County Citizens' Coalition Cumulative Impact Analysis

No rezonings or special use permit requests (SUPs) should be considered until the cumulative impact of such development projects has been established and the public benefit is identified.

Implementation of this recommendation is one of the key objectives set forth in the James City County Citizens' Coalition (J4C) 2007-2008 Plan. In August 2007 J4C began work on the first phase of this project. On October 15, 2007 the results were published in a report and delivered to the Board of Supervisors at a public meeting. The report provided a statement of the problem, the J4C approach to addressing this problem, and a presentation of the database developed to help evaluate these cumulative impacts.

This is an update of that report. It is a restatement of the problem and provides updated statistical data and sorts of the data to reinforce the recommended solution.

Problem: The County's population has grown 3.3% per year since 1997, from 44,023 to over 62,000 at mid-year 2008. The database we have developed, with the assistance of county staff, identifies 11,576 additional dwelling units already approved, resulting in a total of 38,337 at buildout. At buildout this suggests a county population in excess of 90,000. Factoring in an additional 15,000 units which may be built under current zoning, population could grow to 129,000.

Four factors affect how this growth scenario impacts our quality of life and the protection of the environment:

1. Adequacy of water supply
2. Potential for environmental degradation
3. Traffic congestion
4. Financial strain

Adequacy of Water Supply: James City is the largest county in Virginia to rely almost entirely on ground water. The Piney Point aquifer is the primary source of this ground water, which provides 4.5 million gallons per day (mgd), and is under stress. The desalination plant, which provides an additional 5.0 mgd, treats brackish water from the lower and middle Potomac aquifers; the middle aquifer is overstressed, the lower less so.

Assuming historic increases in new household water hookups of 800 per year within the JCSA primary service area, water from these two sources will meet projected need through 2012; thereafter, additional sources are required. The county is a participant in the planned King William Reservoir project, but water is not anticipated from this source until at least 2020. The alternative of a second desalination plant is remote, as the Virginia Department of Environmental Quality (DEQ) has signaled to JCSA that it is unlikely to issue the required water withdrawal permit.

As a contingency James City Service Authority (JCSA) contracted with Newport News Waterworks in April 2008 for 4 mgd of additional water after 2012. This would be surface water, not requiring additional water withdrawal permits from DEQ. The one time up-front cost is \$25 million with a second \$25 million payment due in 2019; this guarantees an additional 2 mgd from 2012 to 2019 and an additional 2 mgd, and a 20% share of the water supply from the King William Reservoir when this facility goes on line. The agreement also provides that JCSA will pay a share of the maintenance, operational and treatment costs of these additional supplies.

While the first \$25 million commitment is firm, there are opting out provisions for the second \$25 million commitment. The short-term issue, until 2019, is constraining the additional cost for treating Newport News water actually used. In the longer term, the second \$25 million payment and paying for 20% of the maintenance and operational costs of the proposed King William and existing Diascund reservoirs can be avoided through an effective conservation program and investment in reclaimed water facilities.

The County has found itself in its current position because of past errors and omissions. First, it has accepted rapid growth in the county without regard to the "cumulative impact" of these individual subdivision approvals. Second, it has accepted wasteful consumption practices on the part of the public. A conscious decision has been made by JCSA management and past supervisory boards to deal with these issues by growing the available supply of water. The county water conservation plan to date has been timid. However, in saying this, the service authority is to be commended for being the first regional water supplier in Virginia to institute an inclined block rate structure that penalizes heavy users (though only residential users) and in introducing a consumer rebate program for rain barrels. And, recently the Water Conservation Committee has surfaced ideas for extending this rebate program to include household uses - for toilet, dishwasher and washing machine replacements and for purchase of hot water recirculating systems.

