

**PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008**

**WATER DEPARTMENT  
PHILADELPHIA, PENNSYLVANIA**

**DIRECT TESTIMONY OF  
J. ROWE MCKINLEY  
AND  
EXHIBITS JRM-1 AND JRM-2**

MARCH 2008



**BLACK & VEATCH**  
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DIRECT TESTIMONY OF J. ROWE MCKINLEY, VICE PRESIDENT

Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.

A. My name is Jennings Rowe McKinley II. I am a registered professional engineer, and a Vice President in the firm of Black & Veatch Corporation, 11401 Lamar Avenue, Overland Park, Kansas.

Q. PLEASE TELL US SOMETHING OF THE NATURE OF THE FIRM OF BLACK & VEATCH.

A. Black & Veatch Corporation, a partnership organized in 1915, and reorganized as a privately held corporate entity in 1999, ranks today among the largest, oldest and most experienced engineering firms in the United States. For many years Engineering News Record has consistently ranked Black & Veatch among the largest consulting engineering and design-build firms in the United States. Its headquarters are in Overland Park, Kansas, with additional offices located in other major cities in the United States and throughout the world. The firm has been engaged in projects for clients including municipalities, ranging from small villages to large metropolitan regions; public and investor owned utilities; industrial and commercial businesses; local, state, and Federal agencies, international bodies, and governments of overseas nations.

Q. WHAT IS THE NATURE OF YOUR PROJECT RESPONSIBILITIES WITH BLACK & VEATCH?

A. I have been with the firm for over thirty-eight years, serving in increasing levels of responsibility during that time, and am currently a Vice President in the firm's Enterprise Management Solutions Division.

Q. WOULD YOU DESCRIBE THE FUNCTIONS OF THE ENTERPRISE MANAGEMENT SOLUTIONS DIVISION?

A. Through its Enterprise Management Solutions Division, Black & Veatch offers assistance in utility rate, valuation, financial planning, economic feasibility, and organization-management matters to water, wastewater, electric, gas, telecommunications, and solid waste utilities. Services include utility cost of service studies and rate design, property inventory, property valuation for rate base or other purposes, organization and management studies, financial feasibility studies, standardized cost studies and manuals, operating reports, market studies, depreciation expense studies, statistical analyses, bond prospectuses, and expert testimony before courts and regulatory bodies.

Q. WILL YOU PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE?

A. I graduated from the University of Kansas with a Bachelor of Science Degree in Civil Engineering and a Bachelor of Science Degree in Business and Industrial Administration. I was elected to membership in the engineering honorary societies of Tau Beta Pi and Chi Epsilon and the business honorary society of Beta Gamma Sigma. I am currently a member of the American Society of Civil Engineers, the

Water Environment Federation, and the American Water Works Association, and am a member of the latter organization's Rates and Charges Subcommittee. I am currently registered as a professional engineer in three states.

I have been associated with the Enterprise Management Solutions Division of the firm of Black & Veatch since graduation from the University of Kansas in 1970. During this period I have been involved in various studies related to water and wastewater utility financial feasibility and rates, serving in increasing levels of responsibility from staff engineer, to project engineer, to project manager, and to Vice President. Among the clients for which I have been involved in studies regarding water and wastewater rates and related matters, in addition to the City of Philadelphia Water Department, are the cities Lawrence and Wichita, Kansas; Norfolk, Virginia; Denver, Colorado; Kansas City, Missouri; Washington, D.C.; Austin and San Antonio, Texas; Water District No. 1 of Johnson County, Kansas; the Massachusetts Water Resources Authority located in Boston, Massachusetts; Little Rock, Arkansas; and Charleston and Greenville, South Carolina.

For the past ten years, I have served as the overall coordinator and as an instructor in a program sponsored by the North American Development Bank, which is located in San Antonio, Texas. This program, The Utility Management Institute (UMI), is targeted at water and wastewater utilities located on both sides of the U.S.-Mexican border and involves training the leaders of these utilities in operating their utilities as business-like entities. One of the overall goals of the UMI program is to improve the financial self-sufficiency for the utilities, in terms of their overall financial planning and rate structures.

Q. MR. MCKINLEY, WHAT IS THE PURPOSE OF YOUR TESTIMONY TODAY?

A. My testimony addresses the results of Black & Veatch's cost of service study related to water, wastewater, and stormwater rates prepared for the City of Philadelphia Water Department.

Q. MR. MCKINLEY, HOW LONG HAS THE FIRM OF BLACK & VEATCH BEEN A CONSULTANT TO THE CITY OF PHILADELPHIA WITH REGARDS TO WATER, WASTEWATER, AND STORMWATER RATE MATTERS?

A. Black & Veatch was initially retained by the City to undertake a study of water, wastewater, and stormwater revenue requirements and rates in 1972. Since the completion of those initial studies early in 1974, we have subsequently been involved in several other studies for the City involving water, wastewater, and stormwater rates and financing.

