A G E N D A

JAMES CITY SERVICE AUTHORITY

County Government Center Board Room

October 22, 2002

7:00 P.M.

A. ROLL CALL

B. CONSENT CALENDAR

1. Minutes – July 23, 2002, Regular Meeting
2. Minutes – September 24, 2002, Regular Meeting
3. Amendment to Regulations Governing Utility Services - Water Conservation Plan
4. Award of Bid – Lift Station 1-2

C. BOARD REQUESTS AND DIRECTIVES

D. ADJOURNMENT

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AGENDA ITEM NO. B-1

AT A REGULAR MEETING OF THE BOARD OF DIRECTORS OF THE JAMES CITY SERVICE AUTHORITY, JAMES CITY COUNTY, VIRGINIA, HELD ON THE 23RD DAY OF JULY 2002, AT 7:00 P.M. IN THE COUNTY GOVERNMENT CENTER BOARD ROOM, 101 MOUNTS BAY ROAD, JAMES CITY COUNTY, VIRGINIA.

A. ROLL CALL

Bruce C. Goodson, Chairman
Michael J. Brown, Vice Chairman
Jay T. Harrison, Sr.
James G. Kennedy
John J. McGlennon

Sanford B. Wanner, Secretary
Frank M. Morton, III, County Attorney
Larry M. Foster, General Manager

B. CONSENT CALENDAR

Mr. Brown made a motion to adopt the item on the Consent Calendar.

The motion passed by a unanimous voice vote.

1. Minutes - June 25, 2002, Regular Meeting

C. BOARD CONSIDERATIONS

1. Utility Participation Agreement - Wellington Subdivision

Mr. Foster stated that due to the proximity to existing and future water/sewer lines and other undeveloped property, the Wellington Development provided an opportunity to increase the size of the water/sewer lines and the pump station. After negotiations with the developer, incremental costs to increase the size of the water/sewer utilities were agreed to as $55,695.00.

Staff recommended the Board approve the resolution authorizing the terms for the Chairman to sign a Utility Participation Agreement with American Eastern Inc., providing terms for reimbursement to the developer for additional expenses incurred to increase the capacity of water and sewer infrastructure as requested by the JCSA to serve future system needs.

Mr. Kennedy made a motion to adopt the resolution.

The motion passed by a unanimous voice vote.

R E S O L U T I O N

UTILITY PARTICIPATION AGREEMENT -WELLINGTON SUBDIVISION

WHEREAS, the James City Service Authority (JCSA) staff identified the opportunity to increase the capacity of the utilities to serve the Wellington Subdivision to provide for their integration into the JCSA infrastructure and improve the overall system; and

WHEREAS, the Regulations Governing Utility Service allows the JCSA to enter into a Utility Participation Agreement with a developer to provide the terms of reimbursing the incremental costs to increase the size of the utilities' infrastructure over that need to serve the development alone; and

WHEREAS, staff and American Eastern, Inc., have agreed on the amount of reimbursement necessary to compensate American Eastern for the expenses incurred to increase the size of their water and sewer facilities over that needed by their development.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the James City Service Authority, James City County, Virginia, authorizes its Chairman to sign a Utility Participation Agreement with American Eastern, Inc., providing the terms of reimbursement for costs incurred to increase the size of a water and sewer infrastructure to serve the Wellington Development as requested by the JCSA staff.

2. Utility Participation Agreement - U. S. Home Corporation

Mr. Foster stated that the James City Service Authority's (JCSA) FY2003 Budget included funds to rehabilitate two sewerage pumping stations adjacent to Route 60 in Lightfoot. Between the two stations, U. S. Home Corporation is developing the Colonial Heritage at Williamsburg project. By partnering with U. S. Home in the expansion of a new station serving the development and enlargement of some of its required gravity sewer lines and force main, the two pumping stations can be eliminated.

Staff recommended the Board approve the resolution authorizing the Chairman to sign a Utility Participation Agreement with U. S. Home Corporation providing the terms to upgrade portions of the sewer system improvements for the Colonial Heritage at Williamsburg project in order to eliminate two JCSA sewerage pumping stations located adjacent to the development. The Agreement provides for the JCSA to reimburse up to $900,000 to U. S. Home Corporation for the upgrades.

The Board and staff held a discussion regarding the cost for the staff recommendation vs. rehabilitating the system.

Mr. Harrison made a motion to approve the resolution.

The motion passed by a unanimous voice vote.

R E S O L U T I O N

UTILITY PARTICIPATION AGREEMENT - U. S. HOME CORPORATION

WHEREAS, the James City Service Authority has determined it prudent to enter into a Utility Participation Agreement with U.S. Home Corporation who has received land use approvals to build the Heritage of Williamsburg project located in Lightfoot; and

WHEREAS, the Agreement provides the terms for reimbursement to U.S. Home Corporation of the costs for additional capacity in the planned sewer infrastructure to allow for the James City Service Authority to eliminate two existing sewerage pumping stations and reduce the life cycle costs associated with maintaining one versus three sewerage pumping stations.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the James City Service Authority, James City County, Virginia, authorizes the Chairman to sign the Utility Participation Agreement with U.S. Home Corporation on behalf of the James City Service Authority.

