A G E N D A

JAMES CITY COUNTY BOARD OF SUPERVISORS

AND

JAMES CITY SERVICE AUTHORITY BOARD OF DIRECTORS

JOINT WORK SESSION

County Government Center Board Room, Building F

December 16, 2003

4:00 P.M.

A. CALL TO ORDER

B. ROLL CALL

C. BOARD DISCUSSIONS

1. Water and Sewer Rate Study
2. Independent Water System Rates
3. Six-Year Secondary Road Plan

D. ADJOURNMENT

121603bs&bdws.age

WORK SESSION

M E M O R A N D U M

DATE: December 16, 2003

TO: The Board of Directors

FROM: Robert H. Smith, Assistant Manager, James City Service Authority

SUBJECT: Water and Sewer Rate Study

The last James City Service Authority (JCSA) water and sewer rate study was conducted in December 1989 by Coopers & Lybrand. Since that time the annual rate reviews have been conducted by in-house staff, which evolved to a formal in-house annual rate study beginning in 1998. In view of the time lapse since the last external review, staff determined that it was time for a "fresh look" by an outside firm to determine if the JCSA was on track with current rate structures and future rate projections.

The firm of Municipal & Financial Services Group (MFSG) located in Annapolis, MD, was selected from seven proposals to conduct the Water & Sewer Utilities Cost of Service/Rate Study. Working with the JCSA staff, MFSG has prepared a draft report which they will present at the December 16, 2003, work session. An Executive Summary with recommendations are contained on pages 1 through 4 of the attached report.

In summary, the Study verified that:

- Current user rates for water and sewer do not produce sufficient revenue to cover revenue requirements for FY 2005 and beyond.

- System facility (connection) charges for water and sewer are currently established at an appropriate level based upon the average cost of capacity within the water and sewer systems.

After discussing the Rate Study with representatives of MFSG and staff, it is recommended that the Board approve the proposed rates for planning purposes. If this recommendation is accepted, staff will use the proposed rates in the development of the FY 05 and FY 06 Budget and Public Hearing Notices that will be advertised at the appropriate time intervals as required by Section 15.2-5136 of the Code of Virginia.

_____

Robert H. Smith

CONCUR:

_____

Larry M. Foster

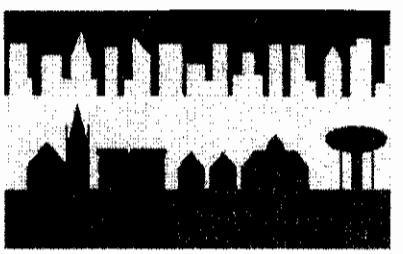
RHS/gs
wtrsewrate.mem

Attachments

Draft Report for Discussion Purposes Only

James City Service Authority
Water and Sewer Utilities
Cost of Service / Rate Study

December 2, 2003



MUNICIPAL & FINANCIAL
SERVICES GROUP

Table of Contents

APPENDIX

Water and Sewer Cost of Service Model consisting of the following schedules:

Schedule 1 – Base Assumptions
Schedule 2 – Operating and Maintenance Expenses
Schedule 3 – Existing Debt Service Schedule
Schedule 4 – Operating and Maintenance Reserves
Schedule 5 – Capital Improvement Projects
Schedule 6 – Projected Debt Service
Schedule 7 – Projected Debt Service Schedule
Schedule 8 – Consumption and Customer Data
Schedule 9 – Water and Sewer Consumption and Customer Projections
Schedule 10 – Repair, Renewal and Replacement "3R" Reserves
Schedule 11 – Cash Reserves
Schedule 12 – Miscellaneous Revenues
Schedule 13 – Net Revenue Requirement from User Rates
Schedule 14 – Rate Analysis
Schedule 15 – Rate Projections
Schedule 16 – Cash Flow Projections
Schedule 17 – Cash Flow Projections with Current Rates
Schedule 18A – Rate Alternative A Bill Example
Schedule 18B – Rate Alternative B Bill Example
Schedule 19 – Sample Commercial Bills
Schedule 20 – Facility Charges
Schedule 21 – Facility Charges Revenues

A. EXECUTIVE SUMMARY

1. Scope of Work and Assumptions

The Scope of Services set forth in the contract between James City Service Authority (JCSA) and the Municipal & Financial Services Group specifies three broad tasks: (1) determine the cost of service for water and for sewer; (2) identify revenue requirements; (3) subsequently design a rate structure for water and sewer that is consistent with JCSA's goals and objectives. These three broad tasks were supported by developing an Excel based financial model. The following sections of the Executive Summary highlight the key items addressed in developing the financial model.

2. Customer Counts and Consumption Data

JCSA's water and sewer system customer base is composed of approximately 16,000 water customers and 17,000 sewer customers. In order to evaluate the number of customers in future years, the number of customers was increased by an annual growth rate which is varied year to year as shown in Schedule 1 of the model. JCSA anticipates billing customers for approximately 1.5 billion gallons of water and 1.6 billion gallons of sewage during Fiscal Year 2005 (Schedule 9).

3. Operating and Maintenance Costs

The budget estimates for Fiscal Years 2004 to 2008 were used as the basis for estimating future operating and maintenance expenses. The O&M expenses for years after 2008 (with the exclusion of personnel expenses [which were inflated by four percent per year]) were inflated by three percent per year to estimate the costs used to establish user fees. The cash basis Fiscal Year 2005 O&M budget for the water system totals $4.1 million. The cash basis O&M budget for the sewer system totals $4.1 million.

4. Capital Costs

The annualized capital costs related to providing water and sewer service were derived by analyzing the capital costs of projects detailed in the capital improvement plans of the JCSA, and then identifying which of those projects will be funded via the issuance of debt (typically bonds or similar financial instruments) and those which will be funded from cash on hand or cash derived from operations. The water system has planned capital projects equal to approximately $17.3 million for the five fiscal years spanning from 2004 to 2008. The sewer system has planned total capital costs of approximately $6.9 million for the five fiscal years spanning from 2004 to 2008. Capital projects have not been identified beyond FY08 for water and sewer. In order to forecast capital costs beyond these years, an annual capital expenditure of $4.0 million and $0.6 million for water and sewer respectively was included in the analysis. Routine O&M capital outlays not located in the capital improvement program for Fiscal Year 2005 are approximately $0.31 million for the water system and $0.09 million for the sewer system.

5. Existing Debt and Anticipated Debt Service

JCSA has outstanding annual debt service expenses of approximately $1.4 million for water, as of the beginning of FY 2005 (Schedule 3). There are currently no debt service expenses for wastewater. JCSA does not plan to issue debt to pay for future capital improvement projects. However, the cost of service model has been developed to accommodate debt inputs and create a debt service schedule for wastewater if so desired.

6. Reserves

An operating reserve is important to furnish funds for unplanned minor repairs or other significant cash outlays. This type of reserve is also valuable during unusually wet years, which could result in reduced revenues due to lesser than anticipated consumption levels. Operating reserves are typically set as a percentage of a system's O&M budget. At this time we recommend the reserves be initially established at a level of 2% of operating costs. For the Fiscal Year 2005, operating reserves for both water and sewer combined were set at $252,000 (Schedule 4).

Many municipal utilities establish Repair, Replacement and Rehabilitation ("3R") reserves to provide funds to pay for unexpected major repairs and planned replacement or rehabilitation of equipment or other major fixed assets. Typically, the annual "3R" reserve contribution is calculated as a percentage of the systems' book value. The initial percentage was set at .05% for FY 2004 and FY 2005. The 3R percentage rate varies for future years. This percentage can be adjusted based on the level of reserves, planned expenditures, and the related impact on user fees. For Fiscal Year 2005 the "3R" reserve for water and sewer combined, using a rate of .05%, was set at approximately $750,000.

7. Revenue Requirements from User Rates

The gross revenue requirement is determined by summing the operating and maintenance expenses, operating reserves, "3R" reserves, existing debt, and anticipated debt. The gross revenue requirement for Fiscal Year 2005 is approximately $6.2 million and $4.7 million for water and sewer, respectively (Schedule 13). Miscellaneous income received by JCSA for items related to the water and sewer systems from sources other than user fees should be offset against the revenue requirement for user related rates.

For the water system, the estimated gross revenue requirement of approximately $6.2 million for Fiscal Year 2005 less miscellaneous revenues of approximately $0.87 million equals a net revenue requirement of $5.36 million to be recovered from user fees. For the sewer system the estimated gross revenue requirement of approximately $4.7 million for Fiscal Year 2005 less miscellaneous revenues of approximately $0.4 million equals a net revenue requirement of $4.3 million to be recovered from user fees.

8. Rate Alternatives

The current rate design methodology and allocation of costs among customers was evaluated to determine if they reasonably reflect how costs are currently incurred within JCSA and to determine

if the current rates adequately cover the total estimated costs of providing water and sewer service. Alternative rate designs were also developed and evaluated to determine a suitable rate design for JCSA. Having evaluated the current rate design, several alternative rates designs were developed. The rate alternatives were developed under the presumption of attempting to treat all customers similarly. Two alternative rate designs, which both produce the same amount revenues for Fiscal Year 2005 were considered:

- Current Rate Structure – based entirely on consumption
- Fixed Fee Plus Consumption Charge – recovers some administrative costs via a fixed charge per billing period, plus a consumption charge

Alternative 1 - Current Rate Structure

The first alternative considered was simply to utilize the current rate structure and increase the individual rates within this structure in order to meet the Fiscal Year 2005 revenue requirement for water and sewer.

Alternative 2 - Fixed Fee (Administrative Charge) plus Consumption Charge

The second alternative considered was to add a fixed charge (an administrative fee) to the current rate structure. The added fixed charge would be applied on a per bill basis to each customer bill and would be collected regardless of usage. After applying the fixed charge the current rate structure would be applied to the various customer classes.

9. Facility Charges

Facility Charges are intended to recover the capital cost of capacity to serve a new customer. This includes treatment as well as pumping, distribution and collection for systems that are off-site.

In order to analyze the system facility charge for JCSA the historical cost of the system and the known costs of JCSA's CIP were identified. The original cost of the water and sewer system property, plant and equipment is $59.6 million and $77.3 million respectively (rounded from 6/30/02 audited financial statements). As previously mentioned, JCSA has planned capital improvement projects for the water system totaling approximately $17.3 million for Fiscal Year FY04 to FY08. The sewer system has planned improvements of approximately $7.9 million over the same period.

To calculate the average cost of capacity (and ultimately the system facility charge) it is necessary to determine the current capacity within the water and sewer systems. The water system is currently limited by groundwater permits for the central system of approximately 7.9 mgd. In order to deliver capacity beyond this level significant capital investment would be required. Based on the industry average household or equivalent dwelling unit (EDU) allowance of 250 gallons per day (gpd), the water system can currently provide service to approximately 31,600 EDU's. The factor limiting capacity within the sewer system is the sewage pump stations. It is estimated that the sewer system could handle approximately 11.0 mgd without significant capital investment in the system. The

current sewer system capacity could service approximately 44,000 EDU's assuming an average usage of 250 gallon per day per EDU which accounts for sewer system inflow and infiltration.

The calculation of the system facility charge using the average cost method is simply the cost of the system divided by the number of EDU's potentially served by the system. Thus for the water system the cost of the system is approximately $78.8 million and serves approximately 31,600 EDU's resulting in an average cost per EDU of roughly $2,500. For the sewer system the cost of the system is approximately $86 million and service 44,000 EDU's resulting in an average cost per EDU of roughly $2,000. Converting the average cost per household to a per fixture charge results in an approximately charge per bathroom fixture of $300 for water and $235 for sewer.

10. Conclusions, Recommendations, and Comparisons

The conclusions and recommendations developed during the course of this rate study are presented below.

1. Conclusions

- Current user rates for water and sewer do not produce sufficient revenue to cover revenue requirements for Fiscal Year 2005. In addition based upon our analysis subsequent rate increases for both water and sewer will be required each of the next four years following Fiscal Year 2005.

- The current system facility charges for water and sewer are currently established at an appropriate level based upon the average cost of capacity within the water and sewer systems.

- The current rate structure for water and sewer rates appears to be equitable, encourages water conservation and appropriately charges customers based on usage characteristics.

2. Recommendations

Based on the results of our study, we recommend that the following rates be adopted and implemented, effective in FY 2005, suggested rate increases for subsequent years are shown in the chart located at the end of the main body of the Report:

Water and Sewer User Rates

Residential Water Rates – Inverted ("Conservation") Block Rate Structure

Block	Quarterly Consumption	Proposed Consumption Charge Per 1,000 gallons	Current Consumption Charge Per 1,000 gallons
1st	< 15,000 gallons	$2.40	$2.30
2nd	> 15,000 but < 30,000 gallons	$2.70	$2.60
3rd	> 30,000 gallons	$7.55	$7.45

Commercial Water Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000 gallons	$2.70	$2.60

Sewer Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000 gallons	$2.70	$2.50

The impact of the proposed rates upon residential and commercial water and/or sewer bills is demonstrated in tables which are attached in the Appendix as Schedule 18A, 19.

System Facility Charges

At this time we recommend that the system facility charges be maintained at the current level and that no changes be made to the structure of the charges.

3. Comparisons

In order to compare the proposed JCSA water and sewer rates for Fiscal Year 2005 with the cost of water and sewer service from other local utilities, two bill comparison charts were developed. A comparison of the recommended JCSA water and sewer rates for FY05 to other localities in the same general geographical area is shown at the end of the main body of the report. Where applicable, localities with fixed charges are included in cost of service.

B. BASIS FOR THE STUDY

1. Scope of Work

The Scope of Services set forth in the contract between James City Service Authority and the Municipal and Financial Services Group specifies several related tasks:

1. Determine the cost of service, identify revenue requirements and subsequently design a rate structure for water and sewer that is consistent with JCSA's goals and objectives.

2. Develop an Excel model, by which JCSA can project cash flows and future water/sewer rates over a 10 year period using varying revenue, expense, capital project cost assumptions and customer growth rates.

3. Identify and document policy issues affecting the establishment of rates and fees for water and sewer service.

4. Consider several cost recovery methods (rate alternatives) for JCSA.

2. Assumptions Used in the Study

In order to project future revenue requirements and offsetting revenues from water and sewer rates several assumptions were made regarding future economic conditions and growth within JCSA. Assumptions were made regarding the following items:

Element	Annual Percentage
Inflation (default rate, unless specified otherwise)	3%
Customer Growth Rate	*
Interest Rate on Debt	5%
Estimated Household Consumption Allowance	250 gallons per day per EDU
O&M Reserve	2% - of O&M budget
Repair, Renewal & Replacement "3R" Reserve	* - of total asset value

** These percentages are expected to change annually and are presented on Schedule 1 in the Appendix to this report.*

These assumptions were used after discussions with JCSA, utilizing our experience and JCSA's knowledge of the customer base and historical costs. A sensitivity analysis was conducted to determine the impacts of varying each assumption. The most significant drivers are the percentages used for inflation and the customer growth rate.

The study was conducted using Fiscal Year 2004 as the base year upon which forecasted figures were developed. The cost of service analysis was specifically focused upon what water and sewer rates need to be in Fiscal Year 2005, although the cost of service analysis was developed for the entire planning period (FY05 to FY14).

C. USAGE, DEMAND, AND SYSTEM CHARACTERISTICS

1. System Characteristics

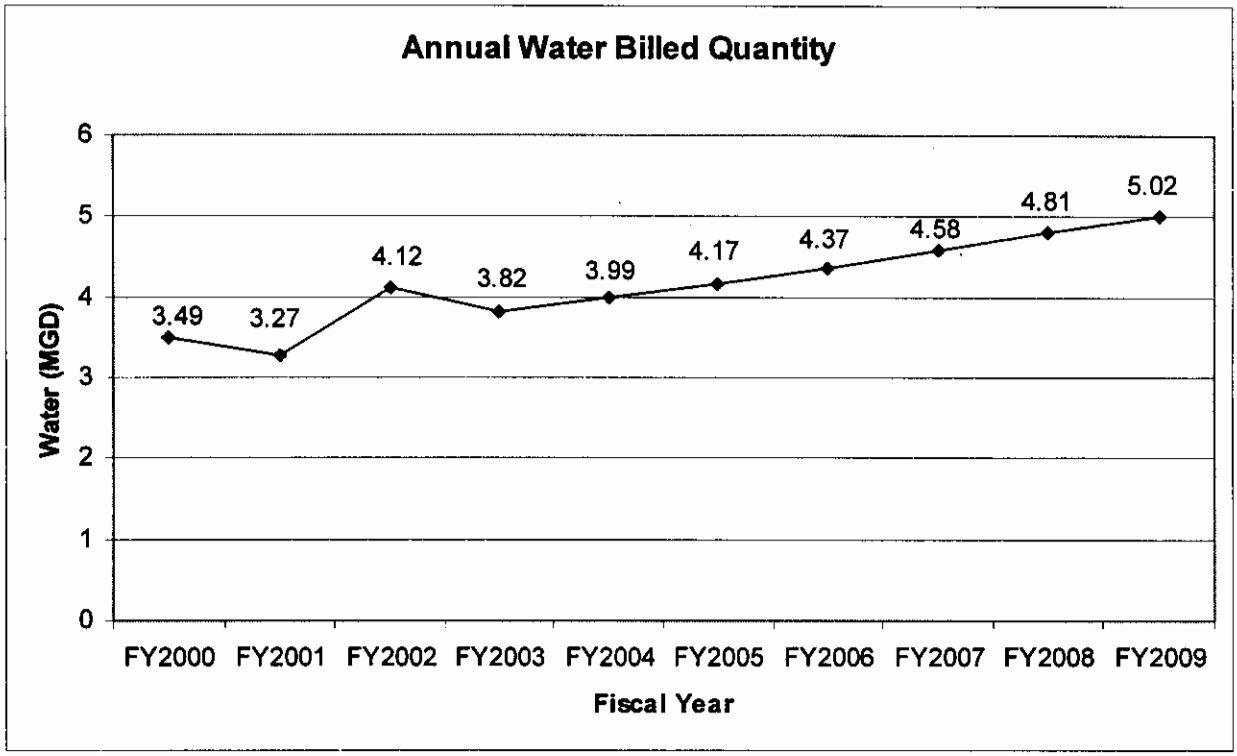
The JCSA water system consists of a central water system and 7 independent water systems. The central system contains 23 well facilities. The complete system includes approximately 282 miles of water transmission and distribution lines. The water currently delivers approximately 4.0 million gallons per day (gpd) to JCSA customers. JCSA's sewer system consists of 76 sewage lift stations with approximately 337 miles of sewer collection lines. The sewer system currently collects and transfers approximately 4.3 mgd of sewage. JCSA has no sewage treatment capabilities, sewage treatment is provided by the Hampton Roads Sanitation District.