To avoid the likely cost increases projected a decade hence, we need a new approach. First, we need to get serious about water conservation. The elements of

an enhanced water conservation program are:

1. Major revision in the inclined block rate structure for residential water use. One thoughtful approach was offered by Don Phillips, a local water expert, in a *Virginia Gazette* essay on April 9 this year. This would encompass a lowering of rates for users in the 1st tier, introduction of the 2nd tier rate at perhaps 7500 gallons per quarter (rather than 15,000 gallons per quarter) and lowering the breakpoint between the second and third block to 25,000 gallons per quarter. In addition, charging a summer conservation rate penalty on consumption in April through September in excess of average October through March consumption should be considered. Commercial businesses should also be included in this revised rate structure. This provides a more effective incentive for all to conserve water and provides the necessary minimum water to economically disadvantaged households at the most affordable cost.
2. Restrictions on water use for new developments. This would include expanded use of native drought tolerant plants, minimum depth for topsoil for lawns with standards for organic carbon and nutrient content in the soils, and even higher hookup fees and inspection fees.
3. Expanded consumer rebate program. This would include much larger rebates to homeowners and businesses for purchase of rain barrels, introduction of rebates for cisterns, and higher rebates for proposed purchase and installation of toilets, dishwashers, washing machines and hot water recirculating systems.

Second, we need to initiate a more objective evaluation of the feasibility of the County investing in reclaimed water facilities. A starting point is to identify those applications which are suitable - i.e. residential irrigation, commercial and industrial property use, and golf course irrigation. A second step is to develop a regional approach, both to source the effluent to provide the raw materials and to use the reclaimed water output.

Third, the cost/benefit tradeoff should compare the cost of bringing incremental reclaimed water facilities online against the incremental cost of acquiring potable water, either from a third desalination plant or purchase of water from the regional water supplier, Newport News Waterworks. Finally, a fourth step should apply marginal cost/marginal revenue figures when costing these alternatives. The recently completed analysis of a standalone reclaimed facility at the GS Stonehouse development was incomplete because it ignored steps 2, 3 and 4 and evaluated this facility on a standalone basis.

Potential for Environmental Degradation: Environmental degradation is already evident in specific areas of the county affected by rapid development.

Development along the Powhatan Creek has already resulted in decreasing water quality, increased soil erosion, storm water runoff and flooding in several areas - most particularly negatively impacting such communities as Jamestown 1607, St. Georges Hundred and Fieldcrest. Impervious cover percentages are already exceeding dangerous levels in several subwatersheds experiencing rapid development, including New Town. The County has created a Stormwater Division to begin to push-back on the environmental degradation already experienced, but this effort is extremely underfunded and clearly inadequate to meet the proven need.

The County has committed to contribute to the restoration and preservation of a healthy Chesapeake Bay, but it is not meeting the minimum requirements for accomplishing this important task. The Chesapeake Bay Preservation Ordinance provides the most powerful management tool for meeting this commitment. However, new commercial and residential developments continue to reduce the natural vegetation that serves to insulate the Bay and its tributary rivers and streams from the encroachment of human development. Some vulnerable streams and conservation lands are not protected by existing Resource Protection Areas (RPAs). Uncoordinated development activities are reducing the size of contiguous forest tracts, producing a patchwork that is far less effective in controlling water quality and flooding than would a more pristine forest. Similarly, wetlands are becoming increasingly fragmented and rare, threatened and endangered (RTE) species are becoming dispersed and more vulnerable. The principles of "Cumulative Impact" need to be applied to managing these issues.

It appears that additional legislative tools will be required if the tide of rampant development is to be stemmed. One such tool is the expansion of buffer zones around headwater streams and the main stems of major streams within the watersheds. The principles of "Better Site Design", and the earlier "Builders for the Bay" study, should be more actively encouraged, and greater emphasis should be placed on bringing more land under conservation management, ideally in cooperation with private entities. A more energetic approach should be taken to educating and informing the citizenry of responsible environmental stewardship.

Modern technology should be applied to restoration of damaged streams and to providing enhanced protection for areas vulnerable to flooding. Stream restoration should incorporate the results of research in this area, which emphasize reverting to the original courses rather than some contrived approach that may be more convenient. Stormwater retention ponds built to outdated specifications should be upgraded, where possible, and new ponds should be built to modern specifications. Consideration should be given to a regional approach to stormwater control where possible.

Traffic Congestion: Traffic problems are already being experienced in several locations around the county. Most apparent is the congestion being experienced along Monticello Avenue from News Road to Ironbound Road, on Longhill Road between Route 199 and Olde Towne Road, Route 199 from Route 5 to Interstate 64 and Richmond Road in the vicinity of Lightfoot. The addition of a new school on Brick Bat Road has significantly increased the traffic on Centerville Road. Feeder roads and older country roads, which are presently sub-standard, are demonstrating new hazards to the driving community.