3. Award of Bid - Ewell Hall Water System Improvements

Mr. Foster stated that five firms submitted bids on the publicly advertised plans and specifications for the replacement of the Ewell Hall water system and recommended the Board approve the resolution awarding the contract for the Ewell Hall water system improvements to Tidewater Utility Construction for $133,191.50.

Mr. Harrison made a motion to adopt the resolution.

The motion passed by a unanimous voice vote.

R E S O L U T I O N

BID AWARD - EWELL HALL WATER SYSTEM IMPROVEMENTS

WHEREAS, the plans and specifications have been advertised and competitively bid for the Ewell Hall Water System Improvements; and

WHEREAS, five firms submitted bids, with Tidewater Utility Construction submitting the low bid of $188,191.50; and

WHEREAS, the bid is within budget, funds are available, and Tidewater Utility Construction has been determined capable of performing the work associated with the project.

NOW, THEREFORE, BE IT RESOLVED that the Board of Board of Directors of the James City Service Authority, James City County, Virginia, awards the contract for the Ewell Hall Water System Improvements to Tidewater Utility Construction in the amount of $181,191.50

4. Award of Bid B Groundwater Treatment Facility Site Preparation

Mr. Foster stated that nine firms submitted bids for the publicly advertised plans and specification for the access road, site work, and erosion and sedimentation pond for the Groundwater Treatment Facility and recommended the Board approve the resolution awarding the contract to Walter C. Via, Inc., in the amount of $495,930 for the Groundwater Treatment Facility site work.

D. BOARD REQUESTS AND DIRECTIVES

Mr. Harrison requested clarification on the public notice sign posted on Route 5 for a special use permit application.

Mr. Foster stated that the application is for the JCSA groundwater treatment plant project, access road, and site preparation.

Mr. Foster provided the Board with a brief overview of the educational efforts by staff to citizens about water conservation.

The Board requested information regarding a flat-rate system for sewer and the feasibility of implementing such a structure.

E. ADJOURNMENT

Mr. Brown made a motion to adjourn.

The motion passed by a unanimous voice vote.

Mr. Goodson adjourned the Board at 9:47 p.m.

Sanford B. Wanner
Secretary to the Board

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AGENDA ITEM NO. B-2

AT A REGULAR MEETING OF THE BOARD OF DIRECTORS OF THE JAMES CITY SERVICE AUTHORITY, JAMES CITY COUNTY, VIRGINIA, HELD ON THE 24TH DAY OF SEPTEMBER, 2002, AT 7:00 P.M. IN THE COUNTY GOVERNMENT CENTER BOARD ROOM, 101 MOUNTS BAY ROAD, JAMES CITY COUNTY, VIRGINIA.

A. ROLL CALL

Bruce C. Goodson, Chairman
Michael J. Brown, Vice Chairman
Jay T. Harrison, Sr.
James G. Kennedy
John J. McGlennon

Sanford B. Wanner, Secretary
Frank M. Morton, III, County Attorney
Larry M. Foster, General Manager

B. CONSENT CALENDAR

Mr. Kenendy made a motion to adopt the item on the Consent Calendar.

The motion passed by a unanimous voice vote.

1. Formal Acceptance of Water and Sewer Systems – FY 02

R E S O L U T I O N

FORMAL ACCEPTANCE OF WATER AND SEWER SYSTEMS - FY 2002

WHEREAS, certain water and sewer infrastructures have been constructed by developers and dedicated to the James City Service Authority; and

WHEREAS, these water and sewer infrastructures have been constructed in accordance with technical requirements of the James City Service Authority.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the James City Service Authority, James City County, Virginia, does formally accept the dedication of the water and sewer systems listed below, as of June 30, 2002.

Water Dedications

Development	Value
Advance Vision Institute	$ 8,950
Brandon Woods - Phase 2, Section 4	43,210
Brandon Woods - Phase 2, Section 5	59,225
Ford's Colony - Manor Club II	22,225
Ford's Colony - Section 14A	31,845
Ford's Colony - Section 14B	146,650
Governor's Land - Fowler Lake B	26,220
Greensprings West - Phase I	146,825
Jamestown Hundred - Phase I	186,865
Monticello Avenue - Water Main Ext.	69,140
Mulberry Place	119,150
Powhatan Place Townhomes	109,665
Powhatan Secondary - Section 6A	147,990
Powhatan Woods - Phase I	161,800
Springhill - Phase 3 and 4	171,445
Village at Westminister - Phase 4	124,725
Village at Westminister - Phase 5	206,000
Williamsburg Plantation - Phase 3	41,415
Williamsburg Plantation - Phase 4	14,550
Total - Water	$1,837,895