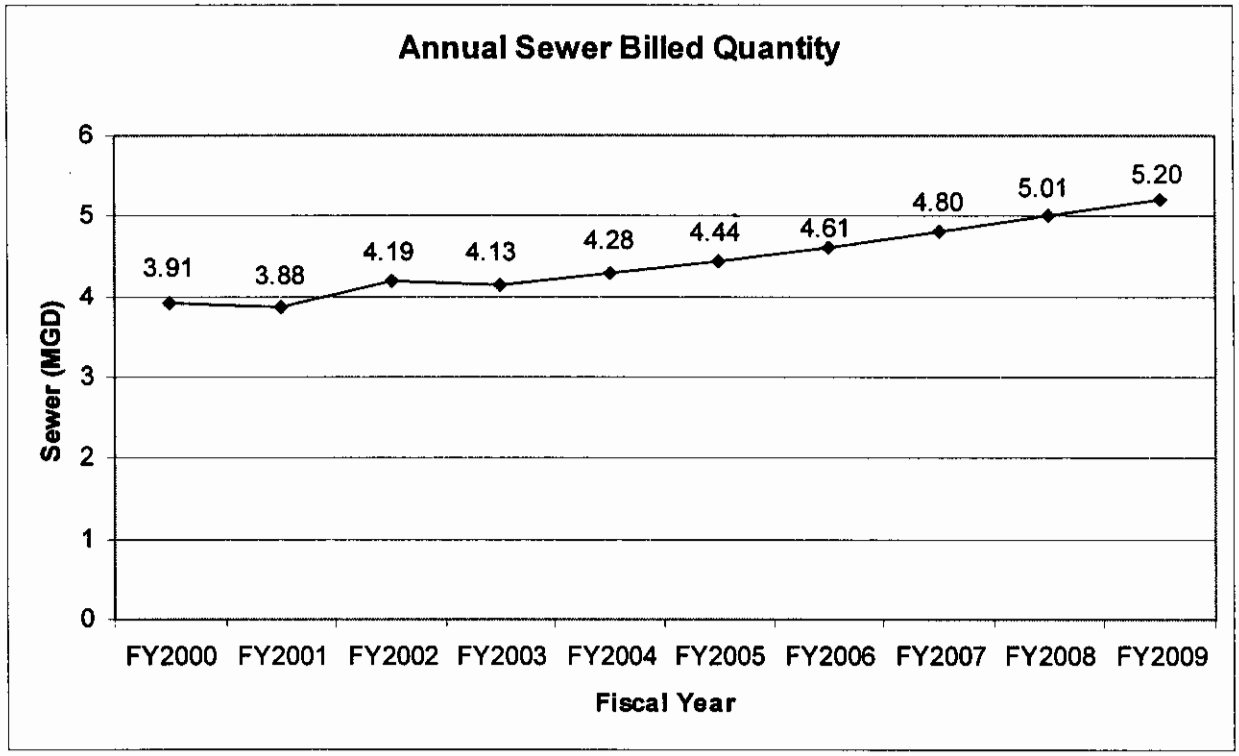
2. Customer Counts

JCSA's water system's anticipated customer base for Fiscal Year 2005 is composed of the following: approximately 15,000 residential water customers, 880 non-residential water customers, 16,000 residential sewer customers and 1,000 non-residential sewer customers. There are approximately 3,350 residential customers and 55 non-residential customers who take part in the sub-metering program offered by JCSA. For purposes of this study, accounting for customer additions to the water and sewer systems, the number of customers was increased by an annual growth rate which varies year to year according to the growth rates shown on Schedule 1 in the Appendix to this report.

3. Consumption Data

JCSA anticipates billing customers for approximately 1.5 billion gallons or 4.2 million gallons per day (MDG) of water during Fiscal Year 2005. JCSA anticipates billing customers for approximately 1.6 billion gallons or 4.4 MGD of sewage during Fiscal Year 2005. The following two charts show the projected quantities of water and sewer for the next 6 years as well as historical usage over the past 4 years. The reduction in water consumption from Fiscal Year 2002 to 2003 is attributed to the wet year experienced in FY03.


Annual Water Billed Quantity
Water (MGD)
0
1
2
3
4
5
6
3.49
3.27
4.12
3.82
3.99
4.17
4.37
4.58
4.81
5.02
FY2000 FY2001 FY2002 FY2003 FY2004 FY2005 FY2006 FY2007 FY2008 FY2009
Fiscal Year


Annual Sewer Billed Quantity
Sewer (MGD)
0
1
2
3
4
5
6
3.91
3.88
4.19
4.13
4.28
4.44
4.61
4.80
5.01
5.20
FY2000 FY2001 FY2002 FY2003 FY2004 FY2005 FY2006 FY2007 FY2008 FY2009
Fiscal Year

D. OPERATING AND MAINTENANCE COSTS

The cost analysis for JCSA's service area is presented on a cash basis. The operating and maintenance (O&M) costs of JCSA's water and sewer systems are broken into four categories: administrative water expenses, water fund expenses, administrative sewer expenses, and sewer fund expenses. Each of these categories contains subcategories comprised of personnel expenses (employee salaries and benefits) and operating expenses (maintenance, services, supplies, etc.). The projected budget estimate for Fiscal Years 2004 to 2008 were used as the basis for estimating future operating and maintenance expenses over this period and beyond. The O&M expenses for years after 2008 (with the exclusion of personnel expenses which were inflated by four percent per year) were inflated by three percent per year to estimate the costs used to establish user fees.

The cash basis Fiscal Year 2005 O&M budget for the water system totals $4.1 million. The amount allocated for personnel expenses (i.e. salaries, benefits) is approximately $2 million. Approximately $2.1 million is attributed to operating expenses.

The cash basis O&M budget for the sewer system totals $4.1 million. The amount allocated for personnel expenses is approximately $2.3 million. Approximately $1.7 million is attributed to operating expenses.

The water and sewer operating expenses, with the exception of personnel expenses, were assumed to increase by an inflation rate of three percent annually for future Fiscal Years 2009 through 2014. Operating and maintenance costs for the sewer system are presented in Schedule 2 in the Appendix to the report.

E. CAPITAL COSTS

The annualized capital costs related to providing water and sewer service are generally derived by analyzing the capital costs of projects detailed in JCSA's capital improvement plans, and then identifying which of those projects will be funded via the issuance of debt (typically bonds or similar financial instruments) and those which will be funded from cash on hand or cash derived from operations. The fact that a project is considered to be capital in nature does not automatically mean that it will be funded by debt; to the extent that projects are small in size, or that there is cash on hand from prior years, may obviate the need to issue debt, thus avoiding interest expense. The following sections of the report present discussions regarding current/existing debt, the capital improvements program, and proposed debt resulting from the need for new capital improvement projects.

1. Planned Capital Improvements

The water system has planned capital projects for JCSA equal to approximately $17.3 million for the period from FY04 to FY08. Capital projects have not been identified beyond this period at this time. However, to forecast capital costs beyond these years an annual amount of $4 million was included in the analysis for the fiscal years beyond FY08. One of the large capital projects budgeted for the water system includes a remaining balance of $2.4 million for a water supply project involving the building of a desalination plant scheduled for Fiscal Year 2004. The planned advance funding ("escrow") for future water supply requires significant cash, with requirements of $1.2 million in FY2006, $1.8 million in FY2007, and $3.2 million in FY2008. In addition the projections identified in the CIP routine O&M capital outlays are included in the operating budget for JCSA. Routine O&M capital outlays for the water system for Fiscal Year 2005 amounts to approximately $0.31 million increase to roughly $0.4 million by the end of the planning period. These routine O&M capital expenses are not located in the capital improvement program.

The sewer system has planned total capital costs of approximately $6.9 million for the period from FY04 to FY08. Capital projects have not been identified beyond this period at this time, so similar to the water capital costs, an annual amount of $0.6 million was included in the analysis for the fiscal years beyond FY08. Major capital projects planned for the sewer system include $0.8 million for rehabilitation of a dry/wet well lift stations in FY04. Routine O&M capital outlays not included in the capital improvement program equal roughly $0.09 million in Fiscal Year 2005 and increasing to $0.17 by the end of the planning period.

2. Existing Debt

JCSA currently has projected annual debt service expenses of approximately $1.4 million for water as of the beginning of FY 2005. Debt service is an expenditure item in the O&M budget which is funded with revenues from user rates. There is currently no debt service for sewer. A summary schedule of the existing debt service is presented in Schedule 3 in the Appendix to this report.

3. Anticipated Debt Service

JCSA does not plan to issue debt to pay for future capital improvement projects. Future capital improvement projects will be funded with revenues from facility charges. Routine O&M capital outlays that have been identified as an expense in the operating budget will be funded with revenues from user rates. The rate model has been designed to accommodate debt inputs and create a debt service schedule should JCSA decide to debt fund future capital projects.

F. RESERVES

Good management practices dictate that cash reserves be accumulated to provide for contingencies and unplanned major expenses. We recommend the establishment of two types of reserves for JCSA's water and sewer system: an Operating Reserve and a Repair, Renewal, and Rehabilitation ("3R") Reserve. Each is discussed below.

1. Operating Reserves

An operating reserve is important to furnish funds for unplanned minor repairs or other significant cash outlays. This type of reserve is also valuable during unusually wet years, which could result in reduced revenues due to lesser than anticipated consumption levels. As these reserves are accumulated, they can be used in future years to offset, decrease, or defer rate increases.

Operating reserves are typically set as a percentage of a system's O&M budget. At this time we recommend the reserves be initially established at a level of 2% of operating costs. The establishment of operating reserves at this level will not have a significant impact (i.e., increase) on rates at this time. The reserve levels can be adjusted in future years as the reserves are accumulated and/or drawn down. For the Fiscal Year 2005, operating reserves for both water and sewer combined were set at $252,000. The computation of Operating Reserves has been set forth as Schedule 4 in the Appendix.

2. Repair, Replacement, and Rehabilitation ("3R") Reserve

Many municipal utilities establish Repair, Replacement and Rehabilitation ("3R") reserves to provide funds to pay for unexpected major repairs and planned replacement or rehabilitation of equipment or other major fixed assets. These reserves can be used to pay for capital costs in order to avoid or minimize the amount that would otherwise be recovered through user fees (and possibly result in a significant rate increase). Typically, the annual "3R" reserve contribution is calculated as a percentage of the systems' book value. The percentage used is determined after considering factors such as the size and age of a system, whether or not any reserves are currently set aside, and the potential impact on rates.

Since JCSA does not currently have a "3R" Reserve (or something similar) in place for its water and sewer systems, a major consideration in determining the percentage recommended to establish each reserve was to minimize the short-term impact on user fees. The initial percentage was set at .5% (i.e, one-half percent). The 3R percentage was set to increase gradually over the planning period. Based upon accumulation or utilization of the 3R reserve the percentage can be adjusted based on the level of reserves, planned expenditures, and the related impact on user fees. For Fiscal Year 2005 the "3R" reserve for water and sewer combined was set at $750,000. The computation of "3R" reserves is attached as Schedule 10 in the Appendix to the report.

G. REVENUE REQUIREMENTS FROM USER RATES

1. Gross Revenue Requirements

The gross revenue requirements that is, the total cash needed for the water and sewer system can be classified into three major categories: operating and maintenance costs, capital costs (routine items and existing and planned debt service), and reserves. The total of these costs, less the amount of miscellaneous income, is the amount that needs to be recovered from user fees.

The operating and maintenance requirements include personal expenses and operating expenses associated with providing water and sewer service. The budgeted operating and maintenance expenses for Fiscal Year 2005 are approximately $4.1 million for water and $4.1 million for sewer.

The capital costs associated with providing water and sewer service include routine O&M capital outlays and existing debt payments. The budgeted capital outlays for Fiscal Year 2005 are approximately $0.31 million for water and $0.09 million for sewer. The existing debt payment for Fiscal Year 2005 is approximately $1.4 million for the water system.

The operating reserve contribution for the water and sewer system was calculated as 2% of the O&M budget. The Repair, Replacement and Rehabilitation ("3R") reserve contribution was based on 0.5% of the capital cost of the water and sewer system.

The gross revenue requirement is determined by summing the operating expenses and maintenance expenses, operating reserves, "3R" reserves, existing debt and anticipated debt. The gross revenue requirement for Fiscal Year 2005 is $6.2 million for water and $4.7 million for sewer.

The total revenue and net revenue requirement calculations are presented as Schedule 13 in the Appendix to this report.

2. Miscellaneous Revenues

Miscellaneous income received by JCSA for items related to the water and sewer systems from sources other than user fees should be offset against the revenue requirement for user related rates.

For the water system, miscellaneous revenues in the Fiscal Year 2005 budget total $867,000. The primary sources of miscellaneous revenue are inspection fees and interest income. These two sources of revenue account for approximately $426,000 of the total miscellaneous revenues. The level of miscellaneous revenues was projected to increase by the annual increase in customers based upon the customer growth rates shown on Schedule 1 in the Appendix to this report.

For the sewer system, miscellaneous revenues in the Fiscal Year 2005 budget total $400,000. A major source of this revenue is interest income. The computation of miscellaneous revenues for water and sewer is attached as Schedule 12 in the Appendix to the report.

One factor that has impacted the amount of miscellaneous revenues from both the water and sewer system over the past few years has been the reduction in interest income. This reduction in interest

income directly impacts revenue requirements and ultimately user rates. A chart showing the annual interest income over the past few years and projected over the next 5 is shown below.

Water and Sewer Interest Income

Fiscal Year	Water	Sewer	Total
2000	$ 605,000	$ 212,000	$ 817,000
2001	$ 896,000	$ 208,000	$ 1,104,000
2002	$ 517,000	$ 176,000	$ 693,000
2003	$ 232,000	$ 59,000	$ 291,000
2004	$ 225,000	$ 75,000	$ 300,000
2005	$ 305,000	$ 137,000	$ 442,000
2006	$ 319,000	$ 143,000	$ 462,000
2007	$ 586,000	$ 260,000	$ 846,000
2008	$ 616,000	$ 271,000	$ 887,000
2009	$ 643,000	$ 282,000	$ 925,000

3. Net Revenues Required From User Rates

For the water system, the estimated gross revenue requirement of approximately $6.2 million for Fiscal Year 2005 less miscellaneous revenues of $867,000 equals a net revenue requirement of approximately $5.36 million to be recovered from user fees.

For the sewer system the estimated gross revenue requirement of approximately $4.7 million for Fiscal Year 2005 less miscellaneous revenues of $400,000 equals a net revenue requirement of $4.3 million to be recovered from user fees. The gross revenue and net revenue requirement calculations for the water and sewer systems are presented as Schedule 13 in the Appendix to this report.

H. RATE ALTERNATIVES

The current rate design methodology and cost allocations were evaluated to determine if they reasonably reflect how costs are currently incurred within JCSA and to determine if the current rates adequately cover the total estimated costs of providing water and sewer service. Alternative rate designs were also developed and evaluated to determine a suitable rate design for JCSA.

1. Current Rate Design

JCSA's current residential water rate design uses an inverted block rate structure. The structure is made up of three consumption levels with an increasing consumption charge throughout the three levels. There is a different consumption charge for water consumed from 0 - 15,000 gallons, 15,001 - 30,000 gallons, and 30,001 gallons and over, on a per 1,000 gallon basis. JCSA's current commercial water rate and sewer rate design consists solely of one consumption charge regardless of how much is consumed. The majority of JCSA's customers are billed on a quarterly basis. The current JCSA residential and commercial water as well as sewer consumption charges are listed below.

Current Customer Rates and Charges

Residential Water Rates - Inverted ("Conservation") Block Rate Structure

Block	Quarterly Consumption	Consumption Charge Per 1,000 gallons
1st	< 15,000 gallons	$2.30
2nd	> 15,000 but < 30,000 gallons	$2.60
3rd	> 30,000 gallons	$7.45

Commercial Water Rates - Uniform

Volume	Charge
All Usage per 1,000 gallons	$2.60

Sewer Rates - Uniform

Volume	Charge
All Usage per 1,000 gallons	$2.50

The following section of the Report presents the suggested changes to the current methodology, as well as individual rates and charges.

2. Rate Alternatives

Having evaluated the current rate design, the rate model was used to develop several rate alternatives. The rate alternatives were developed under the presumption of treating all customers similarly. The various rate designs considered were developed as alternatives using methodologies, which allocate costs fairly among various user classifications while meeting JCSA's goals and objectives.

Two alternative rate designs, which would each produce the same amount of revenues for Fiscal Year 2005, were considered:

- Current Rate Structure
- Add Fixed Fee (Administrative Charge) to Current Rate Structure

Each option was evaluated considering its fit with the system's consumption pattern, its ability to raise the revenue required without impacting the existing rates too adversely, exposure to risk, incentives for water conservation, ease of billing and comprehension, and fairness in allocating costs to different usage levels. A summary of the base line data used for the alternatives is presented below.

Base Line Water System Data - FY2005	
Net Revenue Requirement from rates	$5,390,462
Estimated Water Customers	15,861
Estimated Total Billed Consumption (1,000 gallons)	1,521,790

Base Line Sewer System Data - FY2005	
Net Revenue Requirement from rates	$4,334,082
Estimated Sewer Customers	16,915
Estimated Total Billed Consumption (1,000 gallons)	1,619,823

Alternative 1 - Current Rate Structure

The first alternative is to utilize the same rate structure as JCSA currently has in place with a slight increase the rates to meet Fiscal Year 2005 revenue requirements. For residential water customers the rates for each of the different blocks were calculated by dividing the allocated cost per block by the estimated amount of consumption in each block. The current rate structure for commercial water customers and all sewer customers was also used with a slight increase in the rates to cover Fiscal Year 2005 revenue requirements. The following proposed consumption charges were calculated for Fiscal Year 2005:

Residential Water Rates – Inverted ("Conservation") Block Rate Structure

Block	Quarterly Consumption	Proposed Consumption Charge Per 1,000 gallons	Current Consumption Charge Per 1,000 gallons
1st	< 15,000 gallons	$2.40	$2.30
2nd	> 15,000 but < 30,000 gallons	$2.70	$2.60
3rd	> 30,000 gallons	$7.55	$7.45

Commercial Water Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000	$2.70	$2.60

Sewer Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000 gallons	$2.70	$2.50

Alternative 2 - Fixed Fee (Administrative Charge) and Consumption Charge

Alternative 2 is a two-part rate design consisting of a fixed charge (an administrative fee) and a consumption charge. The two-part design is similar to the current design except there is a fixed charge included in added onto each customer's bill, and a consumption charge that is slightly lower than the Alternative 1 rate. This helps to assure that revenue is generated by guarantying minimum revenue, even though it is currently set at only 5% of the water and sewer revenue requirement. The following minimum charge and consumption charges were calculated for Fiscal Year 2005:

Fixed Charge per Bill

Frequency	Proposed Charge	Current
per billing cycle	$5.70	$0

Consumption Charge per Bill

Residential Water Rates – Inverted ("Conservation") Block Rate Structure

Block	Quarterly Consumption	Proposed Consumption Charge Per 1,000 gallons	Current Consumption Charge Per 1,000 gallons
1st	< 15,000 gallons	$2.20	$2.30
2nd	> 15,000 but < 30,000 gallons	$2.50	$2.60
3rd	> 30,000 gallons	$7.40	$7.45

Commercial Water Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000	$2.40	$2.60

Sewer Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000 gallons	$2.55	$2.50

I. SYSTEM FACILITY CHARGES

Facility Charges are intended to recover the capital cost of capacity constructed to serve a new customer. This includes treatment as well as pumping, distribution and collection for systems that are off-site. JCSA currently charges a system facility charge and a local facility charge which covers the cost of the actual physical connection to the system. This section of the report details exclusively with the system facility charges.

While there are a variety of methods for calculating the system facility charge to serve a customer in a water and sewer system, most methods of calculating this cost fall into three broad categories:

- *Average cost of capacity*, tied to the historical cost of the system plus the known costs of the utility's Capital Improvement Program. This is most typically used in a system that has ample capacity, and produces the lowest unit cost of capacity because it relies on lower historical costs.

- *Most recent increment of capacity* calculations are often used in a utility which is approaching its capacity, reflecting the situation that new customers are being served by the latest additions to the utility's infrastructure. This approach produces a unit cost that is typically higher than that produced by the average cost method.

- *Next increment of capacity* is used to calculate the costs of serving new customers in a utility that has little or no capacity and is being heavily stressed by growth. This approach estimates what it will cost to add capacity to serve new customers. This approach typically produces the highest unit cost of capacity.