Q. WOULD YOU BRIEFLY STATE THE NATURE OF YOUR ENGAGEMENTS FOR THE WATER DEPARTMENT SINCE 1972?

A. We have prepared numerous reports for the Water Department including: a comprehensive wastewater rate study and a review of water rates and costs, both completed in 1974; a combined report on water and wastewater revenue requirements and rates completed in 1976; a comprehensive water rate study and a comprehensive wastewater rate study, both completed in 1978; two separate reports on water and wastewater revenue requirements and rates, both completed in 1980; Engineering Reports under the 1974 General Ordinance for the Seventh, Eighth, Ninth, Eleventh, Twelfth, Fourteenth, Fifteenth and Sixteenth Series Water and Sewer Revenue Bonds, completed in 1981, 1982, 1983, 1985, 1986, 1989, and 1991, respectively; the Water

and Sewer Bond Anticipation Notes, First Series, completed in 1984; and the remarketing of the Thirteenth Series Bonds and issuance of Tenth Series Bonds, completed in 1992; Engineering Reports under the 1989 General Ordinance for the Series 1993, 1995, 1997, 1998, 1999, 2001, 2003, 2005, and 2007 Bonds; two separate comprehensive studies regarding water and wastewater rates, both completed in 1982; a comprehensive study regarding water and wastewater rates, completed in 1985; a comprehensive study regarding costs of service and rates for wastewater service, completed in 1990; a study which examined the factors contributing to the revenue shortfall in Fiscal Year 1991; and three additional comprehensive studies regarding cost of service and rates for water and wastewater rates, completed in 1992, 2001, and 2004. In addition, we have written various letter reports related to such matters as rates for water and wastewater service to contract customers during the past several years.

Q. MR. MCKINLEY, I WOULD LIKE TO ENTER THE TABLES MARKED EXHIBIT (JRM-1) AND EXHIBIT (JRM-2) INTO THE RECORD. WOULD YOU IDENTIFY THESE EXHIBITS?

A. Yes. Exhibit (JRM-1) includes various summary tables related to the comprehensive rate study, including the projection of revenue requirements, cost of service allocations, and rate design for water, wastewater, and stormwater service performed by Black & Veatch for the Water Department. Exhibit (JRM-2) includes supplemental supporting detail tables related to the cost of service study for the wastewater utility.

Q. MR. MCKINLEY, WOULD YOU BRIEFLY STATE THE NATURE OF YOUR ENGAGEMENT IN THE DEVELOPMENT OF THE WATER, WASTEWATER, AND STORMWATER RATES NOW BEING CONSIDERED FOR ADOPTION BY THE CITY OF PHILADELPHIA?

A. Black & Veatch was engaged to undertake a comprehensive water, wastewater, and stormwater rate study which consists of three principal elements: (1) the projection of revenue under existing rates from the various classes of customers served by the Water Department and the projection of revenue requirements for the water and wastewater utilities; (2) allocation of costs of service for each of the two utilities to the classes of customers provided service by the respective utilities; and (3) design of rates which recognize the costs of service.

Q. MR. MCKINLEY, WHAT IS THE STUDY PERIOD ENCOMPASSED IN YOUR COST OF SERVICE STUDY?

A. The projection of revenue requirements examined in the study includes the six-year period of the fiscal years ending June 30, 2009 through June 30, 2014. The detailed allocation of costs of service utilizes an initial test year which is the fiscal year ending June 30, 2009 (Fiscal Year 2009). Schedules of water, wastewater, and stormwater charges for retail service are developed for Fiscal Year 2009 based upon the results of the cost of service study. For purposes of the rate hearings, schedules of charges for the four year period of Fiscal Year 2009 to Fiscal Year 2012 are being proposed. Accordingly, schedules for each of the following three years, Fiscal Years 2010, 2011, and 2012 are also developed.

Q. WOULD YOU BRIEFLY SUMMARIZE THE FINDINGS OF THE REVENUE REQUIREMENTS PORTION OF YOUR STUDY?

A. For the water and wastewater utilities combined, the revenue requirement projections indicate the need for an overall increase in water and wastewater revenues of \$754,144 over the six-year study period. This translates into an overall increase in revenues of approximately 6.4 percent in each of Fiscal Years 2009 through 2012, an increase of 13.1 percent in Fiscal Year 2013, and an increase of 4.4 percent in Fiscal Year 2014.

The overall increase in revenues is approximately 56 percent from the water utility and 44 percent from the wastewater utility. However, the overall annual percentage increase in water rates is approximately 2.2 times that required for the wastewater rates. This is due to the relative level of revenues under existing rates for the two utilities and relative recovery of the costs of service from the existing rates.

Q. MR. MCKINLEY, IN DETERMINING THE OVERALL LEVELS OF WATER AND WASTEWATER REVENUES, ARE THERE ADDITIONAL REQUIREMENTS, OTHER THAN THE ANNUAL CASH REVENUE REQUIREMENTS, WHICH NEED TO BE CONSIDERED?

A. Yes. In addition to meeting cash revenue requirements, the authorizing revenue bond ordinance (the 1989 General Ordinance) covenants that during any given fiscal year the Water Department's revenues (for both water and wastewater service combined), must be sufficient to satisfy the following debt service coverage obligations.

According to the authorizing 1989 General Ordinance, during any given fiscal year the Water Department will, at a minimum, impose, charge, and collect in each fiscal

year such water and wastewater rents, rates, fees, and charges as shall yield net revenues which shall be equal to at least 1.20 times the debt service requirements for such fiscal year (recalculated to exclude therefrom principal and interest payments in respect of Subordinated Bonds); provided that such water and wastewater rents, rates, fees, and charges shall yield net revenues which shall be at least equal to 1.00 times (i) the debt service requirements for such fiscal year (including debt service requirements in respect of Subordinated Bonds); (ii) amounts required to be deposited into the Debt Reserve Account during such fiscal year; (iii) the principal or redemption price of and interest on General Obligation Bonds payable during such fiscal year; (iv) debt service requirements on interim debt payable during such fiscal year; and (v) the Capital Account Deposit amount for such fiscal year (less any amounts transferred from the Residual Fund to the Capital Account during such fiscal year).