Sewer Dedications

Development	Value
Advance Vision Institute	$ 30,619
Brandon Woods - Phase 2, Section 4	78,937
Brandon Woods - Phase 2, Section 5	105,296
Ford's Colony - Manor Club II	61,146
Ford's Colony - Section 14A	87,274
Ford's Colony - Section 14B	244,761
Governor's Land - Fowler Lake B	11,505
Greensprings West - Phase I	488,470
Jamestown Hundred - Phase I	260,613
Magruder Woods	6,850
Mulberry Place	232,079
Powhatan Place Townhomes	158,870
Powhatan Secondary - Section 6A	193,380
Powhatan Woods - Phase I	249,767
Springhill - Phase 3 and 4	223,431
Village at Westminister - Phase 4	170,375
Village at Westminister - Phase 5	352,490
Williamsburg Plantation - Phase 3	61,283
Williamsburg Plantation - Phase 4	24,530
Total - Sewer	$3,041,676

Total Value of Dedications by Developers during FY 02 $4,879,571.00

C. BOARD CONSIDERATION

1. Virginia Department of Transportation (VDOT) Construction Permit – Liability Insurance Coverage

Mr. Foster stated that the Virginia Department of Transportation (VDOT) requires a Land Use Permit for all construction work within its right-of-way and a bond or resolution from the public utility's governing body to provide liability insurance coverage on work that is done within the right-of-way.

Staff recommended the Board adopt the resolution providing evidence that the James City Service Authority has liability insurance for construction work to be completed within the VDOT right-of-way and thereby discontinuing the need to provide VDOT with a bond for the coverage.

R E S O L U T I O N

VIRGINIA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PERMIT - LIABILITY INSURANCE COVERAGE

WHEREAS, it becomes necessary from time to time for the James City Service Authority to obtain permits from the Virginia Department of Transportation to install, construct, maintain, and operate certain public utilities projects along, across, over, and upon highway systems of the Commonwealth of Virginia; and

WHEREAS, expense, damage, or injury may be sustained by the Commonwealth of Virginia growing out of the granting to the James City Service Authority by the Virginia Department of Transportation of said permits for the work aforesaid.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the James City Service Authority, James City County, Virginia:

Section 1

That the provisions of Section 1.064 of the Land Use Permit Manual of the Virginia Department of Transportation, the James City Service Authority does hereby grant assurances to the Virginia Department of Transportation that it shall, in all respects, comply with all of the conditions of the permit or permits that have been, or will be, granted to the James City Service Authority and that said Authority does hereby certify that it will carry liability insurance for personal injury and property damage that may arise from the work performed under permit and/or from the operation of the permitted activity as follows: up to $1,000,000 each occurrence to protect the Commonwealth Transportation Board members and Department's agents or employees; $75,000 each occurrence to protect the Board, Department, or the Commonwealth in the event of suit.

Section 2

That the James City Service Authority General Manager or his designee be and hereby is authorized to execute on behalf of the James City Service Authority all Land Use Permits and related documents of the Virginia Department of Transportation.

Section 3

That this resolution shall be a continuing resolution and shall not be revoked unless and until sixty days written notice of any proposed revocation be submitted to the Virginia Department of Transportation.

Section 4

That the James City Service Authority shall, if requested by the Virginia Department of Transportation, furnish or shall require its contractors to furnish to the Virginia Department of Transportation a performance bond, guarantee fee or irrevocable letter of credit in a minimum amount of $1,000,000 to cover the performance of permitted work.

NOW, THEREFORE, BE IT FURTHER RESOLVED that the General Manager be and hereby is authorized and directed to procure the insurance required by Section 1 above.

D. BOARD REQUESTS AND DIRECTIVES

Mr. McGlennon requested staff present an overview of the adopted three-tier water rate structure and how it impacts its customers.

E. ADJOURNMENT

Mr. Harrison made a motion to adjourn until 7 p.m. on October 22, 2002.

The motion passed by a unanimous voice vote.

Mr. Goodson adjourned the Board at 9:07 p.m.

Sanford B. Wanner
Secretary to the Board

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AGENDA ITEM NO. B-3

M E M O R A N D U M

DATE: October 22, 2002

TO: The Board of Directors

FROM: Lisa Meddin, Water Conservation Coordinator, James City Service Authority

SUBJECT: Amendment to Regulations Governing Utility Services - Water Conservation Plan

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The Department of Environmental Quality issues permits to the James City Service Authority (JCSA) that provide the conditions for the JCSA to withdraw groundwater. One of the terms of the permit is the requirement that the JCSA has a Water Conservation Plan (Plan). The Plan is included in JCSA's Regulations Governing Utility Service under Section 33. Water Conservation and Drought Management Plan.

On June 25, 2002, the Board approved an amendment to Section B of the Water Conservation and Drought Management Plan which establishes benchmarks for which the JCSA will enter into each of four stages of Drought Management.

The JCSA requests that the Board approve an amendment to Section A of the Water Conservation and Drought Management Plan, which establishes policies that support County Ordinance, Chapter 11, Article VI, Drought Management. Since the Plan was approved, the JCSA or County have taken the following actions that encourage the proposed update to the Plan:

- When the Plan was developed, the JCSA did not have a staff position dedicated to water conservation. Since that time, the JCSA added a part-time Water Conservation Coordinator staff position. In August 2000, the JCSA made the position full-time.