As JCSA currently has adequate capacity, the average cost of capacity method is suggested to calculate unit cost amounts.

1. Historical Assets and Capital Improvement Program

In order to analyze the system facility charge for JCSA the historical cost of the system and the known costs of JCSA's CIP. The original cost of the water and sewer system property, plant and equipment is $59.6 million and $77.3 million, respectively (rounded from 6/30/02 audited financial statements). As previously mentioned, JCSA has planned capital improvement projects for the water system totaling approximately $17.3 million for Fiscal Year FY04 to FY08. The sewer system has planned improvements of approximately $7.9 million over the same period.

2. Water and Sewer System Capacity

To calculate the average cost of capacity and ultimately the system facility charge it is necessary to determine the current capacity within the water and sewer systems. The water system is currently limited by groundwater permits for the central system of approximately 7.9 MGD. In order to deliver capacity beyond this level significant capital investment would be required. Therefore the current capacity of the water system was assumed to be approximately 7.9 MGD. Based on the

industry average household or equivalent dwelling unit (EDU) allowance of 250 gallons per day (gpd) of capacity, the water system can currently provide service to approximately 31,600 EDU's.

The sewer system capacity is not limited permit since a number of customers are sewer only and don't receive water service from JCSA. The sewer system is also not limited by treatment capacity as the treatment is handled by the Hampton Road Sanitation District. The factor limiting capacity within the sewer system is the sewage pump stations. It is estimated that the sewer system could handle approximately 11.0 mgd without significant capital investment in the system. The current sewer system capacity could service approximately 44,000 EDU's assuming an average allowance of 250 gallon per day per EDU which accounts for sewer system inflow and infiltration.

3. System Facility Charge Calculation

The calculation of the system facility charge using the average cost method is simply the cost of the system divided by the number of EDU's potentially served by the system. Thus for the water system the cost of the system is approximately $78.8 million and serves approximately 31,600 EDU's resulting in an average cost per EDU of roughly $2,500. For the sewer system the cost of the system is approximately $86 million and service 44,000 EDU's resulting in an average cost per EDU of roughly $2,000.

JCSA currently applies the system facility charge to bathroom fixture for residential customers and to meter size for commercial customers. In order to convert the average cost facility charge per EDU to a per fixture basis the average number of bathroom fixtures per EDU was analyzed. JCSA has maintained records of the number of fixture per housing unit added to their customer base over the past several years. There has been a gradual increase in the number of bathroom fixtures per household over the past several years. The average number of bathroom fixtures for new customers added to the system is approximately 8.4. Dividing the average cost per household for water and sewer by 8.4 results in a per fixture charge of roughly $300 for water and $230 for sewer. The calculation of the system facility charges are shown on Schedule 20 in the Appendix to this report. The anticipated revenue stream from the facility charges is shown on Schedule 21 in the Appendix. As shown on Schedule 21 the combination of the facility charge revenues and the 3R reserves results in the total source of funds for the capital improvement program.

J. CONCLUSIONS, RECOMMENDATIONS, AND COMPARISONS

The conclusions and recommendations developed during the course of this rate study are presented below.

1. Conclusions

- Current user rates for water and sewer do not produce sufficient revenue to cover revenue requirements for Fiscal Year 2005. In addition based upon our analysis subsequent rate increases for both water and sewer will be required each of the next four years following Fiscal Year 2005.

- The current system facility charges for water and sewer are currently set an appropriate level based upon the average cost of capacity within the water and sewer systems.

- The current rate structure for water and sewer rates appears to be equitable, encourage water conservation and appropriately charge customers based on usage characteristics.

2. Recommendations

Based on the results of our study, we recommend that the following rates be adopted and implemented, effective in FY 2005, suggested rate increases for subsequent years are shown in the chart located at the end of this section of the report:

Water and Sewer User Rates

Residential Water Rates – Inverted ("Conservation") Block Rate Structure

Block	Quarterly Consumption	Proposed Consumption Charge Per 1,000 gallons	Current Consumption Charge Per 1,000 gallons
1st	< 15,000 gallons	$2.40	$2.30
2nd	> 15,000 but < 30,000 gallons	$2.70	$2.60
3rd	> 30,000 gallons	$7.55	$7.45

Commercial Water Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000	$2.70	$2.60

Sewer Rates - Uniform

Volume	Proposed Charge	Current Charge
All Usage per 1,000 gallons	$2.70	$2.50

The impact of the proposed rates upon residential and commercial water and/or sewer bills is demonstrated in tables which are attached in the Appendix as Schedule 18A, 19.

System Facility Charges

At this time we recommend that the system facility charges be maintained at the current level and that no changes be made to the structure of the charges.

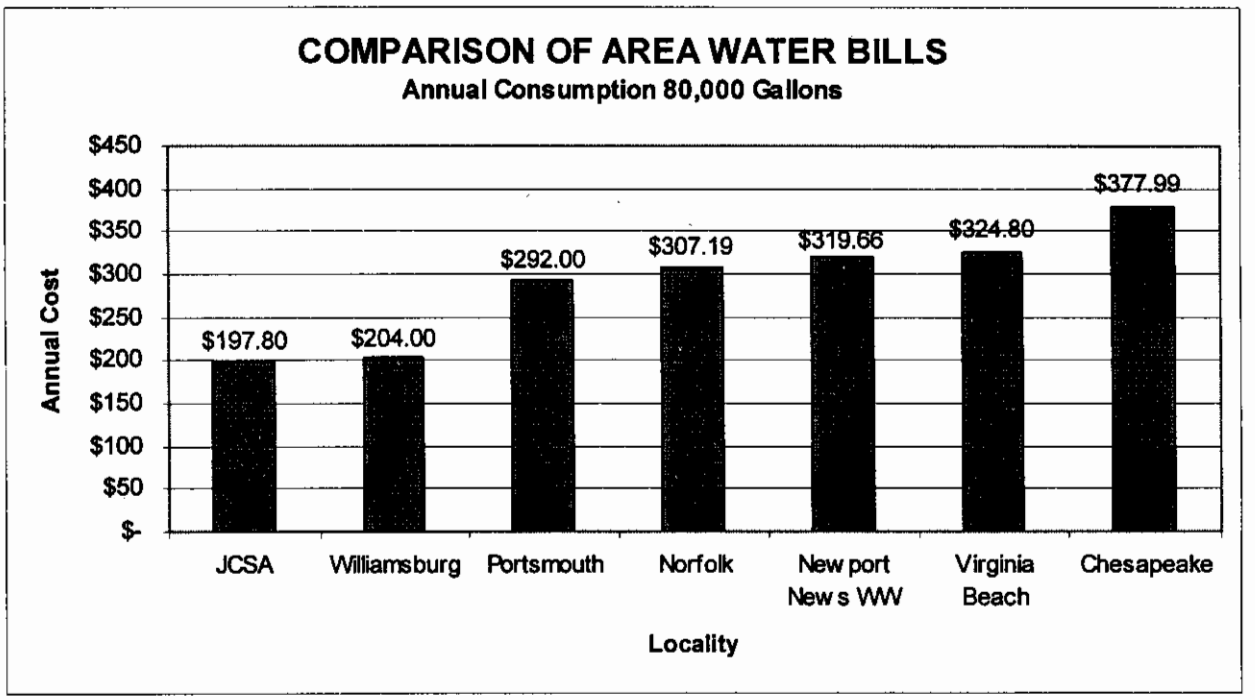
Water	
Meter Size	Charge
5/8"	$ 300*
3/4"	$ 3,500
1"	$ 4,000
1-1/2"	$ 7,500
2"	$ 12,000

Sewer	
Meter Size	Charge
5/8"	$ 300*
3/4"	$ 3,500
1"	$ 4,000
1-1/2"	$ 7,500
2"	$ 12,000

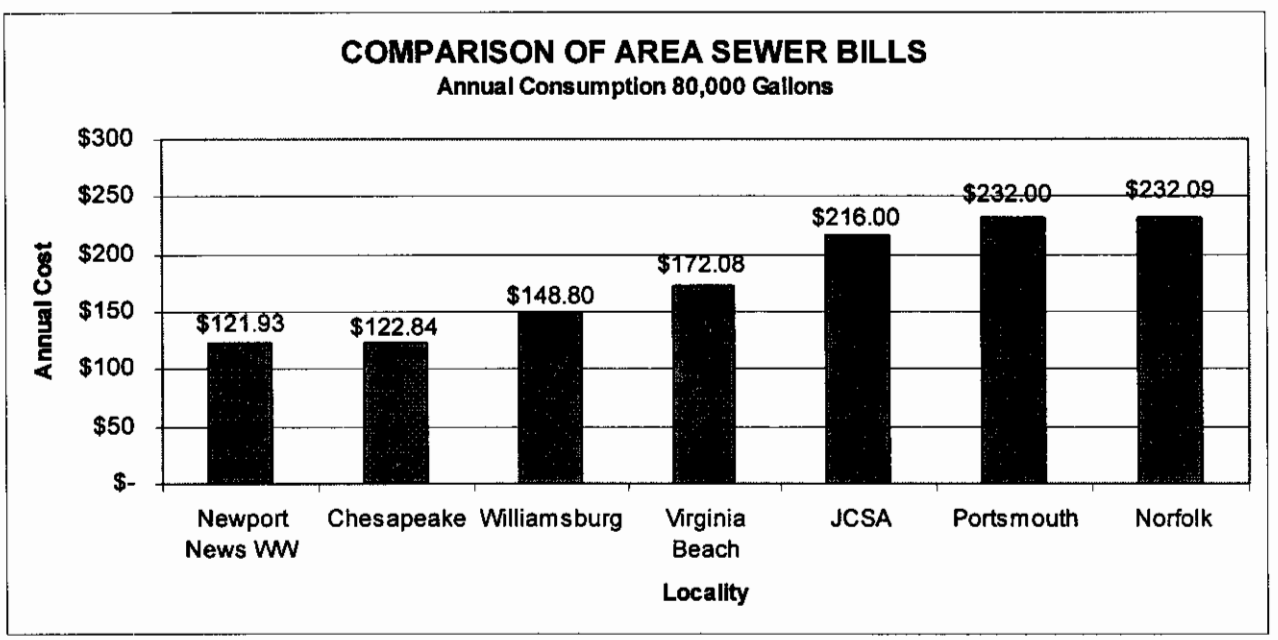
* per bathroom fixture (residential customer only)

3. Comparison of Water and Sewer Bills

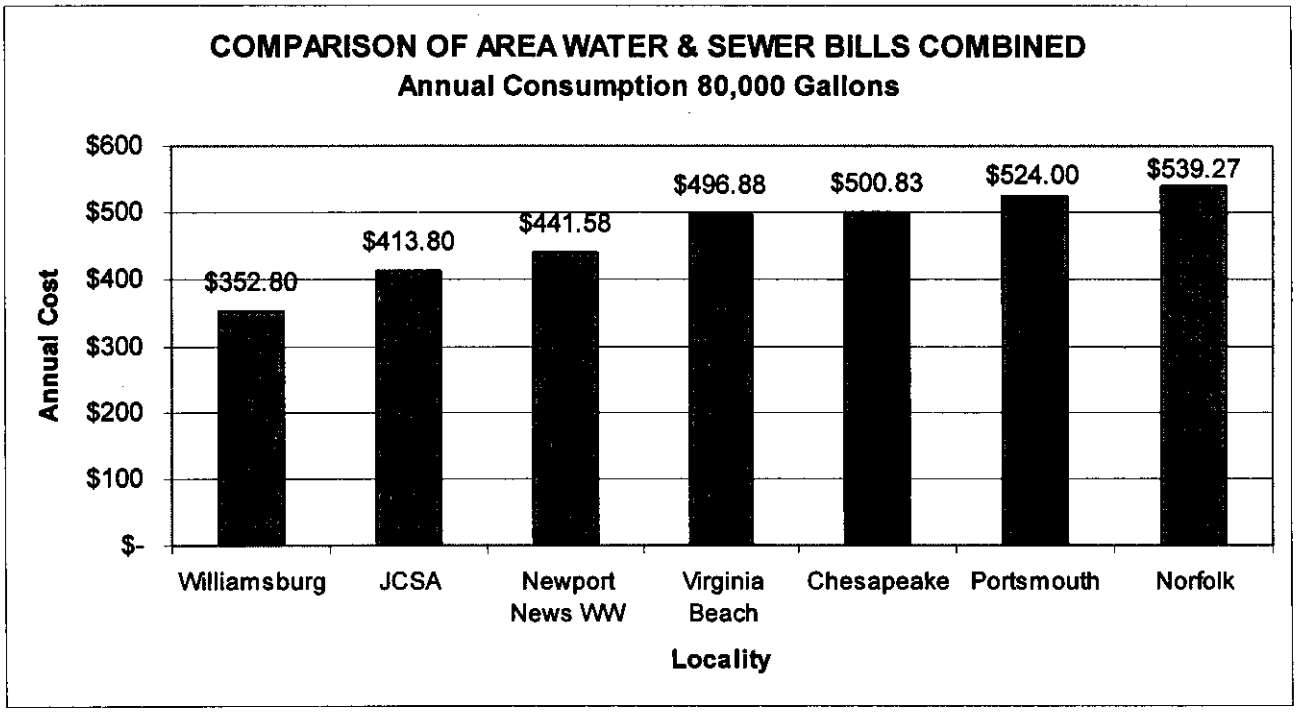
In order to compare the proposed JCSA water and sewer rates for Fiscal Year 2005 with the cost of water and sewer service from other local utilities, two bill comparison charts were developed. A comparison of the recommended JCSA water rates for FY05 to other localities in the same general geographic area is shown in the graph below. The bills compared are calculated for an annual consumption of 80,000 gallons. The rate for JCSA is the only one utilizing the inverted block structure. The other localities currently use a uniform rate structure. While the bills calculated for JCSA are based upon the proposed FY 2005 rates, the bills calculated for the other areas are based upon current rates as projected rates were not available.



A comparison of the bills resulting from recommended JCSA sewer rates for FY05 to other localities in the same general geographic area is shown in the graph below. The bills compared are also calculated for an annual consumption of 80,000 gallons. The rate for JCSA, as well as for the other localities shown, is using a uniform rate structure. A uniform rate is charged per unit sewage production regardless of volume produced. The sewer bill calculated for JCSA is based upon the proposed FY05 sewer rates were as the other utilities rates are based upon current rates which are expected to increase by FY05.



A comparison of the bills resulting from recommended JCSA combined water and sewer rates for FY05 to other localities in the same general geographic area is shown in the graph below.



The following chart shows the water and sewer rates for JCSA over the past 5 years, the proposed Fiscal Year 2005 rates and estimated rates for the subsequent 4 years.

	Residential Water Rates - Blocks			Commercial	
Fiscal Year	1st	2nd	3rd	Water	Sewer
2000	$ 2.50	$ 2.60	$ 4.60	$ 2.60	$ 2.30
2001	$ 2.30	$ 2.60	$ 6.00	$ 2.60	$ 2.30
2002	$ 2.30	$ 2.60	$ 6.00	$ 2.60	$ 2.30
2003	$ 2.30	$ 2.60	$ 6.00	$ 2.60	$ 2.30
2004	$ 2.30	$ 2.60	$ 7.45	$ 2.60	$ 2.30
2005	$ 2.40	$ 2.70	$ 7.55	$ 2.70	$ 2.70
2006	$ 2.50	$ 2.80	$ 7.85	$ 2.80	$ 2.90
2007	$ 2.55	$ 2.90	$ 8.00	$ 2.90	$ 3.20
2008	$ 2.60	$ 2.90	$ 8.10	$ 2.90	$ 3.25
2009	$ 2.70	$ 3.00	$ 8.45	$ 3.00	$ 3.45

James City

Water and Sewer Rate Analysis

Developed by: Municipal and Financial Services Group

Last Update: 12/3/2003

James City
Water and Sewer Rate Analysis

MODEL INDEX

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 1 - BASE ASSUMPTIONS

	FY04	FY05	FY06	FY07	FY08	FY09
Inflation Rate:	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Interest Rate on Borrowings:	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Growth Rate - Water	4.3%	4.3%	4.7%	4.9%	5.1%	4.4%
Growth Rate - Sewer	3.6%	3.6%	3.9%	4.1%	4.3%	3.8%
Interest earned on investments	2.0%	2.0%	2.0%	3.5%	3.5%	3.5%
O&M Reserve	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Repair, Renewal & Replacement "3R" Reserve	0.5%	0.5%	1.0%	1.8%	2.0%	2.5%

Base Year: 2003

Estimated Consumption 250 gallons per day (1 EDU)

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 2 - OPERATING & MAINTENANCE EXPENSES