In addition to the rate covenant of the 1989 General Ordinance described above, for each fiscal year ending on or after June 30, 2000, the City has agreed with Financial Guaranty Insurance Company (FGIC), for so long as the series 1993 Bonds insured by FGIC are outstanding, to establish rates and charges for use by the Water and Wastewater systems sufficient to yield Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of, such fiscal year) at least equal to 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year. Further, any calculation by a consulting engineer of projected rate covenant compliance in connection with the proposed issuance of additional Bonds for each fiscal year ending

on or after June 30, 2000, must state that Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of, such fiscal year) in each fiscal year included in the projection period are projected to be at least 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year. With the issuance of the Series 2003 Bonds, Financial Security Assurance, Inc. (FSA) also entered into an agreement with the Water Department to apply this “90 percent” rule so long as the Series 2003 Bonds insured by FSA are outstanding.

Q. HOW WERE THESE ADDITIONAL BOND ORDINANCE COVENANTS RECOGNIZED IN THE REVENUE REQUIREMENT PROJECTIONS?

A. Since the outstanding revenue bonds are combined water and wastewater bonds, compliance with the debt service coverage obligations is estimated using a projected cash flow schedule for the two utilities on a combined basis.

Q. WHAT WERE THE FINDINGS WITH REGARD TO THE UTILITIES' COMPLIANCE WITH THE STATED DEBT SERVICE COVERAGE OBLIGATIONS?

A. With the inclusion of the overall additional increase in revenues projected as necessary for the two utilities combined, the required debt service coverage requirements are indicated to be satisfied over the six year study period.

Q. MR. MCKINLEY, ARE THERE OTHER CONSIDERATIONS, IN ADDITION TO THOSE ASSOCIATED WITH MEETING CASH REVENUE REQUIREMENTS AND DEBT SERVICE COVERAGE OBLIGATIONS THAT WERE REFLECTED

IN EXAMINING THE OVERALL NEED FOR AN INCREASE IN WATER AND WASTEWATER REVENUES?

A. Yes. In conjunction with the issuance of the Water and Wastewater Revenue Bonds, Series 1993, in August of 1993, the Water Department refunded all then outstanding revenue bonds which had been issued solely under the previously controlling bond ordinance, the 1974 General Ordinance. With this refunding, the 1989 General Ordinance became the controlling bond ordinance with respect to all outstanding and future parity revenue bond issues. The 1989 General Ordinance provided several changes to the 1974 General Ordinance and included more “modern” financial management techniques and requirements. Among four of the more significant changes were a reduction in the annual debt service coverage percentage, the establishment of a Rate Stabilization Fund, the requirement that a portion of major annual capital improvement requirements be financed directly from annual system revenues, and the provision for a deposit into a Residual Fund of any monies remaining after payment of all current cash obligations.

Q. MR. MCKINLEY, WOULD YOU PLEASE BRIEFLY SUMMARIZE THESE FOUR PARTICULAR FEATURES OF THE 1989 GENERAL ORDINANCE?

A. The annual coverage requirement under the 1974 General Ordinance was 150 percent. This coverage included consideration of the total available balance of funds in the Revenue Fund which had been generated and carried forward from prior years. Under the 1989 General Ordinance, the annual coverage requirement is 120 percent; however, this coverage must be solely met from revenues generated within the

current year, including consideration of any transfer of funds from the Rate Stabilization Fund.

Balances in the Rate Stabilization Fund, as its name implies, are intended to help stabilize or levelize the need for future increases in water and wastewater rates. Funds are deposited into the Rate Stabilization Fund from annual system revenues, generally as a result of complying with the bond coverage covenant, and the revenues from the 20 percent coverage being in excess of general obligation bond debt and other cash related capital requirements. When revenues are deposited into the Rate Stabilization Fund, they are excluded from eligibility in the numerical calculation of annual debt service coverage. Conversely, when revenues are transferred from the Rate Stabilization into the Revenue Fund, they are then included in the debt service coverage computation. The Rate Stabilization Fund balance is projected to decrease from \$126,059,000 in Fiscal Year 2009 to \$48,409,000 in Fiscal Year 2014. The projected revenue increases were established to result in projected Rate Stabilization Fund balances to provide the Water Department with adequate working capital.

Under the 1989 General Ordinance, there is a mandatory annual revenue requirement referred to as the Capital Account Deposit. The amount of this requirement, at a minimum, is set equal to one percent of the net investment in Water Department assets. This annual requirement, which ranges from approximately \$18 million to \$20 million during the study period, is to be used for financing major capital improvements directly from annual system revenues.

After meeting the annual cash obligation for operation and maintenance expenses, payment of debt service, the Capital Account Deposit, and transfers to/from the Rate

Stabilization Fund, any remaining monies are deposited into the Residual Fund. Balances in the Residual Fund may be used for retirement of debt, payment of capital expenditures, and any other payments as provided by the 1989 General Ordinance. For purposes of projections over the study period, we have shown the balances in the Residual Fund to be utilized for meeting the required payment of interest earnings to the City General Fund (to be discussed in more detail later) and for financing of the major capital improvement program. A balance of between \$12 million and \$3 million is maintained in the Residual Fund during the study period.

Q. MR. MCKINLEY, WOULD YOU PLEASE SUMMARIZE THE CONTENTS OF EXHIBIT (JRM-1)?

A. Exhibit (JRM-1) contains various summary tables from the cost of service study. Tables 1 through 5 include the projection of revenues under existing rates and revenue requirements for the water utility while Tables 6 through 10 show parallel tables for the wastewater utility. Tables 11, 12 and 13 show the cash flow projections for the combined water and wastewater utilities, the water utility, and the wastewater utility, respectively, for the six year study period of Fiscal Years 2008 through 2014. Tables 14 through 25 include various summary tables related to the cost of service analysis and resulting proposed rates for the water utility. Tables 26 through 37 reflect key summary tables for the wastewater utility cost of service analysis and proposed rates. Table 38 shows a comparison of combined water and wastewater charges under existing and proposed rates for Fiscal Years 2009, 2010, 2011, and 2012 for typical retail customers, including various levels of monthly consumption for different meter sizes.