- In May 2000, the Board appointed a Citizen Water Conservation Committee.

- In April 2001, the JCSA launched "Let's Be Water Smart" (Water Smart), a public/private initiative to promote responsible water usage in the County. All water conservation programs are developed under the Water Smart brand. Water Smart includes an active partnership with the local landscape industry, citizen workshops, an advertising campaign, a website, and a proactive approach to public education.

- On June 25, 2002, the Board passed a resolution approving Water Conservation Guidelines proffers to be included in applications to rezone land or for a special use permit.

- On July 23, 2002, the Board approved an Outdoor Water Use Ordinance that regulates the days and times that the owner/occupant of a structure can use water outdoors.

Attached is a copy of Section A of the Plan and proposed Amendments. Staff recommends approval of the attached resolution authorizing amendments to Section 33 of the Regulations Governing Utility Service.

_____
Lisa Meddin

CONCUR:

_____
Larry M. Foster

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Attachments:

SECTION 33. WATER CONSERVATION AND DROUGHT MANAGEMENT PLAN

The purpose of this section is to establish policies ~~which~~ *that* support County Ordinance, Chapter 11, Article VI, Drought Management.

A. Water Conservation Plan

1. Introduction

Population projections and economic growth within James City County have raised public awareness of the inadequacy of public water supplies to satisfy future needs. Of particular concern is the reliability of the quality and quantity of the surface water and groundwater resources in the region. Another concern is the adequacy of surface and groundwater supplies to meet current and projected demands during drought conditions *or during a well facility failure*. Therefore, conservation of available and proposed water supplies shall be a key element of the James City Service Authority's (JCSA) long-range strategy for public water supply management.

Conservation is not the complete solution. However, conservation can extend a finite water supply, ~~less inexpensively than increasing the existing public water supply. Conservation can also reduce the impacts of future growth and the risk of disruptive water shortages by extending this limited resource~~ *postponing the need for costly repairs and expansion while reducing the impacts of future growth and water supply emergencies.*

The goals of this water conservation program are:

- Reduce future demands on limited water supplies.
- Reduce the magnitude of seasonal peak water demands.
- Fully integrate water conservation into long-range water supply planning and management.
- Fully integrate water conservation into land use planning and development.

Water conservation means measures intended to improve the efficiency of water use and reduce waste. The intent of this definition is to focus on technical methods of reducing water demands through efficiency. This definition is not to be equated with a similar level of sacrifice by end users to comply with temporary emergency measures that are implemented during drought conditions *or a water supply emergency*.

2. Conservation Measures

(a) Water Conservation Staff

In 2000, JCSA upgraded the part-time Water Conservation Coordinator to a full-time staff position. The Water Conservation Coordinator is responsible for implementing and managing all conservation related activities, with an emphasis on public information and education.

(~~a~~ *b*) Public Information and Education

Public acceptance of this conservation plan requires information and education. The primary goals of the education program are as follows:

(1) ~~Create an awareness~~ *Educate citizens* of local public water supply issues ~~and problems~~.

(2) Inform ~~the~~ citizens of the benefits of water conservation that include:

- Optimized use and efficiency of public water supplies
- Cost savings by reducing, delaying, or eliminating utility system expansions
- Reduced risk of public water supply shortages
- Protection of economic viability of the area

(3) Educate ~~the~~ citizens on water-conserving ~~techniques~~ *measures* such as ~~low-water-use landscaping (Mesiscape) and low-water-use fixtures~~ *water efficient landscaping and low flow fixtures*.

~~Educating the citizens of James City County requires identifying target groups for education. The following groups include most citizens and public water users in James City County.~~ *Local target groups for water conservation education include:*

- ~~Local g~~ *G*overnment boards and commissions
- News Media
- ~~Property owners~~ *Homeowners* associations
- ~~Farmers~~
- Industrial and commercial establishments
- Students and teachers
- Community leaders and influential citizens
- Professionals and tradesmen (~~landscape architects, architects, engineers, builders, nursery owners, etc.~~ *landscape contractors, irrigation contractors, nursery owners, builders and developers*)
- High water-use industries and businesses (golf courses, laundries, motels, hotels, car washes, and restaurants)
- ~~Others~~

In April 2001, the JCSA launched "Let's be Water Smart," a public/private water management initiative. The goal of Let's be Water Smart is to promote responsible water usage in James City County.

Let's be Water Smart is a public education program and a partnership between JCSA and local stakeholder businesses, including landscape contractors, irrigation contractors, nurseries, builders and developers. The program offers partnership opportunities to these businesses, in exchange for promoting "Water Smart" practices to their customers. Most, if not all, of JCSA's water conservation efforts are promoted as Let's be Water Smart programs. The program includes educational advertising, brochures, product giveaways, contests, workshops, demonstration landscapes, public presentations, environmental events participation, Water Smart communities, and policy development.