Account	Item	Inflation Rate	Δ% 03-04	Δ% 04-05	Δ% 05-06	Δ% 06-07	Δ% 07-08	Fiscal Year 2003	2004	2005	2006	2007	2008	2009
ADMINISTRATIVE - WATER														
PERSONNEL EXPENSES														
0100	SALARIES - BOARD MEMBERS	3%	0%	0%	0%	0%	0%	4,276	4,276	4,276	4,276	4,276	4,276	4,404
0110	SALARIES - FULL TIME	4%	9%	4%	5%	5%	4%	849,443	928,780	965,931	1,015,051	1,066,136	1,108,782	1,153,133
0120	SALARIES, OVERTIME	4%	37%	4%	6%	6%	4%	34,544	47,276	49,168	52,008	54,962	57,160	59,447
0140	SALARIES, PT-TEMPORARY	4%	42%	4%	4%	4%	4%	7,728	10,944	11,382	11,837	12,310	12,803	13,315
0150	FRINGE BENEFITS	4%	5%	4%	5%	5%	4%	258,762	272,412	283,309	298,572	314,447	327,024	340,105
	Subtotal							1,154,752	1,263,688	1,314,065	1,381,744	1,452,131	1,510,045	1,570,404
OPERATING EXPENSES														
0200	ADVERTISING	3%	0%	0%	3%	3%	3%	4,200	4,200	4,200	4,326	4,456	4,589	4,727
0202	TEMPORARY SERVICES	3%	0%	0%	3%	3%	3%	2,100	2,100	2,100	2,163	2,228	2,295	2,364
0203	PROFESSIONAL FEES	3%	0%	316%	-76%	3%	3%	19,908	19,908	82,908	19,908	20,505	21,120	21,754
0206	DUES & SUBSCRIPTIONS	3%	0%	0%	3%	3%	3%	1,260	1,260	1,260	1,298	1,337	1,377	1,418
0207	UTILITIES	3%	27%	0%	3%	3%	3%	12,600	15,960	15,960	16,439	16,932	17,440	17,963
0210	INSURANCE	3%	20%	0%	3%	3%	3%	26,334	31,601	31,601	32,549	33,525	34,531	35,567
0214	DUPLICATIONS	3%	-38%	0%	3%	3%	3%	3,360	2,100	2,100	2,163	2,228	2,295	2,364
0215	EQUIPMENT MAINTENANCE	3%	-20%	0%	3%	3%	3%	10,500	8,400	8,400	8,652	8,912	9,179	9,454
0216	BUILDING MAINTENANCE	3%	0%	0%	3%	3%	3%	4,200	4,200	4,200	4,326	4,456	4,589	4,727
0217	ROAD REPAIR	3%	0%	58%	3%	3%	3%	25,200	25,200	39,900	41,097	42,330	43,600	44,908
0218	POSTAGE	3%	0%	0%	3%	3%	3%	2,100	2,100	2,100	2,163	2,228	2,295	2,364
0219	TELEPHONE	3%	0%	13%	3%	3%	3%	13,440	13,440	15,120	15,574	16,041	16,522	17,018
0220	TRAVEL & CONFERENCES	3%	0%	0%	3%	3%	3%	840	840	840	865	891	918	945
0222	LOCAL TRAVEL	3%	0%	0%	3%	3%	3%	44	44	44	45	46	48	49
0223	TRAINING	3%	0%	0%	3%	3%	3%	6,946	6,946	6,946	7,154	7,369	7,590	7,818
0226	SPECIAL SERVICES	3%	4%	0%	3%	3%	3%	90,676	94,303	94,303	97,132	100,046	103,047	106,139
0235	ANNUAL AUDIT	3%	7%	0%	3%	3%	3%	6,300	6,720	6,720	6,922	7,129	7,343	7,563
0240	RADIO MAINTENACE	3%	50%	0%	3%	3%	3%	1,680	2,520	2,520	2,596	2,673	2,754	2,836
0250	GARAGE MAINTENANCE	3%	-41%	17%	3%	3%	3%	64,241	38,155	44,505	45,840	47,215	48,632	50,091
0260	COMPUTER SERVICES	3%	6%	0%	3%	3%	3%	37,909	40,226	40,226	41,432	42,675	43,955	45,274
0310	FOOD SUPPLIES	3%	0%	0%	3%	3%	3%	1,680	1,680	1,680	1,730	1,782	1,836	1,891
0311	RECOGNITION	3%	0%	131%	3%	3%	3%	546	546	1,260	1,298	1,337	1,377	1,418
0312	MOTOR FUEL & LUBRICANTS	3%	7%	0%	3%	3%	3%	31,500	33,600	33,600	34,608	35,646	36,716	37,817
0318	OPERATING SUPPLIES	3%	26%	0%	3%	3%	3%	21,000	26,460	26,460	27,254	28,071	28,914	29,781
0319	OFFICE SUPPLIES	3%	0%	0%	3%	3%	3%	1,260	1,260	1,260	1,298	1,337	1,377	1,418
0320	LEASES/RENTALS	3%	0%	0%	3%	3%	3%	420	420	420	433	446	459	473
0321	MICROGRAPHIC SERVICES	3%	5%	0%	3%	3%	3%	3,322	3,488	3,488	3,593	3,701	3,812	3,926
0322	GRAPHICS	3%	0%	0%	3%	3%	3%	2,100	2,100	2,100	2,163	2,228	2,295	2,364
0325	CLOTHING PURCHASES	3%	3%	0%	3%	3%	3%	11,340	11,676	11,676	12,026	12,387	12,759	13,141
0326	CLOTHING RENTAL	3%	4%	0%	3%	3%	3%	5,880	6,132	6,132	6,316	6,505	6,701	6,902
0327	SOFTWARE	3%	0%	0%	3%	3%	3%	8,400	8,400	8,400	8,652	8,912	9,179	9,454
0340	GRASS MOWING SERVICE	3%	0%	0%	0%	0%	0%	-	-	17,892	18,429	18,982	19,551	20,138
0710	LEGAL SERVICES	3%	6%	0%	3%	3%	3%	12,889	13,662	13,662	14,072	14,494	14,929	15,376
	Subtotal							434,175	429,646	533,982	484,514	499,049	514,021	529,441
CAPITAL OUTLAY														
0410	VEHICLE - NEW	3%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	-	-	-	-	-	-	-
0420	OPERATIONAL EQUIPMENT - NEW	3%	#DIV/0!	9%	-8%	0%	0%	-	4,200	4,578	4,200	4,200	4,200	4,326
0510	VEHICLE REPLACEMENT	3%	-50%	-21%	-100%	#DIV/0!	#DIV/0!	43,680	21,840	17,220	-	-	-	-
0520	OPERATIONAL EQUIPMENT - REPL	3%	-44%	57%	-36%	275%	0%	9,072	5,040	7,896	5,040	18,900	18,900	19,467
	Subtotal							52,752	31,080	29,694	9,240	23,100	23,100	23,793
TOTAL ADMINISTRATIVE WATER EXPENSES								1,641,678	1,724,414	1,877,740	1,875,498	1,974,280	2,047,166	2,123,638
WATER FUND														
PERSONNEL EXPENSES														
0110	SALARIES, FULL TIME	4%	16%	34%	4%	4%	4%	281,018	325,454	434,958	452,356	470,451	489,269	508,840
0120	SALARIES, OVERTIME	4%	60%	25%	4%	4%	4%	17,662	28,273	35,435	36,852	38,326	39,859	41,454
0140	SALARIES, FTT	4%	39%	0%	4%	4%	4%	15,119	20,946	20,946	21,784	22,655	23,561	24,504
0150	FRINGE BENEFITS	4%	92%	24%	4%	4%	4%	65,817	126,180	156,190	162,438	168,935	175,693	182,721
	Subtotal							379,616	500,853	647,529	673,431	700,368	728,382	757,518
OPERATING EXPENSES														
0203	CONTRACTUAL SERVICES	3%	0%	17%	3%	3%	3%	30,000	30,000	35,000	36,050	37,132	38,245	39,393
0207	UTILITIES	3%	85%	71%	3%	3%	3%	202,000	374,500	640,660	659,880	679,676	700,066	721,068
0215	EQUIPMENT MAINTENANCE	3%	0%	33%	3%	3%	3%	150,000	150,000	200,000	206,000	212,180	218,545	225,102
0216	BUILDING MAINTENANCE	3%	0%	0%	3%	3%	3%	5,000	5,000	5,000	5,150	5,305	5,464	5,628
0920	TANK COATINGS	3%	0%	30%	3%	3%	3%	165,000	165,000	215,000	221,450	228,094	234,936	241,984
0218	POSTAGE	3%	0%	14%	3%	3%	3%	3,500	3,500	4,000	4,120	4,244	4,371	4,502
0219	TELEPHONE	3%	0%	54%	-33%	3%	3%	7,794	7,794	12,000	8,028	8,269	8,517	8,772
0224	ADMINISTATIVE ALLOCATION	3%	5%	9%	0%	5%	4%	1,641,678	1,724,414	1,877,740	1,875,498	1,974,280	2,047,166	2,123,638
0318	OPERATING SUPPLIES	3%	44%	88%	3%	3%	3%	152,000	218,659	411,588	423,936	436,654	449,753	463,246
0320	LEASES/RENTALS	3%	0%	0%	3%	3%	3%	1,000	1,000	1,800	1,030	1,061	1,093	1,126
0328	HRPDC WATER PROGRAMS	3%	4%	11%	3%	3%	3%	18,200	19,000	21,000	21,630	22,279	22,947	23,636
0330	VA WATERWORKS FEE	3%	12%	0%	3%	3%	3%	28,000	31,360	31,360	32,301	33,270	34,268	35,296
0340	GRASS MOWING SERVICES	3%	5%	-100%	#DIV/0!	#DIV/0!	#DIV/0!	19,000	20,000	-	-	-	-	-
	Subtotal							2,423,172	2,750,227	3,454,348	3,495,072	3,642,441	3,765,372	3,893,391
CAPITAL OUTLAY														
0410	VEHICLE - NEW	3%	#DIV/0!	#DIV/0!	0%	-100%	#DIV/0!	-	-	18,000	18,000	-	-	-
0420	OPERATIONAL EQUIPMENT - NEW	3%	-26%	-97%	5456%	0%	0%	40,500	30,000	900	50,000	50,000	50,000	51,500
0510	VEHICLE REPLACEMENT	3%	-100%	#DIV/0!	#DIV/0!	-100%	#DIV/0!	36,000	-	-	31,500	-	-	-
0520	OPERATING EQUIPMENT - REPL	3%	-15%	0%	18%	-15%	0%	11,800	10,000	10,000	11,800	10,000	10,000	10,300
0600	PURCHASE OF WATER	3%	3%	14%	0%	0%	0%	136,000	140,000	160,000	160,000	160,000	160,000	164,800
0700	WELL ABANDONMENT PROGRAM	3%	-4%	0%	0%	0%	0%	36,550	35,000	35,000	35,000	35,000	35,000	36,050
0809	INTEREST EXPENSE	3%	0%	0%	0%	0%	0%	6,000	6,000	6,000	6,000	6,000	6,000	6,180
0950	WELL MITIGATION	3%	-20%	0%	0%	0%	0%	100,000	80,000	80,000	80,000	80,000	80,000	82,400
	Subtotal							366,850	301,000	309,900	392,300	341,000	341,000	351,230
TOTAL WATER FUND EXPENSES								3,169,638	3,552,080	4,411,778	4,560,802	4,683,809	4,834,754	5,002,138

SCHEDULE 2 - OPERATING & MAINTENANCE EXPENSES

Account	Item	Inflation Rate	Δ% 03-04	Δ% 04-05	Δ% 05-06	Δ% 06-07	Δ% 07-08	Fiscal Year 2003	2004	2005	2006	2007	2008	2009
ADMINISTRATIVE - SEWER														
PERSONNEL EXPENSES														
0100	SALARIES - BOARD MEMBERS	4%	0%	0%	0%	0%	0%	5,904	5,904	5,904	5,904	5,904	5,904	6,141
0110	SALARIES - FULL TIME	4%	9%	4%	5%	5%	4%	1,173,041	1,282,600	1,333,904	1,401,737	1,472,284	1,531,175	1,592,422
0120	SALARIES, OVERTIME	4%	37%	4%	6%	6%	4%	47,703	65,287	67,898	71,820	75,900	78,936	82,093
0140	SALARIES, PT-TEMPORARY	4%	42%	4%	4%	4%	4%	10,671	15,113	15,718	16,346	17,000	17,680	18,387
0150	FRINGE BENEFITS	4%	5%	4%	5%	5%	4%	357,337	376,189	391,236	412,314	434,236	451,605	469,669
	Subtotal							1,594,657	1,745,093	1,814,661	1,908,123	2,005,323	2,085,300	2,168,712
OPERATING EXPENSES														
0200	ADVERTISING	3%	0%	0%	3%	3%	3%	5,800	5,800	5,800	5,974	6,153	6,338	6,528
0202	TEMPORARY SERVICES	3%	0%	0%	3%	3%	3%	2,900	2,900	2,900	2,987	3,077	3,169	3,264
0203	PROFESSIONAL FEES	3%	0%	316%	-76%	3%	3%	27,492	27,492	114,492	27,492	28,317	29,166	30,041
0206	DUES & SUBSCRIPTIONS	3%	0%	0%	3%	3%	3%	1,740	1,740	1,740	1,792	1,846	1,901	1,958
0207	UTILITIES	3%	27%	0%	3%	3%	3%	17,400	22,040	22,040	22,701	23,382	24,084	24,806
0210	INSURANCE	3%	20%	0%	3%	3%	3%	36,366	43,639	43,639	44,948	46,297	47,686	49,116
0214	DUPLICATIONS	3%	-38%	0%	3%	3%	3%	4,640	2,900	2,900	2,987	3,077	3,169	3,264
0215	EQUIPMENT MAINTENANCE	3%	-20%	0%	3%	3%	3%	14,500	11,600	11,600	11,948	12,306	12,676	13,056
0216	BUILDING MAINTENANCE	3%	0%	0%	3%	3%	3%	5,800	5,800	5,800	5,974	6,153	6,338	6,528
0217	ROAD REPAIR	3%	0%	58%	3%	3%	3%	34,800	34,800	55,100	56,753	58,456	60,209	62,016
0218	POSTAGE	3%	0%	0%	3%	3%	3%	2,900	2,900	2,900	2,987	3,077	3,169	3,264
0219	TELEPHONE	3%	0%	13%	3%	3%	3%	18,560	18,560	20,880	21,506	22,152	22,816	23,501
0220	TRAVEL & CONFERENCES	3%	0%	0%	3%	3%	3%	1,160	1,160	1,160	1,195	1,231	1,268	1,306
0222	LOCAL TRAVEL	3%	0%	0%	3%	3%	3%	60	60	60	62	64	66	68
0223	TRAINING	3%	0%	0%	3%	3%	3%	9,592	9,592	9,592	9,880	10,176	10,481	10,796
0226	SPECIAL SERVICES	3%	4%	0%	3%	3%	3%	125,219	130,228	130,228	134,135	138,159	142,304	146,573
0235	ANNUAL AUDIT	3%	7%	0%	3%	3%	3%	8,700	9,280	9,280	9,558	9,845	10,141	10,445
0240	RADIO MAINTENACE	3%	50%	0%	3%	3%	3%	2,320	3,480	3,480	3,584	3,692	3,803	3,917
0250	GARAGE MAINTENANCE	3%	-41%	17%	3%	3%	3%	88,714	52,690	61,459	63,303	65,202	67,158	69,173
0260	COMPUTER SERVICES	3%	6%	0%	3%	3%	3%	52,350	55,550	55,550	57,216	58,932	60,700	62,521
0310	FOOD SUPPLIES	3%	0%	0%	3%	3%	3%	2,320	2,320	2,320	2,390	2,461	2,535	2,611
0311	RECOGNITION	3%	0%	131%	-59%	3%	3%	754	754	1,740	777	800	824	849
0312	MOTOR FUEL & LUBRICANTS	3%	7%	0%	3%	3%	3%	43,500	46,400	46,400	47,792	49,226	50,703	52,224
0318	OPERATING SUPPLIES	3%	26%	0%	3%	3%	3%	29,000	36,540	36,540	37,636	38,765	39,928	41,126
0319	OFFICE SUPPLIES	3%	0%	0%	3%	3%	3%	1,740	1,740	1,740	1,792	1,846	1,901	1,958
0320	LEASES/RENTALS	3%	0%	0%	3%	3%	3%	580	580	580	597	615	634	653
0321	MICROGRAPHIC SERVICES	3%	5%	0%	3%	3%	3%	4,588	4,817	4,817	4,961	5,110	5,264	5,421
0322	GRAPHICS	3%	0%	0%	3%	3%	3%	2,900	2,900	2,900	2,987	3,077	3,169	3,264
0325	CLOTHING PURCHASES	3%	3%	0%	3%	3%	3%	15,660	16,124	16,124	16,608	17,106	17,619	18,148
0326	CLOTHING RENTAL	3%	4%	0%	3%	3%	3%	8,120	8,468	8,468	8,722	8,984	9,253	9,531
0327	SOFTWARE	3%	0%	0%	3%	3%	3%	11,600	11,600	11,600	11,948	12,306	12,676	13,056
0340	GRASS MOWING SERVICES	3%								24,708	25,449	26,213	26,999	27,809
0710	LEGAL SERVICES	3%	6%	0%	3%	3%	3%	17,799	18,866	18,866	19,432	20,015	20,616	21,234
	Subtotal							599,574	593,320	737,403	668,075	688,117	708,761	730,024
CAPITAL OUTLAY														
0410	VEHICLE - NEW	3%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	-	-	-	-	-	-	-
0420	OPERATIONAL EQUIPMENT - NEW	3%	#DIV/0!	9%	-8%	0%	0%	-	5,800	6,322	5,800	5,800	5,800	5,974
0510	VEHICLE REPLACEMENT	3%	-50%	-21%	-100%	#DIV/0!	#DIV/0!	60,320	30,160	23,780	-	-	-	-
0520	OPERATIONAL EQUIPMENT - REPL	3%	-44%	57%	-36%	275%	0%	12,528	6,960	10,904	6,960	26,100	26,100	26,883
	Subtotal							72,848	42,920	41,006	12,760	31,900	31,900	32,857
	TOTAL ADMINISTRATIVE SEWER EXPENSES							2,267,080	2,381,333	2,593,070	2,588,958	2,725,341	2,825,961	2,931,593
SEWER FUND														
PERSONNEL EXPENSES														
0110	SALARIES, FULL TIME	4%	18%	4%	12%	4%	4%	285,163	336,512	349,972	392,051	407,733	424,043	441,004
0120	SALARIES, OVERTIME	4%	71%	4%	12%	4%	4%	15,172	25,943	26,981	30,140	31,346	32,599	33,903
0150	FRINGE BENEFITS	4%	53%	4%	11%	4%	4%	75,656	115,510	120,130	133,256	138,586	144,129	149,894
	Subtotal							375,991	477,965	497,084	555,447	577,665	600,771	624,802
OPERATING EXPENSES														
0203	CONTRACTUAL SERVICES	3%	0%	0%	3%	3%	3%	30,000	30,000	30,000	30,900	31,827	32,782	33,765
0207	UTILITIES	3%	2%	7%	3%	3%	3%	205,000	210,000	225,000	231,750	238,703	245,864	253,239
0215	EQUIPMENT MAINTENANCE	3%	0%	0%	3%	3%	3%	290,000	290,000	290,000	298,700	307,661	316,891	326,398
0216	BUILDING MAINTENANCE	3%	0%	0%	3%	3%	3%	5,000	5,000	5,000	5,150	5,305	5,464	5,628
0217	INFRASTRUCTURE MAINTENANCE	3%	29%	14%	3%	3%	3%	142,853	184,902	210,000	216,300	222,789	229,473	236,357
0218	POSTAGE	3%	0%	0%	3%	3%	3%	3,000	3,000	3,000	3,090	3,183	3,278	3,377
0219	TELEPHONE	3%	0%	13%	-9%	3%	3%	16,800	16,800	19,000	17,304	17,823	18,358	18,909
0224	ADMINISTATIVE ALLOCATION	3%	5%	9%	0%	5%	4%	2,267,080	2,381,333	2,593,070	2,588,958	2,725,341	2,825,961	2,931,593
0230	GRINDER PUMP MAINTENANCE	3%	0%	15%	-11%	3%	3%	65,000	65,000	75,000	66,950	68,959	71,027	73,158
0318	OPERATING SUPPLIES	3%	0%	23%	3%	3%	3%	102,000	102,000	125,000	128,750	132,613	136,591	140,689
0320	LEASES/RENTALS	3%	0%	0%	3%	3%	3%	20,000	20,000	20,000	20,600	21,218	21,855	22,510
0340	GRASS MOWING SERVICES	3%	5%	-100%	#DIV/0!	#DIV/0!	#DIV/0!	21,000	22,000	-	-	-	-	-
	Subtotal							3,167,733	3,329,935	3,595,070	3,608,452	3,775,419	3,907,542	4,045,621
CAPITAL OUTLAY														
0410	VEHICLE - NEW	3%	#DIV/0!	#DIV/0!	#DIV/0!	0%	0%	-	-	-	25,000	25,000	25,000	25,750
0420	OPERATIONAL EQUIPMENT - NEW	3%	-13%	25%	2%	0%	0%	46,000	40,000	50,000	50,900	50,900	50,900	52,427
0510	VEHICLE REPLACEMENT	3%	#DIV/0!	#DIV/0!	#DIV/0!	0%	0%	-	-	-	25,000	25,000	25,000	25,750
0520	OPERATING EQUIPMENT - REPL	3%	-52%	0%	9%	8%	0%	21,000	10,000	10,000	10,900	11,800	11,800	12,154
0809	INTEREST EXPENSE	3%	19%	0%	0%	0%	0%	26,000	31,000	31,000	31,000	31,000	31,000	31,930
	Subtotal							93,000	81,000	91,000	142,800	143,700	143,700	148,011
	TOTAL SEWER FUND EXPENSES							3,636,724	3,888,900	4,183,153	4,306,699	4,496,784	4,652,014	4,818,435
	TOTAL ADMINISTRATIVE WATER EXPENSES							1,641,678	1,724,414	1,877,740	1,875,498	1,974,280	2,047,166	2,123,638
	TOTAL WATER FUND EXPENSES							1,527,960	1,827,666	2,534,037	2,685,305	2,709,529	2,787,589	2,878,500
	TOTAL WATER OPERATING EXPENSES							3,169,638	3,552,080	4,411,778	4,560,802	4,683,809	4,834,754	5,002,138
	TOTAL ADMINISTRATIVE SEWER EXPENSES							2,267,080	2,381,333	2,593,070	2,588,958	2,725,341	2,825,961	2,931,593
	TOTAL SEWER FUND EXPENSES							1,369,644	1,507,567	1,590,084	1,717,741	1,771,444	1,826,053	1,886,842
	TOTAL SEWER OPERATING EXPENSES							3,636,724	3,888,900	4,183,153	4,306,699	4,496,784	4,652,014	4,818,435
	TOTAL WATER AND SEWER EXPENSES							$ 6,806,362	$ 7,440,980	$ 8,594,931	$ 8,867,501	$ 9,180,593	$ 9,486,768	$ 9,820,573