Q. MR. MCKINLEY, PLEASE BRIEFLY DESCRIBE THE PROJECTIONS OF WATER AND WASTEWATER UTILITY REVENUES UNDER EXISTING RATES, AS SUMMARIZED IN TABLES 1 AND 6.

A. Operating revenues for the water and wastewater utilities include charges for water and wastewater service to several customer classes. The General Customer group consists of residential, commercial, and industrial accounts, senior citizens, charitable institutions, schools, and the Philadelphia Housing Authority. Projected gross billings have been developed by applying the present schedules of rates to projections of water sales and number of customers for respective classes based upon an analysis of historical trends. Revenues under existing rate levels from General Customers reflect an adjustment to projections of gross billings to anticipated cash receipts based on an analysis of historical annual billing adjustments and receipts factors.

Revenues from Municipal Service are derived from water and wastewater service to various municipal entities within the City of Philadelphia and the provision of system facilities for public fire protection. Existing schedules of charges also include a charge for private fire protection connections to the water system.

Current charges for water service provided to Bucks County include an annual fixed charge to recover allocated capital costs and certain fixed operating expenses, a commodity charge applicable to metered usage for the recovery of power and chemical expenses, and a demand charge per unit of measured maximum demand to recover other operation and maintenance expenses. The Water Department entered into a water service agreement for the provision of treated water service to Aqua Pennsylvania (formerly the Philadelphia Suburban Water Company) in June of 2000.

Charges for this service include a commodity charge that is designed to recover power and chemical costs and a fixed charge that is designed to recover allocated capital costs and all other allocated operation and maintenance expenses, excluding power and chemical costs. Service to Aqua Pennsylvania commenced in Fiscal Year 2002.

Wholesale wastewater service is provided to 10 suburban customers on a contractual basis. Contractual rates for wastewater service generally consist of charges for operation and maintenance expense and certain capital costs associated with the collection and treatment facilities used in providing the service.

Retail customers which contribute high strength wastewater are presently assessed an extra strength surcharge based upon their monitored strength.

Other operating revenue consists largely of penalties on overdue bills for retail service customers and other miscellaneous revenue. Nonoperating income of the Department consists of interest earnings and other income. Interest income recognizes the current revenue bond ordinance requirement which provides for the transfer of all interest earnings from investment of Capital Improvements Fund, the Sinking Fund Reserve, the Residual Fund, and the Rate Stabilization Fund to the Operating Fund of the Department. Projections of interest income are based on the projected average balances in these funds and are considered to be available to meet the Department's revenue requirements throughout the period. Other nonoperating income includes income from permits and licenses, fines, and operating grants.

Q. MR. MCKINLEY, PLEASE BRIEFLY DESCRIBE THE PROJECTIONS OF OPERATION AND MAINTENANCE EXPENSE FOR THE STUDY PERIOD WHICH ARE SUMMARIZED IN TABLES 2 AND 7 of JRM-1.

A. Projected operation and maintenance expenses for the study period utilize the Fiscal Year 2009 operating budget as a starting base for the projections. Analyses of historical actual expenditures versus budgeted expenses for each of the various budgetary categories or object classes such as personal services, purchases of services, materials and supplies, equipment and interdepartmental charges were utilized to adjust the Fiscal Year 2009 budget to an estimated expenditure level for Fiscal Year 2009. Annual allowances by Black & Veatch for growth and inflation in future years of the study period were utilized in the projections.

The existing labor agreement with the unions to which the majority of the Water Department's personnel belong terminates at the end of Fiscal Year 2008. For personal services inflation allowances in subsequent years, we used recent labor union contracts as a guide in making our future projections. The recent labor agreements included a one-time payment to all employees in the first year of the agreement. Accordingly, the projected Fiscal Year 2009 expenses for personal services reflect an estimated payment of \$1,500 per employee. Subsequent to Fiscal Year 2009, the following annual inflation allowances were assumed, again following previous labor agreements, which reflected lower percentage increases in the early years and increasing percentage increases in the latter years of the agreements.

In addition to the projected increases due to the labor union contracts and overall inflation, an allowance for additional staffing of 0.5 percent per year has also been recognized in the projections.

	<u>Personal Services</u> <u>Annual Inflation</u>
Fiscal Year 2010	2.0%
Fiscal Year 2011	3.0%
Fiscal Year 2012	4.0%
Fiscal Year 2013	3.0%
Fiscal Year 2014	3.0%

For electric power costs we have projected an annual increase of 2.5 percent for Fiscal Year 2009 to mid-year Fiscal Year 2011 based on a review of historic trends and discussions with Water Department staff. The City's current contract agreements with PECO for electrical service expire on December 31, 2010. The projected power costs for Fiscal Year 2011 reflect an increase in anticipated power costs upon expiration of the current contract agreements, due to the loss of the negotiated favorable rate provided in those agreements. Power costs during the period Fiscal Year 2012 to Fiscal Year 2014 are projected to increase 7.5 percent annually. Chemical costs were projected to increase by 9.0 percent annually beginning in Fiscal Year 2010 based upon Water Department experience and the Producer Price Index. For other expense categories, based upon the past three years of history within the Water Department for inflation and growth in expenses, as well as a review of various cost indices, we have used an annual growth rate of 3.0 percent. Fringe benefits, which are directly related to personal services expenses, were estimated by Black & Veatch to increase from 73.0 percent of personal services for Fiscal Year 2009 to 88.8

percent of personal services for Fiscal Year 2014 based upon current levels of such expenses and the growth rate reflected in the City's 5-Year Plan for Fiscal Years 2009 through 2013.