The JCSA *also* participates in the Hampton Roads Water Efficiency Team (HRWET) a regional organization representing all water purveyors in the Hampton Roads area. The mission of HRWET is to educate the public and promote water conservation. The group distributes educational material at public events *and to groups* across the region. ~~The following is a list of potential public education "forums":~~ *The Water Conservation Coordinator represents JCSA at HRWET meetings and events.*

- ~~County fairs and other similar events~~
- ~~Meetings of local government boards or commissions~~
- ~~Media~~
- ~~Regional authorities, districts, organizations~~
- ~~Billing inserts~~
- ~~Meetings of property owner associations~~
- ~~Agricultural agencies~~
- ~~Classroom grades (three through 12 and college)~~
- ~~Professional publications~~
- ~~Service and social clubs~~
- ~~Meetings of garden clubs~~

~~To make the educational program effective, the JCSA will do the following:~~

- ~~Designate responsibility to an appropriate staff member to represent the JCSA on HRWET and carry out the conservation education program in James City County~~

- ~~Determine criteria to measure the effectiveness of the education program at regular intervals.~~

- ~~Provide adequate staff and funding for the program.~~

(c) Water Conservation Committee

In January 2000, the JCSA Board of Directors adopted a resolution establishing a citizen-based Water Conservation Committee. The Committee's purpose is to "raise public awareness of water conservation issues and recommend water conservation initiatives." The Committee works with staff to achieve the following goals:

- *Provide a community perspective on water conservation issues;*
- *Assist and advise the JCSA and Water Conservation Coordinator in the development of water conservation programs;*
- *Assist in the promotion of water conservation goals throughout the County;*
- *Provide citizen input on the implementation of JCSA/JCC water conservation programs; and*
- *Raise public awareness of the County's water supply and the need to use water efficiently with the objective of changing water use habits.*

(~~b~~ *c*) Water Conserving Plumbing Code

Interior water-use in both residential and commercial settings is largely "technology based," that is, the water use rate of fixtures and appliances determines the amount of water required to accomplish a function. Improvement of end use efficiency by reducing water use rates is a major means of conserving public water supplies.

The various methods of increasing interior water-use efficiency can be classified in two basic categories: (1) code standards for new construction and (2) retrofitting of existing structures. Although the potential water savings for each category are similar, they differ in the institutional and regulatory issues and the water savings they realize.

Section 15 of these Regulations were last revised in July 1995. The Regulations allow the termination of utility service when "service to a customer is of such magnitude or such character that utility service to other customers is affected" or for "negligent and wasteful use of water during periods when restrictions on consumption are imposed to conserve water."

James City County adopted the Uniform Statewide Building Code (USBC) as the County building code in 1974. The 1984 revision of this code required the installation of low flow (3 gallons per minute) shower heads, low volume (3.5 gallons per flush) toilets, water saving washing and dishwashing machines, and flow controlled or aerated faucets in new construction and renovation of existing structures. *The 1996 Edition of this code with 2000 Amendments further increased conservation methods by requiring the installation of low flow shower heads (2.5 gallons per minute), low volume toilets (1.6 gallons per flush), and water conserving sink faucets (2.2 gallons per minute).*

The General Assembly passed legislation in 1993 allowing localities to adopt standards for plumbing fixtures more stringent than those of the 1990 Building Officials and Code Administration (BOCA) Plumbing Code. The 1993 revision of the BOCA Plumbing Code further decreased the flow rate, or consumption of water per use, for plumbing fixtures. The Virginia Department of Housing and Community Development incorporated the 1993 BOCA Plumbing Code Plumbing Code into the USBC in April 1994. The JCSA incorporated those rates in the latest revision of the Regulations. *The 1995 BOCA Plumbing Code further decreased flow rates to the same rates as the 1996 USBC Edition.*

All plumbing work in James City County must conform to the latest requirements for water conserving fixtures. ~~A few less-conserving~~ *High water use* plumbing fixtures remain on the market~~. There is nothing that prevents the owner of a home or business from replacing a water-saving fixture with one of these~~*, and home or business owners may replace water-saving fixtures with* higher usage fixtures if the replacement is not part of a renovation project.

(~~c~~ d) Water Conservation Retrofit Program

The water demand projections prepared by County staff ~~in 1983, and updated in~~ 1986, considered that residential demand should reduce from 81 gallons per capita day (gpcd) to 69 gpcd through an active water conservation program, new construction utilizing water-conserving fixtures required by the plumbing code, and the replacement of existing fixtures with water-conserving fixtures. Replacement of existing fixtures was projected to occur at a rate of 1 percent per year. ~~The per-employee water usage rates used for the commercial and industrial portions of these projections were reduced from 1980 levels for the same reasons residential usage was projected to decline.~~

In March 2000, the JCSA participated in an EPA Environmental Justice Grant, administered by the Hampton Roads Planning District Commission, HRWET's umbrella organization. With EPA grant monies, JCSA, HRWET, and local volunteers retrofitted ninety lower-income homes with 1.6 gpf low flow toilets.