SCHEDULE 3 - EXISTING DEBT SERVICE SCHEDULE

Water System Debt	Fiscal Year 2004	2005	2006	2007	2008	2009
Principal	435,000	825,000	840,000	860,000	880,000	905,000
Interest	427,673	560,444	541,881	522,981	503,631	479,431
Annual Water Debt Expense	862,673	1,385,444	1,381,881	1,382,981	1,383,631	1,384,431

Sewer System Debt	Fiscal Year 2004	2005	2006	2007	2008	2009
Principal	-	-	-	-	-	-
Interest	-	-	-	-	-	-
Annual Sewer Debt Expense	-	-	-	-	-	-

Index

SCHEDULE 4 - OPERATIONS AND MAINTENANCE RESERVES

Water O&M Reserve	O&M Reserve Percentage	Fiscal Year 2004	2005	2006	2007	2008	2009
Water O&M Expenses		4,944,413	5,949,924	6,034,760	6,293,989	6,517,820	6,750,754
Water O&M Reserve	*	98,888	118,998	120,695	125,880	130,356	135,015

Sewer O&M Reserve	O&M Reserve Percentage	Fiscal Year 2004	2005	2006	2007	2008	2009
Sewer O&M Expenses		6,146,314	6,644,217	6,740,096	7,046,525	7,302,374	7,569,159
Sewer O&M Reserve	*	122,926	132,884	134,802	140,930	146,047	151,383
Total O&M Reserve		221,815	251,883	255,497	266,810	276,404	286,398

*See Base Assumptions

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 5 - CAPITAL IMPROVEMENT PROJECTS

Water System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
Water Supply							
1015	Water Supply Escrow	-	150,536	1,221,108	1,830,184	3,250,000	-
1025	Well Facility Upgrade	-	70,000	70,000	70,000	70,000	-
1030	W-1 Owens Illinois Facility Rehab	123,575	-	-	-	-	-
1045	W-36 Warecreek Manor	20,480	-	-	-	-	-
1050	SCADA	293,054	-	-	-	-	-
1065	W-29 Racefield Well	35,641	-	-	-	-	-
1075	W-30 Glenwood Well	62,729	-	-	-	-	-
1090	W-31 Kings Village	37,013	-	-	-	-	-
1100	Tank Coatings	-	-	-	-	-	-
1105	W-38 Kristiansand Well Upgrade	30,665	-	-	-	-	-
1130	W-40 Chickahominy Upgrade	35,000	-	-	-	-	-
1135	W-5 Ewell Hall Upgrade	33,620	-	-	-	-	-
1150	W-4 Pottery Upgrade	535,489	-	-	-	-	-
1155	Desalination Plant	2,378,033	-	-	-	-	-
1160	Waterworks Interconnection Mounts Bay	2,575	-	-	-	-	-
1175	Hansen Upgrade	-	-	-	-	-	-
1185	W-25 Stonehouse	1,058	-	-	-	-	-
Water Distribution							
1150	Water Systems Improvements Escrow	127,120	400,000	400,000	200,000	200,000	-
1170	Toano Water Main	53,465	-	-	-	-	-
1180	Pressure Reducing Valves	-	-	-	-	-	-
1190	Automatic Meter Reading System	136,244	-	-	-	-	-
1205	Ewell Hall Water Line Repl	1,355	-	-	-	-	-
1240	St Georges Hundred PRV	184,313	-	-	-	-	-
XXXX	Waterline Replacement Escrow	-	167,414	27,222	75,749	115,171	-
1260	Raleigh Square	120,000	70,000	-	-	-	-
1270	Norge Area	606,742	-	-	-	-	-
1280	Kingswood Area	25,000	-	-	-	-	-
Water Storage							
1200	Route 199 Storage Tank	82,189	-	-	-	-	-
1235	Altitude Valves (ESH & Toano)	217,109	-	-	-	-	-
1240	Monticello Water Storage Tanks	98,838	250,000	250,000	1,500,000	-	-
Water System Acquisition							
1300	Water System Acquisition	70,254	-	-	-	-	-
Water Transmission							
1492	First Colony Water System Replacement	128,982	-	-	-	-	-
1495	Transmission Main Improvements	200,000	400,000	200,000	200,000	200,000	-
1505	Alternate Route 5 Betterment	242,001	-	-	-	-	-
	Projected Out Years						4,000,000
Total Water Capital Projects		5,882,544	1,507,950	2,168,330	3,875,933	3,835,171	4,000,000

Sewer System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
2032	Kristiansand Sewer Extension	25,909	-	-	-	-	-
2036	LS 5-4 Frank's Truck Stop Control Bldg	250,000	-	-	-	-	-
2045	Odor Control System	182,972	-	80,000	-	80,000	-
2055	Monticello Ave Extension	242,000	-	-	-	-	-
2100	Sewer System Improvements Escrow	535,495	300,000	300,000	300,000	300,000	-
2210	LS 2-7 Kingsmill Rehab	1,040	-	-	-	-	-
2215	LS 7-2 Burton Woods Rehab	536	-	-	-	-	-
2250	Lift Station Grease/Grit Removal Contract Services	1,500	-	-	-	-	-
2266	LS Dry/Wet Well Rehab	800,403	-	-	-	-	-
2270	LS 1-2 John Tyler Hwy Replacement & Force Main	180,947	-	-	-	-	-
2275	Gravity Sewer Survey	28,400	-	-	-	-	-
2295	First Colony Sewer System Rehabilitation	51,626	-	-	-	-	-
2300	Sewer System Overflow Report Preparation	50,000	-	-	-	-	-
2305	LS 6-8 Andersons Corner Force Main	376,122	-	-	-	-	-
2310	Lift Station Controls (Six Series Stations)	123,030	-	-	-	-	-
2320	Lift Station Upgrades (Air ejector stations)	160,000	160,000	200,000	200,000	200,000	-
2330	LS 4-6 Discovery Lane & LS 1-9 Posie Cirle Control Bldg	122,113	-	-	-	-	-
2335	LS 2-1 Jamestown Ferry & LS 2-2 Glasshouse Upgrade	50,000	-	-	-	-	-
2355	Sewer Bridge Rehab	175,231	50,000	50,000	25,000	-	-
2360	School Lane Sewer Replacement	230,000	-	-	-	-	-
2365	American Eastern	180	-	-	-	-	-
2370	US Homes	674,400	-	-	-	-	-
XXXX	LS 1-5 Windsor Forest Upgrade	-	200,000	-	-	-	-
XXXX	LS 3-9 Indigo Dam Rd. Control Bldg	-	150,000	-	-	-	-
	Projected Out Years						600,000
Total Sewer Capital Projects		4,261,904	860,000	630,000	525,000	580,000	600,000

Other Projects

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
3000	Contingency	146,710	50,000	50,000	50,000	50,000	-
3005	Tewning Road Expansion	1,330,787	250,000	250,000	250,000	250,000	-
211524	Heavy Equipment	221,524	350,000	155,000	110,000	250,000	-
Total Other Projects		1,699,021	650,000	455,000	410,000	550,000	-
TOTAL CAPITAL IMPROVEMENT PROJECTS		$ 11,843,469	$ 3,017,950	$ 3,253,330	$ 4,810,933	$ 4,965,171	$ 4,600,000

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 6 - PROJECTED DEBT SERVICE

Water System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
Projected CIP Costs (Cash + Debt)		$ 6,732,055	$ 1,832,950	$ 2,395,830	$ 4,080,933	$ 4,110,171	$ 4,000,000
Less Pay as you go (from reserves)		$ -	$ -	$ -	$ -	$ -	$ -
Less Pay as you go (from current revenues)		$ 6,732,055	$ 1,832,950	$ 2,395,830	$ 4,080,933	$ 4,110,171	$ 4,000,000
Projected Debt		-	-	-	-	-	-
Debt Service							
Interest Rate	5.0%						
Period (years)	20						
Debt Service by Fiscal Year		-	-	-	-	-	-
Admin fees (% of debt service)	5.0%	-	-	-	-	-	-
Total Debt Service by Fiscal Year		$ -	$ -	$ -	$ -	$ -	$ -

Sewer System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
Projected CIP Costs (Cash + Debt)		$ 5,111,415	$ 1,185,000	$ 857,500	$ 730,000	$ 855,000	$ 600,000
Less Pay as you go (from reserves)		$ -	$ -	$ -	$ -	$ -	$ -
Less Pay as you go (from current revenues)		$ 5,111,415	$ 1,185,000	$ 857,500	$ 730,000	$ 855,000	$ 600,000
Projected Debt		-	-	-	-	-	-
Debt Service							
Interest Rate	5.0%						
Period	20						
Debt Service		-	-	-	-	-	-
Admin fees (% of debt service)	5.0%	-	-	-	-	-	-
Total Projected Debt Service		$ -	$ -	$ -	$ -	$ -	$ -

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 7 - PROJECTED DEBT SERVICE SCHEDULE

Water System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
Projected Debt Serv. - FY	2004	-	-	-	-	-	-
Projected Debt Serv. - FY	2005	-	-	-	-	-	-
Projected Debt Serv. - FY	2006	-	-	-	-	-	-
Projected Debt Serv. - FY	2007	-	-	-	-	-	-
Projected Debt Serv. - FY	2008	-	-	-	-	-	-
Projected Debt Serv. - FY	2009	-	-	-	-	-	-
Projected Debt Serv. - FY	2010	-	-	-	-	-	-
Projected Debt Serv. - FY	2011	-	-	-	-	-	-
Projected Debt Serv. - FY	2012	-	-	-	-	-	-
Projected Debt Serv. - FY	2013	-	-	-	-	-	-
Total Projected Debt Service		$ -	$ -	$ -	$ -	$ -	$ -

Sewer System

		Fiscal Year					
		2004	2005	2006	2007	2008	2009
Projected Debt Serv. - FY	2004	-	-	-	-	-	-
Projected Debt Serv. - FY	2005	-	-	-	-	-	-
Projected Debt Serv. - FY	2006	-	-	-	-	-	-
Projected Debt Serv. - FY	2007	-	-	-	-	-	-
Projected Debt Serv. - FY	2008	-	-	-	-	-	-
Projected Debt Serv. - FY	2009	-	-	-	-	-	-
Projected Debt Serv. - FY	2010	-	-	-	-	-	-
Projected Debt Serv. - FY	2011	-	-	-	-	-	-
Projected Debt Serv. - FY	2012	-	-	-	-	-	-
Projected Debt Serv. - FY	2013	-	-	-	-	-	-
Total Projected Debt Service		$ -	$ -	$ -	$ -	$ -	$ -

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 8 - CONSUMPTION AND CUSTOMER DATA

Water Consumption

Residential Water Consumption

Annual Consumption Range (Block) in Gallons	Number of Customers each Block	Percent of Customers in each Block	Total Annual Consumption (Gallons) in each Block	Percent of Consumption in each Block
< 20,000	1,150	8%	16,030,570	2%
> 20,001 to < 40,000	2,180	16%	67,011,963	7%
> 40,001 to < 60,000	2,945	21%	147,619,610	15%
> 60,001 to < 80,000	2,826	21%	196,368,799	20%
> 80,001 to < 100,000	1,968	14%	175,703,405	18%
> 100,001 to < 120,000	1,130	8%	123,236,251	12%
> 120,001 to < 140,000	666	5%	85,990,127	9%
> 140,001 to < 160,000	340	2%	50,760,979	5%
> 160,001	567	4%	123,692,414	13%
Total	13,772	100%	986,414,118	100%

Non-Residential (Commercial) Water Consumption

Flat Billing	Number of Customers	Total Annual Consumption
On Quarterly Cycle	469	69,312,594
On Monthly Cycle	339	343,171,708
Total	808	412,484,302

Total Water	1,398,898,420

Sewer Collection

Residential Sewer Collection

Flat Billing	Number of Customers	Total Annual Consumption
On Quarterly Cycle	12,022	800,482,020
On Bi-Monthly Cycle	2,807	225,776,980
Total	14,829	1,026,259,000

*Note: 1,750 water only customers were taken out of the water consumption figures to arrive at the sewer collection. Total annual consumption was found by subtracting water only cust total annual consumption from total residential sewer consumption. [885,740,459-(1750*250*365)]

Non-Residential (Commercial) Sewer Collection

Flat Billing	Number of Customers	Total Annual Consumption
On Quarterly Cycle	469	72,441,900
On Bi-Monthly Cycle	123	53,124,060
On Monthly Cycle	339	357,380,040
Total	931	482,946,000

Total Sewer	1,509,205,000

Submetering Data

Residential Sub-Meter Consumption

Flat Billing	Number of Customers	Total Annual Consumption
On Quarterly Cycle	2,381	96,142,667
On Bi-Monthly Cycle	736	27,388,041
Total	3,117	123,530,708

Commercial Sub-Meter Consumption

Flat Billing	Number of Customers	Total Annual Consumption
On Quarterly Cycle	24	2,060,191
On Bi-Monthly Cycle	3	430,516
On Monthly Cycle	24	11,302,000
Total	51	13,792,707

Total Sub-Meter	137,323,415

SCHEDULE 9 - WATER AND SEWER CONSUMPTION AND CUSTOMER PROJECTIONS

Total Annual Consumption/Collection Projections (in Gallons)

	Water		Total	Sewer		Total	Sub-Meter		Total
Fiscal Year	Residential	Commercial	Water	Residential	Commercial	Sewer	Residential	Commercial	Sub-Meter
2003	986,414,118	412,484,302	1,398,898,420	1,026,259,000	482,946,000	1,509,205,000	123,530,708	13,792,707	137,323,415
2004	1,028,829,925	430,221,127	1,459,051,052	1,063,204,324	500,332,056	1,563,536,380	127,977,814	14,289,244	142,267,058
2005	**1,073,069,612**	**448,720,635**	**1,521,790,247**	**1,101,479,680**	**518,344,010**	**1,619,823,690**	**132,585,015**	**14,803,657**	**147,388,672**
2006	1,123,503,884	469,810,505	1,593,314,389	1,144,437,387	538,559,426	1,682,996,814	137,755,831	15,381,000	153,136,830
2007	1,178,555,574	492,831,220	1,671,386,794	1,191,359,320	560,640,363	1,751,999,683	143,405,820	16,011,621	159,415,440
2008	1,238,661,908	517,965,612	1,756,627,520	1,242,587,771	584,747,898	1,827,335,669	149,570,184	16,700,120	166,270,304
2009	1,293,163,032	540,756,099	1,833,919,131	1,289,806,106	606,968,319	1,896,774,425	155,253,851	17,334,725	172,588,576
2010	1,350,062,206	564,549,368	1,914,611,573	1,338,818,738	630,033,115	1,968,851,853	161,153,497	17,993,445	179,146,942
2011	1,402,714,632	586,566,793	1,989,281,425	1,384,338,575	651,454,241	2,035,792,816	166,632,716	18,605,222	185,237,958
2012	1,456,017,788	608,856,331	2,064,874,119	1,430,021,748	672,952,231	2,102,973,979	172,134,596	19,219,494	191,350,790
2013	1,508,434,428	630,775,159	2,139,209,587	1,475,782,444	694,486,702	2,170,269,146	177,639,807	19,834,208	197,474,015
2014	1,561,229,633	652,852,290	2,214,081,922	1,521,531,700	716,015,790	2,237,547,490	183,146,641	20,449,069	203,595,709
2015	1,615,872,670	675,702,120	2,291,574,790	1,567,177,651	737,496,263	2,304,673,914	188,641,040	21,062,541	209,703,581

Customers Projections

	Water			Sewer				
Fiscal Year	Residential	Commercial		Residential		Commercial		
		Quarterly	*Monthly*	*Quarterly*	*Bi-Monthly*	*Quarterly*	*Bi-Monthly*	*Monthly*
2003	13,772	469	339	12,022	2,807	469	125	339
2004	14,364	489	354	12,455	2,908	486	127	351
2005	**14,982**	**510**	**369**	**12,903**	**3,013**	**503**	**132**	**364**
2006	15,686	534	386	13,406	3,130	523	137	378
2007	16,455	560	405	13,956	3,259	544	143	394
2008	17,294	589	426	14,556	3,399	568	149	410
2009	18,055	615	444	15,109	3,528	589	155	426
2010	18,849	642	464	15,683	3,662	612	160	442
2011	19,584	667	482	16,217	3,786	633	166	457
2012	20,328	692	500	16,752	3,911	654	171	472
2013	21,060	717	518	17,288	4,037	674	177	487
2014	21,797	742	537	17,824	4,162	695	182	503
2015	22,560	768	555	18,359	4,287	716	188	518

	Sub-Metering				
Fiscal Year	Residential		Commercial		
	Quarterly	*Bi-Monthly*	*Quarterly*	*Bi-Monthly*	*Monthly*
2003	2,381	736	24	3	24
2004	2,467	762	25	3	25
2005	**2,556**	**790**	**26**	**3**	**26**
2006	2,655	821	27	3	27
2007	2,764	854	28	3	28
2008	2,883	891	29	4	29
2009	2,992	925	30	4	30
2010	3,106	960	31	4	31
2011	3,212	993	32	4	32
2012	3,318	1,026	33	4	33
2013	3,424	1,058	35	4	35
2014	3,530	1,091	36	4	36
2015	3,636	1,124	37	5	37

Index

SCHEDULE 10 - REPAIR, RENEWAL AND REPLACEMENT "3R" RESERVES

Water System	3R Reserve Percentage	Fiscal Year 2005	2006	2007	2008	2009
Water System Total Asset Value[1]		68,209,801	70,605,631	74,686,564	78,796,735	82,796,735
Total Water "3R" Reserve	*	341,049	706,056	1,307,015	1,575,935	2,069,918

Sewer System	3R Reserve Percentage	Fiscal Year 2005	2006	2007	2008	2009
Sewer System Total Asset Value[1]		83,600,004	84,457,504	85,187,504	86,042,504	86,642,504
Total Sewer "3R" Reserve	*	418,000	844,575	1,490,781	1,720,850	2,166,063
Total Repair, Renewal and Replacment Reserves		759,049	1,550,631	2,797,796	3,296,785	4,235,981

*See Base Assumptions

Notes:

1 - The water and sewer system total asset values for Fiscal Year 2005 equals the book value of assets plus CIP projects for FY04 and FY05, each subsequent year the value includes the previous year value plus the value of CIP projects occuring that year.