Interdepartmental charges represent the Department's proportionate charge for services provided directly by other City departments and agencies, including the Water Revenue Bureau, which has the responsibility for the collection of revenue for water and wastewater service provided by the Water Department. Accomplishment of this responsibility requires reading of meters, maintenance of customer accounts, collection of payments, enforcement of payments, and customer relations.

Other interdepartmental charges are for services provided by the Law Department, Fleet Management, the Finance Department, Public Properties, the Mayor's Office of Information Services (MOIS), and other departments and agencies of the City. Interdepartmental charges were estimated by Black & Veatch to increase from \$55.9 million in Fiscal Year 2009 to 66.9 million in Fiscal Year 2014.

Q. MR. MCKINLEY, PLEASE SUMMARIZE THE PROJECTED CAPITAL IMPROVEMENT PROGRAM OF THE WATER DEPARTMENT AND THE INDICATED FINANCING OF THE PROGRAM DURING THE STUDY PERIOD.

A. Tables 3 and 8 summarize the Water Department's capital improvement program for Fiscal Years 2008 through 2014 on an encumbrance basis, that is, the total cost of each project is shown in the year construction of the project is scheduled to commence. Costs shown in Tables 3 and 8 reflect the estimated total costs of the various projects, which will be financed from the annual Capital Account Deposit, transfers from the Residual Fund, and the issuance of revenue bonds. Projected costs

for the capital improvement program are at Fiscal Year 2009 cost levels. Accordingly, an annual inflation allowance of 4 percent, based upon a review of the ENR Construction Cost Index and the Handy-Whitman Construction Cost Index, has been recognized in Tables 3 and 8 beginning with Fiscal Year 2010. The cash flow adjustment indicated on Line 9 in Tables 3 and 8 represents the net result of carrying forward costs which are encumbered in one year, but which do not become a cash expenditure until a subsequent year. Line 10 of Tables 3 and 8 shows the net cash expenditures to be met from the sale of revenue bonds and other sources of capital.

Tables 4 and 9 present an estimate of the flow of funds in the Construction Fund of the Department. Line 1 of Tables 4 and 9 indicates the projected total revenue bond principal amounts for each utility to be issued in each of the Fiscal Years 2009, 2012, and 2014. It is anticipated that \$325 million in bonds will be issued in the last half of Fiscal Year 2009, \$350 million in the last half of Fiscal Year 2012, and \$365 million in the last half of Fiscal Year 2014 to finance the proposed capital improvements of the water and wastewater utilities which are not financed from other sources. As shown on Lines 2 through 4 of Tables 4 and 9, in addition to funding construction costs, the proceeds of the proposed bond issues are also used to fund the debt service reserve fund and pay the costs of bond issuance. The deposit into the Debt Service Reserve Fund amounts to the estimated maximum future annual debt service for the proposed bonds, which for purposes of this study are based on equal annual principal and interest payments over 30 years at an annual interest rate of 5.0 percent in Fiscal Year 2009 and 5.5 percent in Fiscal Year 2012 and Fiscal Year 2014.

In addition to funds from bond proceeds, Line 8 of Tables 4 and 9 shows that during the six year study period a total of approximately \$115 million from the Capital Account Deposit will be available to finance capital improvements. In addition, Line 10 of Tables 4 and 9 indicates that \$120 million will be available from the Residual Fund as another major source of funding of the capital improvement program.

Interest income on annual average balances in the Construction Fund and the Sinking Fund Reserve are shown on Lines 17 and 18 of Tables 4 and 9. These earnings are available to the Revenue Fund as a part of the overall project revenues available for meeting annual revenue requirements of the Department. An interest rate of 2.0 percent was assumed through Fiscal Year 2011, after which an assumed interest rate of 2.5% was assumed.

Q. WOULD YOU PLEASE SUMMARIZE THE ANNUAL DEBT SERVICE REQUIREMENTS OF THE WATER DEPARTMENT?

A. Tables 5 and 10 summarize the annual debt service payments for the water and wastewater utilities, respectively. Line 1 shows the annual debt service on existing revenue bonds, while Lines 2 through 9 show the projected debt service on the proposed revenue bond issues reflected in Tables 4 and 9. Lines 11 and 12 of Table 5 show applicable debt service on outstanding Pennvest Loans allocable to the water utility. No Pennvest Loans are currently allocable to the wastewater utility.

Q. MR. MCKINLEY, IN ADDITION TO THE PROJECTED REVENUE REQUIREMENTS FOR OPERATION AND MAINTENANCE EXPENSES, INCLUDING INTERDEPARTMENTAL CHARGES, AND FOR DEBT SERVICE

PAYMENTS, ARE THERE ANY OTHER ANNUAL REVENUE REQUIREMENTS WHICH MUST BE MET FROM WATER AND WASTEWATER REVENUES?