Longhill Road Traffic (June 2008) just west of Highway 199

Traffic on many of the county's roadways is increasing at annual rates well above the 3% currently used by the county. Vehicle registration in the county is experiencing an annual growth rate of nearly 4%. More cars equal more traffic.

Before making decisions on new developments, it is important to know the cumulative impact of these decisions. Traffic is a major factor/impact to be considered, particularly for already stressed corridors and the designated community corridors. Currently, a traffic study submitted by a developer covers only the situation at the current time, with the addition of the proposed development. It does not include the cumulative impact of what is there now (current counts), plus what will be generated by already approved but not built units, and what the potential development might be for that corridor. These data need to be provided by the developer and independently verified by the County staff or an unbiased contractor in the County in recommending approval or denial of the project.

Several changes are recommended:

1. Establish an ongoing review of traffic on the major community corridors. This would permit VDOT to make changes early enough to prevent serious accidents.
2. Require a realistic traffic study for all new development proposals on Community Character Corridors. These would include current counts and realistic estimates for at least 10 years.
3. Add a traffic engineer to the County staff to review and verify traffic studies submitted with new development proposals. This position would be responsible for reviewing the adequacy of submitted traffic studies, for improving traffic flow on existing roadways, for standardizing the county's procedures for the periodic collection of traffic data, and for disseminating this traffic data to the public in an easily understood manner.
4. Conduct a review that compares historical traffic estimates and projections with actual traffic experienced. Adjust traffic increase projections to more accurately reflect experience.
5. Require that traffic analyses account for trip origin and destination so that traffic impacts on other roads beyond the immediate road under study may be factored into regional traffic counts and road infrastructure costs.
6. Develop a traffic count system (understandable by lay individuals) for displaying counts used in presentations to the public.
7. In traffic reports, the complete information on the location of the counting site and the dates of the count should be included.
8. Apply cumulative traffic impact when deciding on a new project, particularly on community corridors. Unacceptable traffic impacts, including a specified safety threshold, would need a mitigation plan before any development could go forward.
9. Differences in traffic counting methodology and site selection make calculating traffic trends and comparisons difficult. The State and County should coordinate times and locations for counting traffic and assure that there is an adequate basis for year to year analysis and comparisons. For example, a count for an entire week in one year is difficult to compare to a count for a three day period in a subsequent year. Determine the consequence of taking counts on certain days, as well as at a consistent time of the year,

10. The County should strengthen and enforce the filing of reports under the new Chapter 527. Minimum standards should be set for developer submitted traffic impact analysis.
11. The County should determine the impact of the State's decision to move to three year counts.

Financial Strain: Rapid growth has an adverse fiscal impact on local government budgets and the residential tax burden. At one time communities believed that growth was self-funding. That may have been true when growth was modest and infrastructure investment was limited. Properly planned infrastructure capacity could handle modest growth, and when small amounts of new investment were required it could be handled cost effectively. But when residential growth accelerates beyond 3%, the cost of providing needed infrastructure and services escalates dramatically.

We have seen this in the county recently, with budget increases in excess of 10% per year from 2006 to 2008. Contributing to the large increases in these years were major capital improvement projects, mainly school additions, but also other infrastructure projects for existing schools, parks, fire and safety, and land acquisitions. Also, operating costs have grown and caused a strain on service levels. The recently approved FY2009 budget is basically flat to FY2008, as county revenues have been adversely affected by the economic slowdown. County revenues are projected to grow only modestly in the next few years, but demand for new capital projects (particularly schools and flood control/drainage efforts) and a continued high level of operations spending for the regional school system are placing upward pressure on the real estate tax rate.

The Virginia State legislature has historically underfunded road development and maintenance resulting in new taxes or tolls that add to the financial strain on the citizens.

J4C Approach:

Unchecked development and population growth is not sustainable. The county possesses a myriad of tools to manage growth. These include: the comprehensive plan, zoning ordinances, subdivision regulations, fiscal impact analyses on rezoning and special use permit requests, voluntary cash proffers, and land preservation programs such as Purchase of Development Rights and Greenspace acquisitions. What is missing is the consideration of the cumulative impact of all past and proposed actions on the four factors identified above: water supply, environmental degradation, traffic congestion and financial strain.