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 11 - CASH RESERVES

Water System	% Interest Earned On Cash	Fiscal Year 2005	2006	2007	2008	2009
Cash Reserves		15,244,075	15,960,546	16,742,613	17,596,487	18,370,732
Interest Income - Water	*	304,881	319,211	585,991	615,877	642,976

Sewer System	% Interest Earned On Cash	Fiscal Year 2005	2006	2007	2008	2009
Cash Reserves		6,874,307	7,142,404	7,435,243	7,754,959	8,049,647
Interest Income - Sewer	*	137,486	142,848	260,234	271,424	281,738
Total Interest Income		442,368	462,059	846,225	887,301	924,713

*See Base Assumptions

SCHEDULE 12 - MISCELLANEOUS REVENUES

Water System		Growth Rate	Fiscal Year 2005	2006	2007	2008	2009
0026	ACCOUNT CHARGES	*	23,153	24,310	25,526	26,802	27,981
0030	MISCELLANEOUS	*	191,441	201,013	211,064	221,617	231,368
0035	INSPECTION FEES	*	120,630	126,662	132,995	139,645	145,789
0040	INTEREST INCOME	*	304,881	319,211	585,991	615,877	642,976
0070	BUILDING E RENT	*	84,104	84,000	84,000	84,000	87,696
0080	RENT - TELECOM	*	100,181	105,190	110,449	115,971	121,074
0100	PLAN REVIEW CHARGE	*	27,417	28,787	30,227	31,738	33,135
0150	DEQ GRANT	*	15,000	15,000	15,000	15,000	15,660
Total Water Miscellaneous Revenues			$ 866,807	$ 904,173	$ 1,195,252	$ 1,250,650	$ 1,305,679

Sewer System		Growth Rate	Fiscal Year 2005	2006	2007	2008	2009
0020	GRINDER PUMP CHARGES	*	48,559	50,987	53,537	56,214	58,350
0026	ACCOUNT CHARGES	*	23,441	24,613	25,844	27,136	28,167
0030	MISCELLANEOUS	*	137,486	142,848	260,234	271,424	281,738
0040	INTEREST INCOME	*	137,700	140,454	143,263	146,128	151,681
0055	SUBMETER CHARGE	*	52,769	55,407	58,178	61,086	63,408
Total Sewer Miscellaneous Revenues			$ 399,956	$ 414,310	$ 541,055	$ 561,988	$ 583,344
Total Miscellaneous Revenues Water and Sewer			$ 1,266,763	$ 1,318,483	$ 1,736,307	$ 1,812,638	$ 1,889,023

*See Based Assumptions

SCHEDULE 13 - NET REVENUE REQUIREMENT FROM USER RATES

Water System	Fiscal Year 2005	2006	2007	2008	2009
Operating Costs					
Total Operating Expenses (Schedule 2)	4,101,878	4,168,502	4,342,809	4,493,754	4,650,908
Total Operating Reserve (Schedule 4)	118,998	120,695	125,880	130,356	135,015
Capital Costs					
Capital Outlay Routine Items (Schedule 2)	309,900	392,300	341,000	341,000	351,230
Total Repair, Renewal & Replacement Reserves (Schedule 10)	341,049	706,056	1,307,015	1,575,935	2,069,918
Total Existing Debt Service (Schedule 3)	1,385,444	1,381,881	1,382,981	1,383,631	1,384,431
Total Revenue Requirement	6,257,269	6,769,435	7,499,685	7,924,677	8,591,503
Less: Miscellaneous Revenues (Schedule 12)	866,807	904,173	1,195,252	1,250,650	1,305,679
Net Revenue Requirement	5,390,462	5,865,262	6,304,433	6,674,026	7,285,824

Sewer System	Fiscal Year 2005	2006	2007	2008	2009
Operating Costs					
Total Operating Expenses (Schedule 2)	4,092,153	4,163,899	4,353,084	4,508,314	4,670,424
Total Operating Reserve (Schedule 4)	132,884	134,802	140,930	146,047	151,383
Capital Costs					
Capital Outlay Routine Items (Schedule 2)	91,000	142,800	143,700	143,700	148,011
Total Repair, Renewal & Replacement Reserves (Schedule 10)	418,000	844,575	1,490,781	1,720,850	2,166,063
Total Existing Debt Service (Schedule 3)	-	-	-	-	-
Total Revenue Requirement	4,734,038	5,286,076	6,128,496	6,518,911	7,135,880
Less: Miscellaneous Revenues (Schedule 12)	399,956	414,310	541,055	561,988	583,344
Net Revenue Requirement	4,334,082	4,871,766	5,587,441	5,956,923	6,552,537
Combined Water & Sewer Net Revenue Requirement	9,724,544	10,737,028	11,891,874	12,630,949	13,838,361

CURRENT CONTRIBUTION TO CIP - Water Fund	156,513	147,196	179,294	184,950
CURRENT CONTRIBUTION - CIP - Sewer Fund	636,073	625,582	544,957	499,879

Index

SCHEDULE 14 - RATE ANALYSIS

Base Line Data:	Water	Sewer
Net Revenue Requirement - FY05	$ 5,390,462	$ 4,334,082
Residential Consumption/Collection FY05 (1000 gallons)	1,073,070	1,101,480
Commercial Consumption/Collection FY05 (1000 gallons)	448,721	518,344
Total Consumption/Collection FY05 (1000 gallons)	1,521,790	1,619,824
Average Cost per 1000 gallons –	**$ 3.54**	**$ 2.68**
Residential Quarterly Customers	14,982	12,903
Residential Bi-Monthly Customers	-	3,013
Commercial Quarterly Customers	510	503
Commercial Bi-Monthly Customers	-	132
Commercial Monthly Customers	369	364
Total Customers	15,861	16,915

Residential Water Usage Breakdown FY03 (gallons) Detailed Blocks

	Consumption	Customers
< 5,000	2%	8%
> 5,001 to < 10,000	7%	16%
> 10,001 to < 15,000	15%	21%
> 15,001 to < 20,000	20%	21%
> 20,001 to < 25,000	18%	14%
> 25,001 to < 30,000	12%	8%
> 30,001 to < 35,000	9%	5%
> 35,001 to < 40,000	5%	2%
> 40,001	13%	4%
	100%	100%

Residential Water Usage Breakdown FY03 (gallons) Current Blocks

	Consumption	Customers
< 15,000	23%	46%
> 15,001 to < 30,000	50%	43%
> 30,000	26%	11%
	100%	100%

SCHEDULE 14 - RATE ANALYSIS

Alternative A - Current Structure

Residential Water Rates - Inverted Block Rate Structure

		Proposed	Current
Level 1: 0 - 15,000 gallons per Quarter			
Consumption (1000 gallons) =		250,926	
Cost Allocated =	14.4%	$ 600,260	
Rate (1,000 gallons) =		$ **2.39**	$ 2.30
Level 2: 15,001 - 30,000 gallons per Quarter			
Consumption (1000 gallons) =		538,821	
Cost Allocated =	34.6%	$ 1,445,226	
Rate (1000 gallons) =		$ **2.68**	$ 2.60
Level 3: Over 30,001 gallons per Quarter			
Consumption (1000 gallons) =		283,323	
Cost Allocated =	51.1%	$ 2,137,512	
Rate (1000 gallons) =		$ **7.54**	$ 7.45
Consumption	100.00%	1,073,070	
Revenue Requirement		$ 4,182,998	
Total Revenue Requirement - Water		$ 5,390,462	
Cost allocation between Residential and Commercial Water Customers		77.6%	

Commercial Water Rates

		Proposed	Current
Commercial Consumption (1000 gallons)		448,721	
Cost Allocated =		$ 1,207,463	
Rate (1,000) gallons		$ **2.69**	$ 2.60
		448,721	
		$ 1,207,463	
		22.4%	

Sewer Rates

	Proposed	Current
Sewer Collection (1,000 gallons)	1,619,824	
Cost Allocated =	$ 4,334,082	
Rate (1,000 gallons) =	$ **2.68**	$ 2.50

SCHEDULE 14 - RATE ANALYSIS

Alternative B - Fixed (Administrative Fee) and Consumption Charge

Fixed Charge					
Annual Bills Sent			85,262		
Cost Allocated (% of Water & Sewer Rev. Requir.)	5%	$	486,227		
Charge per Bill		$	**5.70**		
Cost Allocated to Water & Sewer Consumption	95%				
Consumption Water Rates - Inverted Block Rate Structure					
			Proposed		Current
Level 1: 0 - 15,000 gallons per Quarter					
Consumption (1000 gallons) =			250,926		
Cost Allocated =	13.9%	$	558,771		
Rate (1,000 gallons) =		$	**2.23**	$	2.30
Level 2: 15,001 - 30,000 gallons per Quarter					
Consumption (1000 gallons) =			538,821		
Cost Allocated =	33.9%	$	1,362,759		
Rate (1000 gallons) =		$	**2.53**	$	2.60
Level 3: Over 30,001 gallons per Quarter					
Consumption (1000 gallons) =			283,323		
Cost Allocated =	52.2%	$	2,098,407		
Rate (1000 gallons) =		$	**7.41**	$	7.45
Consumption	100.0%		1,073,070		
Revenue Requirement		$	4,019,937		
Total Revenue Requirement - Water		$	5,120,939		
Cost allocation between Residential and Commercial Water Customers			78.5%		

Commercial Water Rates					
			Proposed		Current
Commercial Consumption (1000 gallons)			448,721		
Cost Allocated =		$	1,101,002		
Rate (1,000) gallons		$	**2.45**	$	2.60
			448,721		
			1,101,002		
			21.5%		

Sewer Rates					
			Proposed		Current
Sewer Collection (1,000 gallons)			1,619,824		
Cost Allocated =		$	4,117,378		
Rate (1,000 gallons) =		$	**2.54**	$	2.50

James City Index
Water and Sewer Rate Analysis

SCHEDULE 15 - RATE PROJECTIONS

Baseline Data	Fiscal Year 2005	2006	2007	2008	2009
Net Revenue Requirement - Water	$ 5,390,462	$ 5,865,262	$ 6,304,433	$ 6,674,026	$ 7,285,824
Net Revenue Requirement - Sewer	$ 4,334,082	$ 4,871,766	$ 5,587,441	$ 5,956,923	$ 6,552,537
Residential Consumption (1,000 gallons) - Water	1,073,070	1,123,504	1,178,556	1,238,662	1,293,163
Commercial Consumption(1,000 gallons) - Water	448,721	469,811	492,831	517,966	540,756
Residential Collection (1,000 gallons) - Sewer	1,101,480	1,144,437	1,191,359	1,242,588	1,289,806
Commercial Collection (1,000 gallons) - Sewer	518,344	538,559	560,640	584,748	606,968

Alternative A

Residential Water Rates - Inverted Block Rate Structure

Consumption Rates (per 1,000 gallons)	Fiscal Year 2005	2006	2007	2008	2009
Level 1: 0 - 15,000 gallons per Quarter	$ 2.39	$ 2.49	$ 2.55	$ 2.57	$ 2.68
Level 2: 15,001 - 30,000 gallons per Quarter	$ 2.68	$ 2.79	$ 2.86	$ 2.88	$ 3.01
Level 3: Over 30,001 gallons per Quarter	$ 7.54	$ 7.84	$ 8.03	$ 8.09	$ 8.46
Commercial Consumption Rate (per 1,000 gallons)	$ 2.69	$ 2.80	$ 2.87	$ 2.89	$ 3.02
Sewer Rates					
Rate (1,000 gallons) =	$ 2.68	$ 2.89	$ 3.19	$ 3.26	$ 3.45

Alternative B

Residential Water Rates - Inverted Block Rate Structure

	2005	2006	2007	2008	2009
Administrative Fee Per Bill	$ 5.47	$ 5.79	$ 5.89	$ 6.00	$ 6.30
Consumption Rates (per 1,000 gallons)					
Level 1: 0 - 15,000 gallons per Quarter	$ 2.23	$ 2.31	$ 2.37	$ 2.39	$ 2.50
Level 2: 15,001 - 30,000 gallons per Quarter	$ 2.53	$ 2.63	$ 2.69	$ 2.71	$ 2.84
Level 3: Over 30,001 gallons per Quarter	$ 7.41	$ 7.70	$ 7.89	$ 7.94	$ 8.31
Commercial Consumption Rate (per 1,000 gallons)	$ 2.45	$ 2.55	$ 2.61	$ 2.63	$ 2.75
Sewer Rates					
Rate (1,000 gallons) =	$ 2.54	$ 2.75	$ 3.03	$ 3.10	$ 3.28

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 16 - CASH FLOW PROJECTIONS (using proposed FY05 rate for all years)

Water System	Fiscal Year 2005	2006	2007	2008	2009
Revenues:					
Usage Charges	5,390,462	5,643,814	5,920,360	6,222,299	6,496,080
Misc. Other Revenues	866,807	904,173	1,195,252	1,250,650	1,305,679
Total Revenues	6,257,269	6,547,987	7,115,612	7,472,949	7,801,759
Expenses:					
Total Operating Expenses	4,411,778	4,560,802	4,683,809	4,834,754	5,002,138
Existing Debt Service	1,385,444	1,381,881	1,382,981	1,383,631	1,384,431
O&M Reserve	118,998	120,695	125,880	130,356	135,015
3R Reserve	341,049	706,056	1,307,015	1,575,935	2,069,918
Total Expenses	6,257,269	6,769,435	7,499,685	7,924,677	8,591,503
Net Revenues (Expenses)	$ -	$ (221,449)	$ (384,073)	$ (451,728)	$ (789,744)

Sewer System	Fiscal Year 2005	2006	2007	2008	2009
Revenues:					
Usage Charges	4,334,082	4,503,111	4,687,739	4,889,312	5,075,106
Misc. Other Revenues	399,956	414,310	541,055	561,988	583,344
Total Revenues	4,734,038	4,917,421	5,228,794	5,451,300	5,658,449
Expenses:					
Total Operating Expenses	4,183,153	4,306,699	4,496,784	4,652,014	4,818,435
Existing Debt Service	-	-	-	-	-
O&M Reserve	132,884	134,802	140,930	146,047	151,383
3R Reserve	418,000	844,575	1,490,781	1,720,850	2,166,063
Total Expenses	4,734,038	5,286,076	6,128,496	6,518,911	7,135,880
Net Revenues (Expenses)	$ -	$ (368,654)	$ (899,702)	$ (1,067,611)	$ (1,477,431)

Combined Water and Sewer Expenses	10,991,307	12,055,511	13,628,181	14,443,588	15,727,384
Combined Water and Sewer Revenues	10,991,307	11,465,408	12,344,406	12,924,249	13,460,208
Combined Water and Sewer Net Revenues (Expenses)	-	(590,103)	(1,283,775)	(1,519,339)	(2,267,175)

SCHEDULE 17 - CASH FLOW PROJECTIONS WITH CURRENT RATES (using FY04 current rates for all years)

Water System	Fiscal Year 2005	2006	2007	2008	2009
Revenues:					
Usage Charges	5,255,495	5,481,481	5,717,185	5,963,023	6,219,433
Misc. Other Revenues	866,807	904,173	1,195,252	1,250,650	1,305,679
Total Revenues	6,122,302	6,385,654	6,912,436	7,213,674	7,525,112
Expenses:					
Total Operating Expenses	4,411,778	4,560,802	4,683,809	4,834,754	5,002,138
Existing Debt Service	1,385,444	1,381,881	1,382,981	1,383,631	1,384,431
O&M Reserve	118,998	120,695	125,880	130,356	135,015
3R Reserve	341,049	706,056	1,307,015	1,575,935	2,069,918
Total Expenses	6,257,269	6,769,435	7,499,685	7,924,677	8,591,503
Net Revenues (Expenses)	$ (134,967)	$ (383,781)	$ (587,249)	$ (711,003)	$ (1,066,391)

Sewer System	Fiscal Year 2005	2006	2007	2008	2009
Revenues:					
Usage Charges	4,049,559	4,223,690	4,405,309	4,594,737	4,792,311
Misc. Other Revenues	399,956	414,310	541,055	561,988	583,344
Total Revenues	4,449,515	4,638,000	4,946,364	5,156,725	5,375,655
Expenses:					
Total Operating Expenses	4,183,153	4,306,699	4,496,784	4,652,014	4,818,435
Existing Debt Service	-	-	-	-	-
O&M Reserve	132,884	134,802	140,930	146,047	151,383
3R Reserve	418,000	844,575	1,490,781	1,720,850	2,166,063
Total Expenses	4,734,038	5,286,076	6,128,496	6,518,911	7,135,880
Net Revenues (Expenses)	$ (284,523)	$ (648,075)	$ (1,182,132)	$ (1,362,186)	$ (1,760,226)

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 18A - RATE ALTERNATIVE A BILL EXAMPLE

Water Bills

Consumption Rates (per 1,000 gallons)	Current	Proposed
Level 1: 0 - 15,000 gallons per Quarter	$ 2.30	$ 2.40
Level 2: 15,001 - 30,000 gallons per Quarter	$ 2.60	$ 2.70
Level 3: Over 30,001 gallons per Quarter	$ 7.45	$ 7.55

Quarterly Water Bill Comparison

Consumption	Old Quarterly Bill	New Quarterly Bill FY 05	FY 05 Percent Increase (Decrease)	FY 05 Dollar Increase (Decrease)
5,000	11.50	12.00	4.3%	$ 0.50
10,000	23.00	24.00	4.3%	$ 1.00
15,000	34.50	36.00	4.3%	$ 1.50
20,000	47.50	49.50	4.2%	$ 2.00
25,000	60.50	63.00	4.1%	$ 2.50
30,000	73.50	76.50	4.1%	$ 3.00
35,000	110.75	114.25	3.2%	$ 3.50
40,000	148.00	152.00	2.7%	$ 4.00
45,000	185.25	189.75	2.4%	$ 4.50
50,000	222.50	227.50	2.2%	$ 5.00

Sewer Bills

	Current	Proposed
Collection Rates (per 1,000 gallons)	$ 2.50	$ 2.70

Quarterly Sewer Bill Comparison

Consumption	Old Quarterly Bill	New Quarterly Bill FY 05	FY 05 Percent Increase (Decrease)	FY 05 Dollar Increase (Decrease)
5,000	12.50	13.50	8%	$ 1.00
10,000	25.00	27.00	8%	$ 2.00
15,000	37.50	40.50	8%	$ 3.00
20,000	50.00	54.00	8%	$ 4.00
25,000	62.50	67.50	8%	$ 5.00
30,000	75.00	81.00	8%	$ 6.00
35,000	87.50	94.50	8%	$ 7.00
40,000	100.00	108.00	8%	$ 8.00
45,000	112.50	121.50	8%	$ 9.00
50,000	125.00	135.00	8%	$ 10.00

Combined Water and Sewer Bills

Consumption	Combined Quarterly Water and Sewer Bills Old Bill	Combined Quarterly Water and Sewer Bills New Bill FY 05	FY 05 Combined Percent Increase (Decrease)	FY 05 Combined Dollar Increase (Decrease)
5,000	24.00	25.50	6.25%	$ 1.50
10,000	48.00	51.00	6.25%	$ 3.00
15,000	72.00	76.50	6.25%	$ 4.50
20,000	97.50	103.50	6.15%	$ 6.00
25,000	123.00	130.50	6.10%	$ 7.50
30,000	148.50	157.50	6.06%	$ 9.00
35,000	198.25	208.75	5.30%	$ 10.50
40,000	248.00	260.00	4.84%	$ 12.00
45,000	297.75	311.25	4.53%	$ 13.50
50,000	347.50	362.50	4.32%	$ 15.00

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 18B - RATE ALTERNATIVE B BILL EXAMPLE

Water

Old Consumption Rates (per 1,000 gallons)	Current	FY 2005
Level 1: 0 - 15,000 gallons per Quarter	$ 2.30	$ 2.20
Level 2: 15,001 - 30,000 gallons per Quarter	$ 2.60	$ 2.50
Level 3: Over 30,001 gallons per Quarter	$ 7.45	$ 7.40
Administrative Charge Per Bill	$ -	$ 5.70