- A. Yes, in addition to the aforementioned revenue requirements, there are two additional revenue requirements. The first is an interest earnings payment to the City. This payment reflects application of the 1974 General Ordinance, as amended and supplemented, that in any fiscal year in which a balance exists in the Department's Operating Fund, a payment may be made to the City's General Fund which does not exceed the lowest of (i) the amount of interest earnings on Sinking Fund Reserves transferred to the Operating Fund during the fiscal year or (ii) \$4,994,000. Projected annual payments for the study period are summarized in the tabulation below:

	<u>Water Utility</u>	<u>Wastewater Utility</u>
Fiscal Year 2009	\$1,094,000	\$1,474,000
Fiscal Year 2010	\$1,156,000	\$1,626,000
Fiscal Year 2011	\$1,156,000	\$1,626,000
Fiscal Year 2012	\$1,539,000	\$2,251,000
Fiscal Year 2013	\$1,630,000	\$2,466,000
Fiscal Year 2014	\$1,677,000	\$2,577,000

The second additional revenue requirement is the required Capital Account Deposit. Under the 1989 General Ordinance, the City covenants to make a Capital Account Deposit in each fiscal year, in an amount not less than one percent of the total value of the net assets of the Water Department. The Capital Account Deposits are to be used by the Water Department to finance capital improvements for the water and wastewater systems.

The total annual Capital Account Deposits for each utility are summarized below:

	<u>Water Utility</u>	<u>Wastewater Utility</u>
Fiscal Year 2009	\$7,798,000	\$10,381,000
Fiscal Year 2010	\$7,966,000	\$10,604,000
Fiscal Year 2011	\$8,134,000	\$10,827,000
Fiscal Year 2012	\$8,301,000	\$11,051,000
Fiscal Year 2013	\$8,469,000	\$11,274,000
Fiscal Year 2014	\$8,637,000	\$11,497,000

Q. MR. MCKINLEY, WOULD YOU PLEASE SUMMARIZE THE OVERALL RELATIONSHIP OF THE PROJECTION OF REVENUE UNDER EXISTING RATES AND REVENUE REQUIREMENTS FOR THE STUDY PERIOD?

A. Table 11 presents a cash flow statement of projected revenues and revenue and rate covenant requirements for water and wastewater utility operations for the period of Fiscal Years 2008 through 2014 under the stipulation of the 1989 General Ordinance. The table provides an indication of the adequacy of the Department's revenues in complying with the stipulations of the 1989 General Ordinance. As indicated on Lines 4 through 9 of Table 11, annual increases in revenue are required beginning in Fiscal Year 2009. Overall annual revenue increases of 6.4 percent in each of Fiscal Years 2009, 2010, 2011, and 2012, a 13.1 percent increase in Fiscal Year 2013, and a 4.4 percent increase in Fiscal Year 2014 are indicated. As indicated in Lines 27 and 33 of Table 11, the debt service coverage requirements would be met with these overall levels of increase in revenues. Annual cash requirements for the combined water and wastewater utilities would also be met with these levels of increase as indicated by the positive balances shown on Line 35 of Table 11.

Tables 12 and 13 show the projected cash flow for the water and wastewater utilities, respectively. These tables are used in the development of the test year cost of service

to be allocated for each utility. Table 12 shows that overall annual increases in revenue of 9.6 percent through Fiscal Year 2012, a 17.6 percent increase in Fiscal Year 2013, and a 4.9 percent increase in Fiscal Year 2014 are proposed for the water utility. For the wastewater utility, projected annual increases averaging approximately 4.4 percent are projected from Fiscal Year 2009 through Fiscal Year 2012 with a 10.0 percent increase projected for Fiscal Year 2013 and a 4.0 percent increase in Fiscal Year 2014.

Q. AFTER THE DETERMINATION OF THE NECESSARY OVERALL INCREASE IN WATER AND WASTEWATER SERVICE REVENUES TO MEET CASH AND DEBT SERVICE COVERAGE REQUIREMENTS, WHAT IS INVOLVED IN THE NEXT PHASE OF YOUR RATE STUDY, PREVIOUSLY REFERRED TO AS THE COST OF SERVICE ALLOCATION PHASE OF THE STUDY?

A. The cost of service phase of the study consists of essentially three steps: (1) the determination of the cost of service to be recovered from charges for water and wastewater service; (2) the allocation of cost of service to functional cost components which recognizes the system characteristics; and (3) the distribution of functionalized cost of service components to customer classes.

The total revenue requirements to be derived from charges for water and wastewater service are synonymous with, and are the definition of, the total cost of service. As a basis for developing an equitable rate structure, these costs are allocable to the various customer classifications according to respective service requirements.

For the water utility, allocations of these requirements to customer classes should take into account the quantity of water use, relative peak capacity requirements placed on

the system, the number and size of services to customers, and proprietary interest in the system investment.

For the wastewater utility, factors considered in estimating service requirements of each customer class include the annual volume and peak rates of sanitary wastewater, infiltration, and stormwater flows; wastewater strengths; the number and sizes of customers served; and proprietary interest in system investment.

Q. WHAT DID YOU DETERMINE TO BE THE COST OF SERVICE FOR THE WATER UTILITY FOR PURPOSES OF YOUR STUDY?

A. In analyzing costs of service of the water utility for allocation to customer classes, the annual revenue requirements for Fiscal Year 2009 were selected as the test year revenue requirements for the initial proposed rate adjustment for the study period. In determining the costs of service to be met from charges for water service, funds from other operating revenue and nonoperating income are deducted from total revenue requirements. The determination of the annual cost of service to be recovered through charges for water service is summarized in Table 14, Exhibit (JRM-1).