~~Regional per capita water consumption was 73 gpcd in 1990 according to a study by Malcolm Pirnie for the Regional Raw Water Study Group (RRWSG) a planning effort by the four water suppliers on the York-James Peninsula. Because more than half of the structures in James City County predate the 1982 building code, the JCSA per capita consumption is probably higher than 73 gpcd but that number is difficult to determine because not all county residents are served by public water.~~

~~The portion of the county served by public water is served by four different purveyors with different billing practices making data collection difficult. Because of the age of the housing stock in James City County the JCSA may have to set up a more active program than the current voluntary retrofit program to realize the decreasing per capita water-consumption rates considered in the County's water demand projections.~~

~~Most utility-sponsored retrofit programs have been carried out to reduce wastewater flows rather than promote water conservation. Increasingly proactive programs could be considered as an alternative to upgrading sanitary sewage pumping stations or other components for areas that are currently experiencing overloading of the wastewater system(s).~~

~~A wide range of options is available for setting up a retrofit program. The JCSA will consider the general types of retrofit programs described below:~~

~~(1) Voluntary Retrofit Programs~~

~~Property owners are encouraged to retrofit existing structures at their own expense. This type of program requires significant educational and promotional effort about the need for and the benefits of these retrofits. Total program effectiveness, therefore, is likely to be low.~~

~~(2) Mandatory Retrofit Programs~~

~~Ordinances require that property owners retrofit all existing structures according to prescribed standards. The ordinance could require compliance by a prescribed date or at point-of-sale. This option requires inspections to ensure compliance. Total effectiveness of this program is likely to be high if public resistance can be overcome.~~

~~(3) Utility Sponsored Retrofit Program~~

~~The JCSA distributes retrofit "kits" to property owners. These kits are given to customers free of charge or sold to them below cost. Some programs also offer assistance with purchase and installation of water-conserving plumbing fixtures. This option would also require inspection to ensure compliance and proper installation. Total effectiveness of this program varies depending on the type of devices provided and the distribution method.~~

~~The public education program should emphasize the benefits of, and the technologies for, the water-conserving retrofits. This material will focus on low and moderate cost "do-it-yourself" retrofits and underscore their favorable cost payback.~~

(~~d~~ *f*) Water Conservation-Oriented Rate Structure

(1) The key issues that must be addressed to achieve demand reductions through the rate structure are conservation pricing and marginal cost pricing.

Conservation Pricing

Water is relatively inexpensive in comparison to other household purchases so reduction in use is limited even when price increases. Most studies have found consumption somewhat responsive to price changes, but the change in consumption is usually proportionally less than the associated price change and often is only temporary. Essential water uses are generally less responsive to price changes than nonessential

uses. Water use within the home, for example, is less responsive to price increases than exterior water use.

Estimates of the price elasticity in water demand from other areas vary widely. Studies estimate a 100 percent increase in water rates will decrease total residential water use from 1 to 60 percent and exterior water use from 27 to 70 percent. These studies suggest consumer behavior can be modified with rate increases but permanent behavioral adjustment may take several years to occur.

Marginal Cost Pricing

Utilities have set water rates in the past to reflect the average cost of water. Economists have argued that water rates should reflect the cost of the next unit of water obtained by the utility, or the marginal cost. The charge for water from a new and expensive source should reflect that additional cost even if it is greater than the average cost. Rates based on these marginal costs would reflect the increasing scarcity and cost of new water supplies.

~~(2) The JCSA will evaluate the following specific measures for attaining the conservation goals reflected in their water demand projections.~~

~~Rates:~~ Effective ~~July 1, 1996~~ *October 1, 2000*, a new increasing block rate structure replaced the ~~flat rate structure and the seasonal surcharge~~ *existing block rate structure* for residential customers.

Other rate options that may be set up if needed are: replacing the single block rate that will remain in effect for commercial customers with the increasing block rate; ~~increasing~~ *implementing* the seasonal surcharge and apply it to residential customers again; eliminating the current practice of allowing sub-meters off private service lines for outdoor uses and require a separate service connection and meter with appropriate fees; and assessing a pumpage fee similar to the peaking factor charged by electric utilities to encourage individual conservation efforts.

~~(3) Incentives: A variety of incentives are available to encourage and promote water conservation. The JCSA may reduce or waive connection fees for expansion of existing structures if the water demand rate decreases or remains the same. This could be accomplished by replacing existing fixtures with ones that meet the requirements of the "advanced" plumbing code.~~

~~The JCSA may also reduce or waive fees in return for use of experimental or innovative commercial or industrial reuse/recycle operations. Another incentive might be a revolving loan program to finance water saving appliances and fixtures or water reuse programs, e.g., greywater irrigation systems.~~

(~~e~~ *g*) Universal Metering and Meter Repair and Replacement

The JCSA meters all customer accounts. Studies show that metering results in lower water use since customers become "sensitized" to the amount of water used through the effect it has on the water bill. Metering is also an aid to detecting leaks on both sides of the meter.

Maintenance programs for water meters are essential to ensure that an accurate measure of system integrity is obtained. Under-registration by meters may result in a significant percentage of unaccounted for water and loss of revenue.