Sewer

	Current	Proposed
Collection Rates (per 1,000 gallons)	$ 2.50	$ 2.54

Quarterly Water Bill Comparison

Consumption	Old Quarterly Bill	New Quarterly Bill FY 05*	FY 05 Percent Increase (Decrease)	FY 05 Dollar Increase (Decrease)
5,000	11.50	13.85	20.4%	$ 2.35
10,000	23.00	24.85	8.0%	$ 1.85
15,000	34.50	35.85	3.9%	$ 1.35
20,000	47.50	48.35	1.8%	$ 0.85
25,000	60.50	60.85	0.6%	$ 0.35
30,000	73.50	73.35	-0.2%	$ (0.15)
35,000	110.75	110.35	-0.4%	$ (0.40)
40,000	148.00	147.35	-0.4%	$ (0.65)
45,000	185.25	184.35	-0.5%	$ (0.90)
50,000	222.50	221.35	-0.5%	$ (1.15)

**New Quarterly Bills Include the Administrative Charge*

Quarterly Sewer Bill Comparison

Consumption	Old Quarterly Bill	New Quarterly Bill FY 05*	FY 05 Percent Increase (Decrease)	FY 05 Dollar Increase (Decrease)
5,000	12.50	15.56	24%	$ 3.06
10,000	25.00	28.27	13%	$ 3.27
15,000	37.50	40.98	9%	$ 3.48
20,000	50.00	53.69	7%	$ 3.69
25,000	62.50	66.40	6%	$ 3.90
30,000	75.00	79.11	5%	$ 4.11
35,000	87.50	91.82	5%	$ 4.32
40,000	100.00	104.53	5%	$ 4.53
45,000	112.50	117.24	4%	$ 4.74
50,000	125.00	129.94	4%	$ 4.94

**New Quarterly Bills Include the Administrative Charge*

Combined Water and Sewer

Consumption	Combined Quarterly Water and Sewer Bills Old Bill	New Bill FY 05*	FY 05 Combined Percent Increase (Decrease)	FY 05 Combined Dollar Increase (Decrease)
5,000	24.00	29.41	22.55%	$ 5.41
10,000	48.00	53.12	10.67%	$ 5.12
15,000	72.00	76.83	6.71%	$ 4.83
20,000	97.50	102.04	4.66%	$ 4.54
25,000	123.00	127.25	3.45%	$ 4.25
30,000	148.50	152.46	2.67%	$ 3.96
35,000	198.25	202.17	1.98%	$ 3.92
40,000	248.00	251.88	1.56%	$ 3.88
45,000	297.75	301.59	1.29%	$ 3.84
50,000	347.50	351.30	1.09%	$ 3.80

**New Quarterly Bills Include the Administrative Charge*

Bi Monthly Sewer Only

Consumption	Old Bi-Monthly Bill	New Bi-Monthly Bill FY 05*	FY 05 Percent Increase (Decrease)	FY 05 Dollar Increase (Decrease)
5,000	12.50	18.41	47%	$ 5.91
10,000	25.00	31.12	24%	$ 6.12
15,000	37.50	43.83	17%	$ 6.33
20,000	50.00	56.54	13%	$ 6.54
25,000	62.50	69.25	11%	$ 6.75
30,000	75.00	81.96	9%	$ 6.96
35,000	87.50	94.67	8%	$ 7.17
40,000	100.00	107.38	7%	$ 7.38
45,000	112.50	120.09	7%	$ 7.59
50,000	125.00	132.80	6%	$ 7.80

**New Bi-Monthly Bills Include the Administrative Charge*

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 19 - SAMPLE COMMERCIAL BILLS

Alternative A

Rates (per 1,000 gallons)	Current	FY 2005
Water Consumption	$ 2.60	$ 2.70
Sewer Collection	$ 2.50	$ 2.70

Large Customer Sample Annual Bills

Customer	Monthly Consumption	FY 05 Combined Water & Sewer Old Bill	FY 05 Combined Water & Sewer New Bill	Percent Increase (Decrease)	Dollar Increase (Decrease)
Wmsbg Pottery	4,498,500	$ 22,942	$ 24,292	6%	$ 1,350
Owens-Illinois	19,171,236	$ 97,773	$ 103,525	6%	$ 5,751
Greystone	8,034,000	$ 40,973	$ 43,384	6%	$ 2,410
Eastern State Hospital	33,051,000	$ 168,560	$ 178,475	6%	$ 9,915
Golden Knights	2,342,800	$ 11,948	$ 12,651	6%	$ 703
Rolling Meadows Apts	8,949,850	$ 45,644	$ 48,329	6%	$ 2,685
Prime Outlets	3,470,807	$ 17,701	$ 18,742	6%	$ 1,041
Wmsbg Landing	8,447,970	$ 43,085	$ 45,619	6%	$ 2,534
Patriot's Colony	12,524,000	$ 63,872	$ 67,630	6%	$ 3,757

Alternative B

Rates (per 1,000 gallons)	Current	Fy 2005
Water Consumption	$ 2.60	$ 2.40
Sewer Collection	$ 2.50	$ 2.55
Monthly Fixed Charge per Bill	-	$ 5.70

Large Customer Sample Annual Bills

Customer	Annual Consumption	FY 05 Combined Water & Sewer Old Bill	FY 05 Combined Water & Sewer New Bill*	Percent Increase (Decrease)	Dollar Increase (Decrease)
Wmsbg Pottery	4,498,500	$ 22,942	$ 22,336	-3%	$ (606)
Owens-Illinois	19,171,236	$ 97,773	$ 94,966	-3%	$ (2,807)
Greystone	8,034,000	$ 40,973	$ 39,837	-3%	$ (1,137)
Eastern State Hospital	33,051,000	$ 168,560	$ 163,671	-3%	$ (4,889)
Golden Knights	2,342,800	$ 11,948	$ 11,665	-2%	$ (283)
Rolling Meadows Apts	8,949,850	$ 45,644	$ 44,370	-3%	$ (1,274)
Prime Outlets	3,470,807	$ 17,701	$ 17,249	-3%	$ (452)
Wmsbg Landing	8,447,970	$ 43,085	$ 41,886	-3%	$ (1,199)
Patriot's Colony	12,524,000	$ 63,872	$ 62,062	-3%	$ (1,810)

**New Annual Bills Include the Administrative Charge*

James City
Water and Sewer Rate Analysis

Index

SCHEDULE 20 - FACILITY CHARGES ANALYSIS

Water System	FY05		Current
Water System Asset Value*	$ 78,796,735		
Water System Capacity	7.90	mgd	
Average EDU Usage	250	gallons per day	
Total EDUs served by current capacity	31,600	EDUs	
Average fixtures per EDU	8.4		
Capacity Fee per EDU:	$ 2,494		
Capacity Fee per Fixture:	**$ 297**		$ 300

*The water system asset value was calculated as the book value of the system plus water CIP projects for FY04 - FY09

Sewer System	FY05		Current
Sewer System Asset Value*	$ 86,042,504		
Sewer System Capacity	11.00	mgd	
Average EDU Usage	250	gallons per day	
Total EDUs served by current capacity	44,000	EDUs	
Average fixtures per EDU	8.4		
Capacity Fee per EDU:	$ 1,956		
Capacity Fee per Fixture:	**$ 233**		$ 300

*The sewer system asset value was calculated as the book value of the system plus sewer CIP projects for FY04 - FY09

SCHEDULE 21 - FACILITY CHARGES REVENUE PROJECTIONS

Water System

	Fiscal Year 2005	2006	2007	2008	2009
Number of New Water TAPS	599	675	741	808	736
Number of New Fixtures	5,032	5,670	6,224	6,787	6,182
Water Facilty Charge	$ 300	$ 300	$ 300	$ 300	$ 300
Annual Water Facility Charge Revenues	$ 1,509,480	$ 1,701,000	$ 1,867,320	$ 2,036,160	$ 1,854,720
Water Total Repair, Renewal & Replacement Reserves	$ 341,049	$ 706,056	$ 1,307,015	$ 1,575,935	$ 2,069,918
Total Annual Water Funds for Capital Projects	$ 1,850,529	$ 2,407,056	$ 3,174,335	$ 3,612,095	$ 3,924,638

Sewer System

	Fiscal Year 2005	2006	2007	2008	2009
Number of New Sewer TAPS	539	607	667	727	663
Number of New Fixtures	4,528	5,099	5,603	6,107	5,569
Sewer Facility Charge	$ 300	$ 300	$ 300	$ 300	$ 300
Annual Sewer Facility Charge Revenues	$ 1,358,280	$ 1,529,640	$ 1,680,840	$ 1,832,040	$ 1,670,760
Sewer Total Repair, Renewal & Replacement Reserves	$ 418,000	$ 844,575	$ 1,490,781	$ 1,720,850	$ 2,166,063
Total Annual Sewer Funds for Capital Projects	$ 1,776,280	$ 2,374,215	$ 3,171,621	$ 3,552,890	$ 3,836,823
Total Annual Facility Charge Revenues	$ 3,626,809	$ 4,781,271	$ 6,345,956	$ 7,164,985	$ 7,761,461

WORK SESSION

M E M O R A N D U M

DATE: December 16, 2003

TO: The Board of Directors

FROM: Larry M. Foster, General Manager, James City Service Authority

SUBJECT: Independent Water System Rates

The County's Subdivision Ordinance requires that a developer proposing a major subdivision - six lots or more - build a water system to serve the development. Upon completion, the developer is required to dedicate the water system infrastructure to the James City Service Authority (JCSA) for maintenance and upkeep. The JCSA currently operates six "independent" water systems. The number of customers served by the individual water systems ranges from less than 20 to 136 customers, with a total of 332 customers served by the combined independent water systems. As a comparison, the Central Water System serves approximately 16,000 customers. Customers of the independent systems pay the same fees as those served by the Central Water System. Because of the economies of scale, it costs more to operate the independent water systems than the revenues generated from service fees.

In preparation of the Fiscal Year 2005 Budget, the JCSA performed a rate study to ensure that the current rate structure is adequate to meet the financial needs of the organization. As part of the scope of services, Municipal and Financial Services Group, who performed the rate evaluation, was asked to conduct a cost of service study for the independent water systems and make recommendations on how the difference in cost versus revenues can be minimized.

Attached is a copy of the study. Representatives of Municipal and Financial Services Group will attend the work session to discuss the study, review the alternatives identified, and make recommendations.

In summary, the study verified that:

- Operation and maintenance costs for independent water systems exceed revenues;
- Fees paid by Central Water System customers subsidize the independent water systems; and
- A $4,000 fee per lot to be deposited to an income-producing trust is necessary to offset the operating deficit.

Staff recommends that the Board maintain a uniform rate structure for all customers and that the Regulations Governing Utility Service be amended to establish a $4,000 fee for each lot within an independent water system. The fee would apply to lots recorded after the approval of the amended Regulations. It is further recommended that the fee be paid when the subdivision of the lot is recorded. If this recommendation is accepted, staff will bring a specific amendment to the Regulations to the Board in early 2004.

Larry M. Foster

LMF/gb
rates_121603.mem

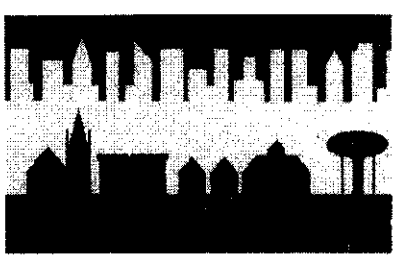
Attachment

Draft Report for Discussion Purposes Only

James City Service Authority

Independent Water System Rates

December 9, 2003



MUNICIPAL & FINANCIAL
SERVICES GROUP

James City Service Authority
Analysis of Cost of Service Differentials in Independent Systems
16 December 2003

Issue:

JCSA owns and operates six independent water systems in developments that are not interconnected with JCSA's main water system. Some of these six systems may eventually be interconnected to the JCSA's Primary Service Area (PSA), but it is very unlikely that some of the six will ever be integrated with the PSA. The unit operating and capital costs for the six independent water systems are significantly higher than those for the water system in the PSA, due primarily to diseconomies of scale. At present, JCSA uses a single rate structure for all of its service areas (i.e., one common rate is charged in the Primary Service Area as well as the six independent service areas). This means, in effect, that the customers in the PSA are subsidizing the cost for customers in the independent systems. Some of the members of the JCSA Board have asked that an analysis be conducted of alternatives that could eliminate or mitigate this situation for future development of independent systems. The County's Subdivision Ordinance requires that any development over six lots build a "central" water system and donate it to the JCSA. This requirement establishes the possibility of the perpetuation of this situation. This paper offers recommendations on how to address these situations in the future.

Cost of Service Analysis:

In order to determine the actual cost of providing service to each of the independent systems on a "stand alone" basis separate from the costs related to the JCSA Primary Service Area, a simple cost of service analysis was completed for each of the independent systems. The analysis included calculating the net revenue requirements for each of the independent systems and developing independent system rates based upon consumption in each system. A combined independent system revenue requirement and rate was also calculated. The following section describes the analysis in detail. The financial and operating data related to each independent system was provided by JCSA staff. The assumptions used in the cost of service analysis appear in the Appendix to this paper.

1. Production and Customer Data

The estimated average daily water production within the independent systems is approximately 100,000 gallons combined. The daily production varies between a low of 5,244 gallons per day (GPD) in the Wexford system to a high of 53,733 GPD in the Stonehouse system. There are a total of 332 customers within the independent systems. The Stonehouse system (serving 136 customers) is the largest of the independent water systems and will likely be connected to the central system within the next 10 years.

2. Operating and Maintenance Expenses

The operating and maintenance (O&M) costs of the JCSA's independent systems may be considered to be comprised of personnel-related expenses (administrative, maintenance, and operator salaries), utilities (electric and gas) and miscellaneous operating costs (facilities/equipment repair and maintenance, supplies and materials). The O&M costs make up the majority of the cost of service within each independent system. The total O&M costs incurred by JCSA related to operating the independent systems during Fiscal Year 2003 was approximately $150,000. The O&M costs projected forward for Fiscal Year 2004 for each of the individual systems are listed in the Cost of Service table at the end of this section of the Report.

3. Reserves

Good management practices dictate that cash reserves be accumulated to provide for contingencies and unplanned major expenses. We recommend the establishment of two types of reserves for JCSA's independent systems: an Operating Reserve and a Repair, Renewal, and Rehabilitation ("3R") Reserve. Operating reserves are typically set as a percentage of a system's O&M budget. At this time we recommend the reserves be initially established at a level of 3% of operating costs. The establishment of operating reserves at this level will not have a significant impact (i.e., increase) on rates at this time. These reserve levels can be adjusted in future years as JCSA's reserves are accumulated and/or drawn down. For the Fiscal Year 2004, operating reserves for the combined independent system were set at approximately $4,495. The operating reserves for each of the independent systems are listed in the Cost of Service table.

Many municipal utilities establish Repair, Replacement and Rehabilitation ("3R") reserves to provide funds to pay for unexpected major repairs and planned replacement or rehabilitation of equipment or other major fixed assets. These reserves can be used to pay for capital costs in order to avoid or minimize the amount that would otherwise be recovered through user fees (and possibly result in a significant rate increase). Typically, the annual "3R" reserve contribution is calculated as a percentage of the systems' book value. The percentage used is determined after considering factors such as the size and age of a system, whether or not any reserves are currently set aside, and the potential impact on rates.

Since the JCSA does not currently have a "3R" Reserve (or something similar) in place for the independent systems, a major consideration in determining the percentage recommended to establish each reserve was to minimize the short-term impact on user fees. The initial percentage was set at 0.4% of book value. In the future, this percentage can be adjusted based on the level of reserves, planned expenditures, and the related impact on user fees. For Fiscal Year 2004 the "3R" reserve for the combined independent system was set at $20,564. The "3R" reserves for each of the independent systems are shown in the Cost of Service table below.

4. Revenue Requirement

The revenue requirement is determined by summing the operating and maintenance expenses, operating reserves, "3R" reserves and as any other expenses incurred by JCSA while operating the independent systems. The revenue requirement for the combined systems for Fiscal Year

2004 is $179,384. The individual revenue requirements for each independent system are shown in the Cost of Service table below.

Independent Systems Cost of Service

System	FY04 Operating Expenses	FY04 Operating Reserve	FY04 "3R" Reserve	Total Revenue Requirement
Stonehouse	$ 77,057	$ 2,311	$ 6,425	$ 85,793
Wexford	$ 20,023	$ 601	$ 2,351	$ 22,975
Racefield	$ 8,933	$ 268	$ 2,665	$ 11,866
Glenwood	$ 17,605	$ 528	$ 2,560	$ 20,693
Kings Village	$ 16,359	$ 491	$ 3,085	$ 19,935
Ware Creek	$ 14,349	$ 430	$ 3,478	$ 18,257
Combined	**$154,326**	**$4,629**	**$20,564**	**$179,519**

6. Rate Alternatives

The customers that are served by the independent systems are currently billed for water usage based on JCSA's existing rate schedule. The existing rate schedule for residential customers is shown below.

Existing Rate Schedule

Block	Quarterly Usage	Rate (per 1,000 gallons)
1st	<15,000 gallons	$2.30
2nd	> 15,000 gallons < 30,000 gallons	$2.60
3rd	> 30,000 gallons	$7.45

Two rate alternatives were considered for the independent systems, including an independent system wide rate and rates for each individual system. The rates were developed as an average cost per 1,000 gallons rather then an inclining block rate structure currently used by the JCSA. The average cost per customer was also calculated. Rates were calculated for the next 4 years based on the increasing expenses and customer growth using the assumptions previously mentioned. The combined independent system rates are presented below followed by the independent system rates.

Combined Independent Systems Rate Schedule

Fiscal Year	2004	2005	2006	2007
Rate per 1,000 gallons	$4.93	$5.01	$5.10	$5.18
Average Annual Cost per Customer	$540	$549	$558	$576

Independent System Rate Schedule

System	2004		2005		2006		2007	
	Rate per 1,000 gallons	Average Annual Cost per Customer	Rate per 1,000 gallons	Average Annual Cost per Customer	Rate per 1,000 gallons	Average Annual Cost per Customer	Rate per 1,000 gallons	Average Annual Cost per Customer
Stonehouse	$4.37	$630	$4.45	$641	$4.53	$653	$4.61	$664
Wexford	$12.00	$1,094	$12.20	$1,112	$12.41	$1,131	$12.62	$1,150
Racefield	$3.15	$359	$3.19	$364	$3.24	$369	$3.28	$374
Glenwood	$8.19	$713	$8.32	$ 725	$8.46	$736	$8.60	$748
Kings Village	$5.27	$406	$5.35	$413	$5.44	$419	$5.52	$425
Ware Creek	$3.83	$285	$3.89	$ 289	$3.94	$293	$4.00	$297

7. Impact on Primary Service Area Customers

While the unit cost of providing service to the independent systems on an individual basis may be more expensive than providing service to the Primary Service Area, it appears that identifying or allocating costs to the independent system customers will have little impact on the bills received by the customers in JCSA's Primary Service Area. As previously mentioned, the total revenue requirement for the combined independent systems is estimated to be about $180,000 per year. This represents about 4% of the total revenue requirement for the Water Fund. If the customers located in the independent service areas were charged the full cost of service, customers within the Primary Service Area would potentially see a 3% reduction in the water portion of their annual water and sewer bill.

Alternatives Identified:

A. Create a "trust fund" or endowment for any newly created independent systems, with the income from the trust fund used to offset ongoing operating and capital costs, with an intent that the net operating and capital costs be similar to those of the PSA. Make the "deposit" to the trust fund:

- When the lot is recorded for subdivision by the developer, or
- Impose the amount of the "deposit" to the trust fund as a lien on the property, payable over a specified period of time (or payable in full if the property is sold before the lien is satisfied), and have the County's property tax system act as the collection vehicle, transferring the revenues generated each year to the trust fund.