In Table 14 the elements comprising the test year annual cost of service are assigned to the two cost categories of operating expense and capital costs. Operating expense consists of operation and maintenance expense, direct interdepartmental charges applicable to the utility, and a portion of the year end revenue balance which is deposited into the Residual Fund, and is reduced by other operating revenue. An additional element of operation and maintenance expense which is recognized in the cost of service study for the water utility is the cost of treating and disposing of water treatment plant sludge which is discharged into the City's wastewater system. The

amount is shown on Line 2 on Table 14. The amount of this expense is \$7,629,000 for the Fiscal Year 2009 test year. A corresponding credit is shown in the wastewater cost of service in Table 26. Capital costs consist of debt service on existing and proposed bonds, the Capital Account Deposit, and a portion of the year end revenue balance which is deposited into the Residual Fund. Both the operating expense and the capital related revenue requirements are reduced by the estimated deposit from the Rate Stabilization Fund. Further, additional credits to both operating expense and capital costs are provided from interest earnings on various funds.

The total Fiscal Year 2009 test year cost of service to be met from water sales revenue, shown on Line 13 of Table 14, is \$189,218,000.

Q. MR. MCKINLEY, AFTER HAVING DETERMINED THE TEST YEAR TOTAL COST OF SERVICE TO BE RECOVERED FROM RATES FOR WATER SERVICE, WHAT IS THE NEXT STEP IN THE ALLOCATION OF THESE COSTS TO THE VARIOUS CLASSES OF CUSTOMERS SERVED BY THE UTILITY?

A. In allocating the test year cost of service to customer classes, revenue requirements are apportioned among the classes on a utility basis, that is, in terms of operating expense, depreciation expense and return on investment. For a municipal utility the total of depreciation expense and return on investment is equal to the total cash requirements, beyond operating expense, to be recovered from revenues to meet capital investment related costs. These capital costs are shown in Column 2 of Table 14, Exhibit (JRM-1).

Depreciation is the loss, not restored by current maintenance, which occurs in plant due to decay, inadequacy, and obsolescence. Depreciation accounting is usually based on an annual percentage allowance of plant investment adequate to return the investment during the useful life of the facility. The annual depreciation allowance is not customarily accrued as a cash reserve, but is used to meet principal payments for long-term debt or is reinvested in replacements and additions to plant facilities. Unless an amount equal to annual depreciation expense is reinvested in the system or is accrued for future investment, the original investment is gradually depleted, which may be an inequitable basis for utility financing.

Since the City of Philadelphia practices depreciation accounting, for purposes of determining an estimated equivalent depreciation expense on the test year plant in service, depreciation rates actually employed by the water utility on various categories of plant investment were used in the rate study. The annual test year depreciation expense is estimated to total \$27,966,000 for the water utility.

In a publicly owned utility, such as the Philadelphia water system, return on investment is the balance of the total annual revenue requirements for capital costs, over and above the allowance for depreciation. Deduction of the estimated water utility depreciation expense of \$27,966,000 from total net capital cost requirements to be met from water service revenue of \$70,595,000 leaves \$42,629,000 to be recovered from both inside City retail and outside City wholesale customers as return on investment on water utility plant investment.

Q. HOW ARE THE TEST YEAR OPERATING AND CAPITAL COSTS ASSIGNED OR ALLOCATED TO THE VARIOUS CLASSES OF CUSTOMERS?

A. The basic underlying principle in developing cost of service rates is the determination of what causes the cost, or what elements in a water system are responsible for causing the level of revenue requirements to be what they are. To make this determination, one must have a working knowledge of how a water system operates.

Q. WOULD YOU BRIEFLY DESCRIBE HOW A WATER SYSTEM OPERATES AND SOME OF THE CONSIDERATIONS INVOLVED IN DESIGNING SUCH A SYSTEM?

A. A water system is comprised of various facilities each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the system must be capable of providing not only the average annual amount of water used, but also supplying water at maximum rates of demand. However, since all customers do not exert maximum demands at the same time, capacities of the various system components are established to meet the maximum coincidental demand of all classes of customers.

The capacities of some facilities, such as certain raw water source of supply facilities, are designed on the basis of average annual, or base, water demands. Other facilities such as raw water pumping and the water treatment plants are designed to meet maximum day demands. Still other facilities, such as treated water pumping, filtered water storage, and transmission and distribution mains, are designed to meet maximum hourly rates of water use. These requirements result in different ratios of maximum to average demands to be met by the various parts of the system. The

demand ratios, in turn, are the basis for allocating costs of respective facilities to the base and extra capacity cost components.

Q. MR. MCKINLEY, AFTER YOU HAVE EXAMINED THE VARIOUS FACILITIES INCLUDED IN A PARTICULAR WATER SYSTEM, SUCH AS THE CITY OF PHILADELPHIA'S SYSTEM, AND HAVE DETERMINED THE BASES FOR WHICH FACILITIES OF THE SYSTEM WERE DESIGNED, HOW DO YOU USE THIS INFORMATION IN YOUR COST OF SERVICE ANALYSES?

A. The total costs of service are allocated to functional cost components recognizing the system characteristics of the utility and the parameter or parameters having the most significant influence on the magnitude of each element of cost. Operation and maintenance expense items are allocated directly to appropriate cost components, while the allocation of capital costs, in terms of depreciation expense and return on investment, is based upon a detailed allocation of related capital investment in test year plant in service.

Q. WHAT WOULD YOU RECOGNIZE AS THE FUNCTIONAL COST COMPONENTS FOR A WATER SYSTEM?

A. The total cost of water service may be allocated to specific cost elements according to the service requirements of the various classes of customers. Costs of service may be classified and assigned to five functional cost components: Base cost, Extra Capacity cost, Customer cost, Public Fire Protection, and Wholesale Direct.