The JCSA has a meter replacement program that requires the replacement of residential meters every 15 years. Fifteen (15) years is the average service life of residential meters. After all residential meters are within that 15-year service life, a percentage of the total meters in the system will be changed every year to maintain that standard.

The JCSA is also considering a program to evaluate the sizing of meter installations for larger commercial customers. This study will evaluate the development of a routine maintenance and replacement program for these meters. Meanwhile, these meters are calibrated and repaired or replaced upon special request by a customer or based on irregular readings in error by ~~3~~ *three* percent or greater.

The JCSA has an ongoing program for purchasing private water systems in James City County. Many systems the JCSA acquired were not metered or there were no records about the maintenance or age of the customer's meters. The JCSA installed meters in those systems that were not metered and replaced the meters in the systems that had no records of their age.

(~~f~~ *h*) Water Conserving Landscaping

Landscape irrigation can create seasonal peak water demands. Landscape irrigation use is largely dependent on weather conditions so large variations in peak demand occur between wet, normal, and dry years. Drought conditions typically increase total water use and peak water demands. ~~Peak~~ *In 2001, the average peak* summer month demands on the JCSA systems were ~~40%~~ *18%* greater than average day demands ~~in 1995~~*, and the highest peak demand month was 82% higher than the lowest demand month of 2001*. Reducing the magnitude of seasonal peak water demand offers the greatest potential for optimal sizing of water supply, treatment, transmission, and distribution facilities.

One method of reducing the seasonal peak demand for landscape irrigation is to promote and encourage ~~low water demand landscaping commonly called "Xeriscaping" in the arid Southwest but more appropriately called "Mesiscaping" in this region. The following are the fundamentals of mesiscaping:~~ *water efficient landscape practices for this region, such as:*

- ~~Planning and design that ensures the resident's long-term satisfaction and water conservation.~~ *Planning and design to maximize water efficiency.*

- *Implementing an annual maintenance plan for the specific needs of the landscape.*

- ~~Limiting the most long-term water-consumptive component of a landscape, the turf areas.~~ *Replacing turf with landscaped beds, mulched areas, ground covers, or hard structures.*

- ~~Soil improvements~~ *Improving soil* to ensure water holding capacity, absorption properties, and nutrients for plant growth.

- ~~Larger mulch areas that cool the soil, reduce weed growth, reduce evaporation, and slow erosion.~~

- ~~Use of~~ *Using* native and other adapted low-water-use plants.

- ~~Irrigating at the right time and applying the right amount.~~ *Efficient irrigation.*

- ~~Proper maintenance to avoid undermining the effectiveness of a well planned and installed mesiscape.~~

The acceptance and use of ~~the mesiscape concept by most of James City~~ *water efficient landscaping by* County citizens ~~are~~ *is* necessary for the long term success of this Conservation Plan. To achieve widespread use of ~~mesiscape fundamentals, James City County/James City Service Authority will do the following~~ *water efficient landscape practices, JCSA/JCC will*:

- Use all available educational resources to ensure public awareness of the fundamentals, long-term benefits, and cost-effectiveness of the ~~mesiscape~~ *Water Smart* concept.

- *Require all new developments requiring a special use or rezoning permit to include water conservation proffers in their plans, including Water Smart landscaping practices, and develop specific water conservation guidelines for each development.*

- Design and properly maintain demonstration landscapes in highly visible areas within James City County such as County buildings.

- *Encourage the use of automatic underground drip irrigation systems for both turf areas and landscaped beds.*

- ~~Offer incentives to encourage builders, developers, and owners to install landscaping using mesiscape fundamentals. One incentive that may be considered is adding a surcharge to all consumption registered on sub-meters for exterior use. This surcharge would be less than the sanitary sewage fees these meters were installed to avoid but would recognize the seasonal nature of the peak demand they satisfy. Another incentive might be reduced connection fees for irrigation meters for certified mesiscape plans.~~

- ~~Modify the Landscape Ordinance to require incorporation of the mesiscape concept in landscape plans for development.~~

(g *i*) Leak Detection and Water Audits

Good construction standards for public water systems and a water main replacement program for areas where leaks recur will result in fewer leaks. The JCSA established and maintains **Standards and Specifications for Water Distribution Systems,** which defines material and construction standards for wells, water mains, storage and pumping facilities and appurtenances. These Standards are reviewed and updated routinely to ensure they accurately reflect the best engineering practices, materials, construction standards, and inspection techniques. The JCSA also has an active ongoing program for leak detection and repair.

Ground elevations in James City County range from sea level to nearly 120 feet. This represents a pressure variation of approximately 50 pounds per square inch (psi) between the high and low areas of the County. In order to provide for adequate, but not excessive, system pressure in both the high and low areas the system is divided into main and secondary pressure zones. ~~The secondary pressure zone consists of four separate areas. Each area is served from the main pressure zone through at least one pressure reducing valve (PRV).~~ *The secondary pressure zones are separated from the main pressure zone through a series of pressure reducing valves (PRV's).*

Using PRVs to reduce system pressure aids conservation in two (2) ways. The first is by reducing losses from leaks or faulty fixtures that might go undetected for long periods. Secondly, PRVs will also reduce the amount of water consumed in "time dependent" uses such as showers.