The J4C first step is the development of a database to collect core information on

existing subdivisions and newly approved developments, capturing the following data on each subdivision:

1. Location - within PSA or in Rural Lands
2. Type of development - residential, timeshare, apartment, trailer park, continuing care community
3. Source of water supply - JCSA, Newport News Waterworks, private wells
4. Watershed - Powhatan Creek, Yarmouth Creek, Mill Creek, Gordon Creek, Skiffes Creek, College Creek, Mill Creek, Diascund Creek, Ware Creek, York River, James River, Chickahominy River
5. Traffic Corridor - Centerville Road, Croaker Road, Ironbound Road, Jamestown Road, John Tyler Highway, Longhill Road, Monticello Avenue, News Road, Pocahontas Trail, Richmond Road, Route 199, Route 30, and Route 60
6. Electoral District
7. Acreage
8. Zoning

This database needs to be made available for public scrutiny at the start of the 2008 comprehensive planning process. During the 2008 Comprehensive Plan studies should be conducted of the cumulative impact of the already approved 11,576 new residential units on water, the environment, traffic, and budgets and taxes, as well as the long-range impact of an additional 15,000 residential units which could be built under current zoning.

Database Development: We have completed development of the Cumulative Impact Database as noted above and generated summary and detailed reports highlighting the residential buildout for developments approved but not started as well as existing developments with additional buildout potential.

The database has been created as a comprehensive Excel file, which can be sorted in a variety of ways to provide data for detailed analysis. Several detailed reports are provided in the Appendix, providing subdivision listings of current developments sorted by key criteria:

1. Alphabetic Listing
2. Listing by Election District
3. Listing by Water Source
4. Listing by Watershed
5. Listing by Traffic Corridor

SUMMARY RESULTS:

Residential Units Buildout Analysis October 2007 Report			
	Unimproved Units	Improved Units	Units at Buildout
Total Projects Approved but Not Started	5,442	0	5,442
Total Projects Underway	6,143	25,141	31,284
Grand Total	11,585	25,141	36,726

This schedule summarizes the results from the October report. A total of 11,585 unimproved units were identified - 5,442 for projects approved but not started and 6,143 for projects already underway.

Residential Units Buildout Analysis June 2008 Report			
	Unimproved Units	Improved Units	Units at Buildout
Total Projects Approved but Not Started	7,955	0	7,955
Total Projects Underway	3,621	26,761	30,382
Grand Total	11, 576	26,761	38,337

This schedule summarizes the results from the current data. A total of 11,576 unimproved units are identified, down slightly from the October figure. A portion of the difference in improved units reflects additional completed units, but it also reflects the improved data quality as we've further scrubbed some of the data. The number of unimproved units is basically unchanged, but there are offsetting impacts. Two new subdivisions have been approved: Powhatan Terrace (36 units) and the Village at Ford's Colony (596 independent living units). Offsetting this increase is the completion of units in existing communities and the impact of improved data quality. In addition, we've restructured the categorization for two of the new projects - i.e. New Town and Colonial Heritage - to show earlier phases of these projects as "Projects Underway" and future phases as "Projects Approved But Not Started." We believe this more accurately reflects how the county planning staff categorizes these projects.

Data Sorted by Key Criteria: We have analyzed the data by four key criteria: election district, water source, watershed, and traffic corridor.

ELECTION DISTRICT SORT	Unimproved Units	Improved Units	Units at Buildout
Projects Approved but Not Started			
1. Berkeley District			
Governors Grove	132	0	132
Settlement at Powhatan Creek (phases 2 & 3)	278	0	278
New Town (future phases)	930	0	930
Village at Ford's Colony	596	0	596
Total Berkeley District	1,936	0	1,936
2. Jamestown District			
Powhatan Terrace	36	0	36
Marywood	95	0	95
Total Jamestown District	131	0	131
3. Powhatan District			
Liberty Ridge	139	0	139
Westport	102	0	102
Windmill Meadows	78	0	98
Total Powhatan District	319	0	319
4. Roberts District	0	0	0
5. Stonehouse District			
Villages At Whitehall	415	0	415
Jennings Way	85	0	85
Michelle Point	110	0	110
Stonehouse (future phases)	3,657	0	3,657
Colonial Heritage (future phases)	1,302	0	1,302
Total Stonehouse District	5,569	0	5,569
Total Projects Approved but Not Started	7,955	0	7,955
Projects Underway			
1. Berkeley District	780	6,491	7,271
2. Jamestown District	268	4,406	4,674
3. Powhatan District	903	6,965	7,868
4. Roberts District	354	4,427	4,781
5. Stonehouse District	1,288	4,396	5,684
6. Unspecified	28	76	104
Total Projects Underway	3,621	26,761	30,382
Grand Total	11,576	26,761	38,337