B. Create a special taxing district, and have the revenues collected (via the County's property tax system) directed to the JCSA to offset the costs of operating and maintaining the independent systems. The special taxing district could allocate costs on either the assessed value of the property or a charge per lot. This approach has the advantage of allowing the amount of revenues generated to be periodically adjusted. However, this alternative has the disadvantage of being "perpetual."

C. Charge the same user rates in the independent systems as in the PSA, but impose a very explicit surcharge on those rates, to be termed a "cost equalization charge."

D. Develop separate user rates for each independent service area that recovers all operating costs.

E. Develop a common user rate for all six independent service areas combined that recovers all operating costs.

8. Quantification of Long-Term Cost Differential

As an alternative to implementing individual rates for each system, the payment of a 6-year lien was considered. In order to develop an appropriate lien, the long-term cost differential between the actual costs of operating the independent system and what the customers currently contribute needed to be quantified. The following analysis was completed to quantify the long-term cost differential. Based on the actual 2003 consumption for residents within the independent system service areas it was estimated that the average customer uses approximately 27,400 gallons per quarter. At the current rates this amounts to an annual water bill of $266. Assuming the combined independent system rate was implemented customers would see average annual bills of approximately $540, an increase of $274 per year. Assuming a constant differential the 6-year forgone revenues or possible lien per customer equates to approximately $5,480 (a payment of $274 per year for 20 years). If the lien were paid in a lump sum "up front" payment (assuming an inflation rate of 3%) the one-time up front payment would be $4,000 (the approximate net present value of 20 years worth of payments).

9. Conclusions

Based upon the cost of service analysis for the independent systems, we have concluded that:

- The establishment of separate rates for customers served by the independent systems would have no material impact upon the Primary Service Area customers, but would have a major impact (increase) on the bills of the customers served by the independent systems.

- The administration and maintenance of independent system rates would create an additional administrative burden for the Customer Service/Billing Department.

- A simple means of eliminating the cost differences for future independent water system is to establish a "Rate Equalization Fund" to be funded by (1) the developer when the lots are recorded at $4,000 per lot or (2) lien placed on the lot when it is recorded and collected when the lot is sold.

10. Recommendations

As a result of the findings and conclusions presented above, we make two specific recommendations:

- Maintain the current practice of using a common rate structure for all JCSA customers.
- For new independent water systems, establish a "rate equalization fund" by charging a one-time "up front" $4,000 payment (the approximate net present value of $5,480 collected over 20 years) for all the new lots established to be paid by the developer when the lot is sold – payment will be secured by a lien.

APPENDIX

Assumptions Used in the Analysis

In order to project future revenue requirements and offsetting revenues from water and sewer rates and capacity fees, several assumptions were made regarding future economic conditions and growth within the independent systems. Assumptions were made regarding the following items:

Element	Annual Percentage
Inflation	3%
Customer Growth Rate	2%
Operating Reserve	3%
Repair, Renewal and Rehabilitation ("3R") reserve	0.4%
Estimated Household Consumption	250 gpd / EDU

WORK SESSION

M E M O R A N D U M

DATE: December 16, 2003

TO: The Board of Supervisors

FROM: David Anderson, Senior Planner

SUBJECT: FY 2004-2009 Six-Year Secondary Road Improvement Plan

Overview:

At the work session on December 16, the staff and Virginia Department of Transportation (VDOT) staff will describe the current status of the Six-Year Secondary Road Improvement Plan. Last year, due to a very significant reduction in secondary road allocations from the Commonwealth and the continued rise in construction cost estimates, this item was approved by the Board in late February. The Plan is coming to the Board at this time in order to get back on the normal review cycle. Attached is a list of all proposed secondary road projects. Staff will discuss the status of each of these projects below.

It is important to note that this year's Plan does not reflect a revenue stream that should be included on page 1 of 4. This anticipated revenue is a result of a three party agreement between VDOT, the Transportation Improvement District (TID) for Monticello Avenue, and the County that took place in the early 1990s. VDOT loaned $1 million to the TID for a construction project that the TID did not have enough funding for at the time. In return, the TID was obligated to pay back $125,000/year over eight years to reimburse VDOT for the loan amount. As part of the agreement, VDOT agreed to make that money available to the County in the Six-Year Secondary Road Plan. Since the TID is no longer in existence, the County has been paying back the loan amount. As of this date, the County has paid back one half of the loan amount, totaling $500,000 that should be reflected in the Six-Year Secondary Road Improvement Plan. This revenue can be allocated for any project on the Six-Year Secondary Road Improvement Plan.

Project Status: (In order of priority)

1. Ironbound Road - Longhill Connector Road to Strawberry Plains Road

   This section of roadway is planned to be widened from two to four lanes from the entrance of Eastern State Hospital to just beyond Strawberry Plains Road. The design of the project is quite complex, and will incorporate many additional features including on and off road bike lanes, sidewalks, median, and landscaping. The design of the roadway is being coordinated with the New Town project and with the Ironbound Square Redevelopment Plan. The project cost is currently estimated at approximately $9.3 million making it the most expensive secondary road project ever undertaken in the County. Both VDOT and County staff hope that after further design clarification, the cost estimates may be decreased. Construction is estimated to begin in July 2008. There have been no changes to the cost estimate or the anticipated date of construction from the Plan the Board adopted in February.

2. Racefield Drive - Route 622

   Last year the Board passed a resolution to use Rural Rustic Design Standards, which essentially allowed the roadway to be paved in place with very minor reconstruction and no expansion of right-of-way, to complete paving the portion of Racefield Drive extending from Route 1040 to 0.56 miles west of Route 1040. This project was recently completed in the summer of 2003. The next phase of the paving project, extending an additional 0.5 miles west, is estimated to cost $150,000 and the projected date of construction is beyond the scope of this year's Six-Year Secondary Road Improvement Plan.

3. Croaker Road - Route 607

The purpose of this improvement to this two-lane roadway is to improve safe access to Woodland Farms, Sycamore Landing, Ivey Dell, Ware Creek Manor, and the York River State Park boat ramp. Citizens have expressed concern about the safety of the roadway, particularly during the season where boats are being towed by vehicles to access the boat ramp. This roadway is outside the Primary Service Area (PSA). When last year's Six-Year Secondary Road Improvement Plan was considered by the Board in February, the Board adopted an improvement method that provided a substantial improvement to this roadway, with somewhat wider lanes and shoulders. This does not require a complete reconstruction of the roadway, which was previously proposed by VDOT staff. The cost of this improvement is approximately 50 percent of the previously planned improvement. With this in the scope of work, construction is projected to begin in 2009. If the previous construction scope was attempted, construction would not be anticipated for several years beyond the length of this Six-Year Plan. There have been no changes to the cost estimate or the anticipated date of construction from the plan the Board adopted in February.

4. Barnes Road and Mount Laurel Road

Spot curve improvement to both Barnes Road and Mount Laurel Road are included in this Plan as scoping projects only. As such, only $5,000 in Six-Year Secondary funds have been allocated towards each of these projects at this time. Additionally, no bid ad dates have been included for the projects due to unknown scopes of work. However, it is estimated that the ad dates will be in 2012.

It is also important to note that the $1,117,682 surplus project fiscal year allocations in FY 2009-2010, indicated on page 4 of the spreadsheet, are reserved for construction of the Barnes Road and Mount Laurel Road improvements, since construction costs have not yet been estimated.

5. Diascund Road

The railroad crossing upgrade on Diascund Road has an estimated construction cost of $60,000. The project will be funded largely through a Federal grant requiring a 10 percent local match. The local match of $6,000 will be allocated from FY 2004-2005 Six-Year Secondary funds. There have been no changes to the cost estimate or the anticipated date of construction from the plan the Board adopted in February.

6. Bikeways

As of last year, bikeway projects will no longer be included within the Six-Year Secondary Road Improvement Plan. This may change, and, if necessary, the staff will include the appropriate project designations in order to maintain progress on these bikeway projects. Even if they are not shown on the Six-Year Plan, staff anticipates steady progress on construction of bikeways along Longhill Road and Ironbound Road. Preliminary engineering is underway for both projects. Federal Regional Surface Transportation funds have been awarded to cover 80 percent of these projects, with the remaining 20 percent to be paid by the County.

The purpose of the work session is to discuss the concept and priorities of these projects. Once direction is provided at the work session, staff will schedule a public hearing for the Six-Year Plan at the first regular meeting of the Board in 2004 and request Board adoption. Mr. Hicks, VDOT Resident Engineer, and County staff will be available on December 16 to discuss the Six-Year Plan with the Board of Supervisors and answer any questions.

_____
David Anderson

CONCUR:

_____
O. Marvin Sowers, Jr.

DA/gs
sixyrplan04-09.mem

Attachments:

1. Work Session Summary Table (1 page)
2. FY 2004-2009 Six-Year Secondary Road Improvement Plan Estimated Allocations (4 pages)

Work Session
James City County
Secondary Six Year Plan FY 04-10

(12-9-03)

PROJECT	FY03-09 AD Date	**FY04-10 AD Date**	*Difference (months)*	FY03-09 Cost	**FY04-10 Cost**	*Difference*	%	**Comments/Reason**
1) 0615-047-126, C501 (Ironbound Road) Fr: Rt. 681 To: Rt. 31	7/30/2008	**7/30/2008**	*0*	9,300,000	**9,300,000**	0	0	
02) 0622-047-P46 (Racefield Rd) Fr:.56Mi W. Rt1040 To:1Mi W. Rt1040			*0*	150,000	**150,000**	0	0	
02) 0607-047-113, C502 (Croaker Road) Fr:.Rt.601 To:Rt.605	3/30/2007	**3/30/2007**	*0*	3,150,000	**3,150,000**	0	0	
03) 0601-047-171, C501 (Barnes Road) Fr:0.50mi E.Rt.60 To:0.85mi E.Rt. 60			*0*	5,000	**5,000**	0	0	**Review SERP**
04) 0608-047- ,C501 (Mount Laurel Road) Fr:0.3mi E.Rt.606 To: Rt. 606			*0*	5,000	**5,000**	0	0	**Review SERP**
05) 0603-047-S , FS (Diascund Road) Fr:.49 miS.Rt.601 To:.49 miS.Rt.601	12/30/2004	**12/30/2004**	*0*	6,000	**6,000**	0	0	**10% match for R/R crossing**

Projects completed or under contract:

>Racefield Rd. (Rte. 622)
>Ironbound Rd. Overlay (Rte. 615)

Secondary System

County: James City

Construction Program

Estimated Allocations

Fiscal Year	Incidental Construction	Regular Construction	Unpaved Construction	Total
2004-05	$105,000	$1,447,374	$16,976	$1,569,350
2005-06	$105,000	$1,460,261	$16,610	$1,581,871
2006-07	$105,000	$1,441,468	$16,585	$1,563,053
2007-08	$105,000	$1,458,621	$16,461	$1,580,082
2008-09	$105,000	$1,488,025	$16,461	$1,609,486
2009-10	$105,000	$475,343	$16,461	$491,804
Totals	$630,000	$7,771,092	$99,554	$8,395,646

Board Approval Date:: 2/25/2004

Steven W Hicks
VDOT Resident Engineer Date

Sanford B Wanner
Chairman, Clerk, Co. Administrator Date

District: Suffolk

County: James City

Board Approval Date:: 2/25/2004

SECONDARY SYSTEM CONSTRUCTION PROGRAM
(in dollars)
2004-05 through 2009-10

e PMS ID Accomplishment Type of Funds: Type of Project Priority #	Road Name Project # FROM TO Length Traffic Count	Estimated Cost AD Date:	Previous Funding	Additional Funding Required	PROJECTED FISCAL YEAR ALLOCATIONS						Balance to Complete	Scope of Work FHWA # *Comments*
					2004-05	2005-06	2006-07	2007-08	2008-09	2009-10		
Rt. 8000	Total County-Wide Allocation	*PE* $0	*PE* $0		$0	$0	$0	$0	$0	$0		
ID: CWI	CWI	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
State Forces		*CON* $839,458	*CON* $314,458		$105,000	$105,000	$105,000	$105,000	$105,000	$0		
STATE		*Total* **$839,458**	*Total* **$314,458**									
County-Wide Incidental												
Pri #: 0	0			**$525,000**	**$105,000**	**$105,000**	**$105,000**	**$105,000**	**$105,000**	**$105,000**	**($105,000)**	
Rt. 0615	IRONBOUND ROAD	*PE* $800,000	*PE* $492,489		$307,511	$0	$0	$0	$0	$0		4 Lane, median w/bike&multi trails
ID: 50057	0615-047-169,PE,C501	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	ROUTE 747	*CON* $5,500,000	*CON* $0		$723,863	$1,010,261	$1,041,468	$1,258,621	$1,052,966	$412,821		*RSTP funds ($1.5M) for R/W and Constr FY 02-03 and (1.5M) in FY 03-04.*
STATE	0.26 MI E RTE 616	*Total* **$6,300,000**	*Total* **$492,489**									
Regular	1.15											
Pri #: 1	17511	7/30/2008		**$5,807,511**	**$1,031,374**	**$1,010,261**	**$1,041,468**	**$1,258,621**	**$1,052,966**	**$412,821**	**$0**	
Rt. 0615	IRONBOUND ROAD	*PE* $0	*PE* $0		$0	$0	$0	$0	$0	$0		4 Lane, median w/bike&multi trails
ID: 50057	0615-047-169,RW,C501	*RW* $1,000,000	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	ROUTE 747	*CON* $2,000,000	*CON* $0		$0	$0	$0	$0	$0	$0		*Balance to be funded by RSTP funds ($1.5M) for R/W and Constr FY 02-03 and $1.5M FY03-04*
STP	0.26 MI E ROUTE 616	*Total* **$3,000,000**	*Total* **$0**									
Regular	1.15 MILES											
Pri #: 1.1	17511	7/30/2008		**$3,000,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,000,000**	
Rt. 0622	RACEFIELD ROAD	*PE* $0	*PE* $0		$0	$0	$0	$0	$0	$0		
ID:	0622-047-P46	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	0.56 MI. W. RTE 1040	*CON* $150,000	*CON* $18,154		$16,976	$16,610	$16,585	$16,461	$16,461	$16,461		*Use Rural Rustic Standards*
STATE	1.00 MI. W. RTE 1040	*Total* **$150,000**	*Total* **$18,154**									*BOS passed Rural Rustic Resolution.*
Unpaved	0.5 MILES											
Pri #: 2				**$131,846**	**$16,976**	**$16,610**	**$16,585**	**$16,461**	**$16,461**	**$16,461**	**$32,292**	
Rt. 0607	CROAKER ROAD	*PE* $150,000	*PE* $150,000		$0	$0	$0	$0	$0	$0		Improve shoulders & ditch
ID: 3089	0607-047-113,C502	*RW* $800,000	*RW* $800,000		$0	$0	$0	$0	$0	$0		15003
Contract	0.05 MI. S. RT. 601	*CON* $2,000,000	*CON* $52,419		$400,000	$450,000	$400,000	$200,000	$435,059	$62,522		*Use existing H/V alignment for improvements. Make spot improvements as needed with min design standards..*
STATE	0.06 MI. N. RT.605	*Total* **$2,950,000**	*Total* **$1,002,419**									
Regular	1.87 MILES											
Pri #: 3	1267	3/30/2007		**$1,947,581**	**$400,000**	**$450,000**	**$400,000**	**$200,000**	**$435,059**	**$62,522**	**$0**	
Rt. 0607	CROAKER ROAD	*PE* $200,000	*PE* $0		$0	$0	$0	$0	$0	$0		Improve shoulders & ditch
ID: 3089	0607-047-113,PE	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	0.05 MI. S. RT. 601	*CON* $0	*CON* $0		$0	$0	$0	$0	$0	$0		*Balance to be funded $200K by R/S FY 01-02 (0622 funds transferred from unpaved project with BOS resolution.)*
S/RevSh	0.06 MI S. RT. 605	*Total* **$200,000**	*Total* **$0**									*Improve shoulders & ditch w/min standards*
Regular	1.87 MI											
Pri #: 3.1	1267	3/30/2007		**$200,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$200,000**	

Date: 12/9/2003

District: Suffolk

County: James City

Board Approval Date:: 2/25/2004

SECONDARY SYSTEM CONSTRUCTION PROGRAM
(in dollars)
2004-05 through 2009-10

Route / PPMS ID / Accomplishment / Type of Funds: / Type of Project / Priority #	Road Name / Project # / FROM / TO / Length / Traffic Count / AD Date:	Estimated Cost	Previous Funding	Additional Funding Required	PROJECTED FISCAL YEAR ALLOCATIONS 2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Balance to Complete	Scope of Work / FHWA # / Comments
Rt. 0601	BARNES ROAD	*PE* $5,000	*PE* $0		$5,000	$0	$0	$0	$0	$0		SERP/scoping only- improve curve
ID: 52080	0601-047-171,C501	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	0.50 E RTE 60	*CON* $0	*CON* $0		$0	$0	$0	$0	$0	$0		*SERP/scoping only- improve curve. County would like to use SYP funds for SERP.*
STATE	.85 MI.E RTE.60	*Total* $5,000	*Total* $0									
Regular	0.35 MILES											
Pri #: 4	325			$5,000	$5,000	$0	$0	$0	$0	$0	$0	
Rt. 0608	MOUNT LAUREL ROAD	*PE* $5,000	*PE* $0		$5,000	$0	$0	$0	$0	$0		SERP/scoping only- improve curve
ID: 52081	0608-047- ,C501	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Contract	.30 MI. E. RTE606	*CON* $0	*CON* $0		$0	$0	$0	$0	$0	$0		*SERP/scoping only-improve curve. County would like to use SYP funds for SERP.*
STATE	ROUTE 606	*Total* $5,000	*Total* $0									
Regular	.0.45 MI											
Pri #: 5	0			$5,000	$5,000	$0	$0	$0	$0	$0	$0	
Rt. 0603	Diascund Road	*PE* $0	*PE* $0		$0	$0	$0	$0	$0	$0		Upgrade Railroad Crossing
ID: 65146	0603-047-S77, FS704	*RW* $0	*RW* $0		$0	$0	$0	$0	$0	$0		
Railroad	0.49 MI. S Route 601	*CON* $6,000	*CON* $0		$6,000	$0	$0	$0	$0	$0		*10% match for RR project*
RRP	0.49 MI. S Route 601	*Total* $6,000	*Total* $0									
Special Program												
Pri #: 9999				$6,000	$6,000	$0	$0	$0	$0	$0	$0	

Date: 12/9/2003

District: Suffolk

County: James City

SECONDARY SYSTEM CONSTRUCTION PROGRAM
(in dollars)
2004-05 through 2009-10

		Estimated Cost	Previous Funding	Additional Funding Required	PROJECTED FISCAL YEAR ALLOCATIONS						Balance to Complete
					2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	
County Totals	Program Allocation:				$1,569,350	$1,581,871	$1,563,053	$1,580,082	$1,609,486	$1,609,486	
Report Totals	PE	$1,160,000	$642,489	$517,511	$317,511	$0	$0	$0	$0	$0	$200,000
	RW	$1,800,000	$800,000	$1,000,000	$0	$0	$0	$0	$0	$0	$1,000,000
	CON	$10,495,458	$385,031	$10,110,427	$1,251,839	$1,581,871	$1,563,053	$1,580,082	$1,609,486	$491,804	$2,032,292
	Phase Allocation Total:	$13,455,458	$1,827,520	$11,627,938	$1,569,350	$1,581,871	$1,563,053	$1,580,082	$1,609,486	$491,804	$3,127,292
	Balance				$0	$0	$0	$0	$0	$1,117,682	

Date: 12/9/2003