Water audits offer a way to identify and eliminate excessive use of public water. Public water purveyors routinely compare the metered amount of water they produce with the metered consumption of their customers to determine the amount and percentage of unaccounted for water in their system(s). The last audit of the JCSA system was done in 1990 and concluded the unaccounted for water equaled 6% of system demand. This is very favorable when compared to the national average of 10-15%.

The JCSA systems will be audited during the first two years of each groundwater withdrawal permit. The results of these audits will be used to identify areas for the JCSA's active ongoing leak detection and repair program. Areas of recurring leaks will be included in the capital improvement program for line replacement.

(h *j*) Wastewater Reuse and Recycling as a Conservation Measure

The RRWSG evaluated wastewater reuse as a long-term alternative supply to meet the water demands on the York-James Peninsula. In light of strong opposition to this alternative from the Virginia Department of Health, the consultant's report concluded, "it is highly unlikely that the Commonwealth of Virginia would approve a Lower Peninsula wastewater reuse project for potable use." This report went on to state that wastewater reuse to meet non-potable demands such as industrial cooling, irrigation and car washes might be more viable. The Federal agencies reviewed the scope of the study performed for the Regional Raw Water Study

Group and concurred with the consultant's recommendation that further evaluation of wastewater reuse is needed to meet non-potable demands only.

"Wastewater reuse" is a general term applied to any process in which a wastewater stream is employed for any beneficial use. Wastewater recycling is a subclass of wastewater reuse and refers to a situation where the same water is used over and over to satisfy the same demand. For the purpose of this discussion, wastewater reuse is defined as a deliberate strategy of directly reusing wastewater effluent, treated to the degree appropriate for the intended reuse, to satisfy non- potable demands.

The JCSA Regulations require process water reuse in certain commercial/industrial operations, i.e., car washes. The water connection fees based on the size of the water meter, and also the associated sewer connection fees, encourage wastewater reuse by all commercial/industrial customers. Correct sizing of water meters to accurately register consumption has already been addressed in item 5, Universal Metering, above.

Sewage treatment in the Hampton Roads area is provided by the Hampton Roads Sanitation District who recently initiated a regional effort to develop a plan for permitting and implementing a program to satisfy non-potable demands through wastewater reuse. James City County is represented by staff from the JCSA and is dedicated to maximizing the effectiveness of this initiative.

(k) Outdoor Water-Use Ordinance

In order to encourage a reduction in Outdoor Water Use and better manage water supply, the Board of Supervisors of James City County approved an Ordinance regulating the day of week and time of day that property owners/occupants can use water outdoors. The Ordinance provides that between May 1 and September 30 of each year, structures with odd street numbers can use water outdoors on Tuesday, Thursday, and Friday; structures with even street numbers can use water outdoors on Wednesday, Friday, and Sunday. No water is allowed to be used outdoors on Monday's or between the hours of 9 a.m. and 5 p.m., except with a hand-held hose with an automatic cutoff.

AGENDA ITEM NO. B-4

M E M O R A N D U M

DATE: October 22, 2002

TO: The Board of Directors

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

SUBJECT: Award of Bid – Lift Station 1-2

The plans and specification for replacement of Sewerage Lift Station 1-2 located along Route 5 near Jamestown High School have been publicly advertised and competitively bid. Five firms submitted bids ranging form $1,569,000 to $2,035,000. The results of the bids are as follows:

Firm Name	Bid Amount
Qualicon Corporation	$ 1,571,500
Mid Eastern Builders	1,628,500
M&W Construction	1,651,277
Peters and White	1,576,000
Crain & Denbo	2,038,300

The low bid submitted by Qualicon Corporation was close to the design engineer's estimate of $1,800,000. Funds are available in the Capital Improvement Plan budget. The James City Service Authority has experience with Qualicon Corporation with similar projects and feels that the firm is capable of performing the work associated with the project.

Staff recommends that the Board approve the attached resolution awarding the Lift Station 1-2 project to Qualicon for a contract amount of $1,571,500.

Larry M. Foster

LMF/tlc
LS1-2rep.mem

Attachment

R E S O L U T I O N

AWARD OF BID – LIFT STATION 1-2

WHEREAS, the plans and specifications have been advertised and competitively bid for the Lift Station 1-2; and

WHEREAS, five firms submitted bids, with Qualicon Corporation submitting the low bid of $1,569,000; and

WHEREAS, the bid is within budget, funds are available and Qualicon Corporation has been determined capable of performing the work associated with the project.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the James City Service Authority, James City County, Virginia, awards the contract for the Lift Station 1-2 Expansion to Qualicon Corporation in the amount of $1,571,500.

_____
Bruce C. Goodson
Chairman, Board of Directors

ATTEST:

_____
Sanford B. Wanner
Secretary to the Board

Adopted by the Board of Directors of the James City Service Authority, James City County, Virginia, this 22nd day of October, 2002.

LS1-2rep.res