Election District: Future residential development is expected in the western part of the county (Stonehouse and Powhatan districts) and in the central core (Berkeley district). Stonehouse growth is attributable largely to Colonial Heritage, GS Stonehouse and Villages at Whitehall, Powhatan growth to continued buildout of Ford's Colony, and Berkeley to New Town and the Village at Ford's Colony. Other midsize projects also contribute. Little new development is planned in the Jamestown and Roberts districts.

WATER SOURCE SORT	Unimproved Units	Improved Units	Units at Buildout
Projects Approved but Not Started			
1. JCSA			
Colonial Heritage (future phases)	1,302	0	1,302
Governor's Grove	132	0	132
Jennings Way	85	0	85
Marywood	95	0	95
Michelle Point	110	0	110
New Town (future phases)	930	0	930
Powhatan Terrace	36	0	36
Settlement At Powhatan Creek (phases 2 & 3)	278	0	278
Stonehouse (future phases)	3,657	0	3,657
Village at Ford's Colony	596	0	596
Villages At Whitehall	415	0	415
Windmill Meadows	78	0	78
Total JCSA	7,714	0	7,714
2. Private Wells			
Liberty Ridge	139	0	139
Westport	102	0	102
Total Private Wells	241	0	241
Total Project Approved but Not Started	7,955	0	7,955
Projects Underway			
1. JCSA	2,480	20,521	23,001
2. Newport News Waterworks	307	3,746	4,053
3. JCSA/Newport News Waterworks	16	365	381
4. Private	744	1,920	2,664
5. Private/JCSA	5	35	40
6. Unspecified	69	174	243
Total Projects Underway	3,621	26,761	30,382
Grand Total	11,576	26,761	38,337

Water Source: Approximately 88% of future residential development will be accommodated by water supplied by the James City Service Authority (JCSA). 97% of "Projects Approved But Not Started" are in the JCSA area of operations. This highlights the importance of the water supply contract with Newport News, with all the uncertainty this entails. Less than 9% of the new developments will be supplied by private wells, mostly in the Stonehouse district.

WATERSHED SORT	Unimproved Units	Improved Units	Units at Buildout
Projects Approved but Not Started			
1. Gordon Creek			
Liberty Ridge	139	0	139
Westport	102	0	102
Total Gordon Creek	241	0	241
2. Mill Creek			
Marywood	95	0	95
Total Mill Creek	95	0	95
3. Powhatan Creek			
Governors Grove	132	0	132
Powhatan Terrace	36	0	36
Settlement at Powhatan Creek (phases 1 &2)	278	0	278
New Town (future phase)	930	0	930
Village at Ford's Colony	596	0	596
Total Powhatan Creek	1,972	0	1,972
4. Ware Creek			
Michelle Point	110	0	110
Stonehouse (future phases)	3,657	0	3,657
Villages at Whitehall	415	0	415
Total Ware Creek	4,182	0	4,182
5. Yarmouth Creek			
Jennings Way	85	0	85
Windmill Meadows	78	0	78
Colonial Heritage (future phases)	1,302	0	1,302
Total Yarmouth Creek	1,465	0	1,465
Total Projects Approved but Not Started	7,955	0	7,955
Projects Underway			
1. Chickahominy River	75	353	428
2. College Creek	263	3,460	3,723
3. Diascund Creek	248	377	625
4. Gordon Creek	4	117	121
5. James River	326	1,955	2,281
6. Mill Creek	188	3,283	3,471
7. Powhatan Creek	1,432	11,931	13,363
8. Skiffes Creek	90	1,324	1,414
9. Ware Creek	387	1,524	1,911
10. Yarmouth Creek	486	1,672	2,158
11. York River	88	445	533
12. Unspecified	34	320	354
Total Projects Underway	3,621	26,761	30,382
Grand Total	11,576	26,761	38,337

Watershed: The County's current population is overwhelmingly concentrated in three watersheds: Powhatan Creek, College Creek, and Mill Creek. All are severely impacted. With additional development planned in the Powhatan Creek watershed, this watershed will be further strained; development of New Town and the Village at Ford's Colony are the largest contributors, along with the further buildout of Ford's Colony and new projects at Five Forks. What is changing, though, is the future development in the Ware Creek and Yarmouth Creek watersheds. Ware Creek watershed is principally affected by the GS Stonehouse and Villages at Whitehall projects, Yarmouth Creek watershed by the Colonial Heritage community.

TRAFFIC CORRIDOR SORT	Unimproved Units	Improved Units	Units at Buildout
Projects Approved but Not Started			
1. Centerville Road			
Liberty Ridge	139	0	139
Westport	102	0	102
Windmill Meadows	78	0	78
Total Centerville Road	319	0	319
2. Jamestown Road			
Marywood	95	0	95
Powhatan Terrace	36	0	36
Total Jamestown Road	131	0	131
3. John Tyler Highway			
Governors Grove	132	0	132
Total John Tyler Highway	132	0	132
4. Monticello Avenue			
New Town (future phases)	930	0	930
Settlement at Powhatan Creek (phases 2 & 3)	278	0	278
Total Monticello Avenue	1,208	0	1,208
5. News Road			
Village at Ford's Colony	596	0	596
Total News Road	596	0	596
6. Richmond Road			
Colonial Heritage (future phases)	1,302	0	1,302
Jennings Way	85	0	85
Michelle Point	110	0	110
Total Richmond Road	1,497	0	1,497
7. Route 30			
Stonehouse	3,657	0	3,657
Village at Whitehall	415	0	415
Total Route 30	4,072	0	4,072
Total Projects Approved but Not Started	7,955	0	7,955
Projects Underway			
1. Centerville Road	141	1,205	1,346
2. Croaker Road	105	790	895
3. Ironbound Road	147	1,275	1,422
4. Jamestown Road	156	1,772	1,928
5. John Tyler Highway	254	3,286	3,540
6. Longhill Road	807	5,440	6,247
7. Monticello Avenue	290	1,299	1,589
8. News Road	77	1,285	1,362
9. Pocahontas Trail	122	1,866	1,988
10. Richmond Road	726	3,121	3,847
11. Route 199	259	3,356	3,615
12. Route 30	368	1,204	1,572
13. Route 60	103	484	587
14. Unspecified	66	378	444
Total Projects Underway	3,621	26,761	30,382
Grand Total	11,576	26,761	38,337

Traffic Corridor: Future residential development is planned along Route 30 (GS Stonehouse, Villages at Whitehall), Monticello Avenue (New Town, Settlement at Powhatan Creek), Richmond Road (Colonial Heritage, several smaller projects in Lightfoot and Norge), and Longhill Road (buildout of Ford's Colony). In addition, projects planned at Five Forks (Governor's Grove, Villas at Five Forks) will affect the traffic at both Ironbound and John Tyler Highway. A future problem is brewing along News Road, an admittedly substandard road by VDOT guidelines, with the approval of The Village at Ford's Colony and by-right developments west to Centerville Road.

Next Steps: We strongly urge that the Planning Commission direct the County Staff to validate the data herein and to develop quantitative data to assess the four essential factors identified below.

1. Adequacy of water supply
2. Potential for environmental degradation
3. Likelihood of traffic congestion
4. Financial strain

This will serve as the point of departure for evaluating the cumulative impact on any new proposed projects.

Conclusion: J4C is pleased to submit this study report to the Board of Supervisors and Planning Commission for their review and use in decision-making on issues before them and the citizens of the County. These decisions should be based on what can best be understood through knowledge of the cumulative impact of factors on the quality of life in James City County

No rezoning or special use permit requests (SUPs) should be considered until the cumulative impact of such development projects has been established and the public benefit is identified.

**James City County Citizens' Coalition
July 2008**