Base costs are those which vary directly with the total quantity of water used, as well as those costs associated with serving customers under average load conditions without the elements necessary to meet water use variations or peak demands. Base

costs include operating costs of supply, treatment, pumping and distribution facilities, and a portion of administrative and general costs, as well as capital costs on water plant investment associated with serving customers to the extent required for a constant, or average annual rate of use.

Extra Capacity costs represent those operating costs incurred due to demands in excess of average load conditions, and capital costs for additional plant and system capacity beyond that required for the average rate of use. Maximum Day Extra Capacity costs are those incurred in meeting demands in excess of average day requirements. Maximum Hour Extra Capacity costs are those incurred in meeting demands in excess of maximum day use.

Customer costs are defined as costs which tend to vary in proportion to the number of customers connected to the system. These costs include meter reading, billing, collecting and accounting, a portion of administrative and general costs, and maintenance and capital charges associated with meters and services.

Costs directly related to the public fire protection include operating expenses and capital costs associated with the standard pressure fire system. It should be noted that the City's high pressure fire system was decommissioned in Fiscal Year 2008. Costs allocable to Wholesale Direct include the operating expenses and capital costs related to those facilities required to serve Bucks County and Aqua Pennsylvania on a wholesale basis in accordance with the contract capacity and contractual terms of the agreements with these two customers.

The separation of the costs of service into these five principal components provides a means for further allocation of such costs directly to wholesale customers and to the

various retail customer classes on the basis of the respective Base, Extra Capacity, and Customer cost requirements of each particular type of usage.

Historical annual average, maximum day, and maximum hour system water demands are utilized to develop the coincidental system demand allocation factors used in this study. Based on the historical demands experienced, the maximum day demands placed on the treatment plants can be expected to amount to approximately 134 percent of average day demand. Consequently, 75 percent of the capacity of these maximum day facilities is required for base use, and the remaining 25 percent is required for maximum day extra capacity demands. Similarly, peak demands for maximum hour facilities can be expected to amount to about 174 percent of average day demands. Of the facilities designed to meet maximum hour demands, 57 percent of the capacity is required for average rates of water use, 16 percent is required to meet maximum day extra capacity requirements, and the remaining 27 percent is needed to meet maximum hour requirements. These cost allocation factors reflect a shift towards the Base cost component as system maximum day demands have leveled off in recent years.

Customer costs, such as meter related expenses and billing, collecting, and accounting expenses, are allocated to customer classes on the basis of the number of bills rendered or customers served and are assigned directly to the customer meter and billing cost components. Costs related to the standard pressure fire system are assigned directly to the cost component for public fire protection. Bucks County Water and Sewer Authority is provided water service on a wholesale contract basis. Bucks County is generally served directly from the low service pumps at the Baxter

treatment plant. Other treatment plants and the major transmission grid and pumping system do provide reliability to Bucks County in the event of an outage of service at the Baxter plant. This reliability of service is reflected in the allocation of costs of service to Bucks County. Costs for which Bucks County is responsible are allocated directly to the County as a separate cost component. The agreement between the City and Bucks County allows the County to purchase up to a maximum rate of flow of 35 million gallons per day (mgd) during the study period. This contractual demand is utilized in the allocation of costs to Bucks County.

A similar consideration is made in the determination of the cost of providing service to Aqua Pennsylvania. The contractual maximum day capacity reserved by Aqua Pennsylvania for Fiscal Year 2009 and the remainder of the study period is 11.0 mgd. Also, since Aqua Pennsylvania has more than one connection point to the Water Department's system, it therefore has the potential to regularly utilize the entire water system, excluding the small main network of mains less than 24 inches in diameter.

Q. MR. MCKINLEY, HAVE YOU PREPARED A SUMMARY OF THE TEST YEAR PLANT INVESTMENT IN THE WATER SYSTEM USED IN YOUR STUDY TO ALLOCATE CAPITAL COSTS TO THE VARIOUS FUNCTIONAL COST COMPONENTS?

A. Yes, Table 15, Exhibit (JRM-1), summarizes the test year investment in the water system used in the allocation of test year capital related costs of service. The total test year investment of \$1,178,875,000 is the total original cost investment in facilities which are anticipated to be in service during the test year.

Q. PLEASE EXPLAIN THE PROCEDURES USED TO ALLOCATE THE TEST YEAR PLANT INVESTMENT TO THE FUNCTIONAL COST COMPONENTS DISCUSSED PREVIOUSLY.

A. Bucks County is allocated a proportionate share of the plant investment in those facilities of the water system utilized in serving the County. Water is normally supplied to Bucks County directly through a 48 inch main connected to the Baxter treatment plant low service pumps. Consequently, Bucks County is allocated a share of the investment in the Baxter source of supply, treatment and pumping facilities based on the ratio of the contract maximum rate of flow for the County to the rated capacities of the individual Baxter facilities. Investment in the 48 inch main has been allocated directly to the County. In addition, the County is allocated a share of total water system investment in large transmission mains, defined as 24 inch and larger mains, as well as filtered water storage and pumping facilities, and a share of the investment in the Queen Lane and Belmont treatment facilities. The allocation of investment in these facilities recognizes the operating flexibility and reliability of the Philadelphia water system in providing service to Bucks County during potential outages of service at the Baxter plant.

A similar process is followed in the allocation of plant investment to the Aqua Pennsylvania. The difference is that due to the potential utilization of the entire water system, excluding mains less than 24 inches in diameter, a proportional share of all applicable facilities is made, recognizing the contract capacity relative to the design capacity of the various facilities.

After deducting the investment directly allocable to Bucks County and Aqua Pennsylvania, the balance of the investment assignable to the retail customers of the water system is allocated as follows. The investment in the source of supply facilities shown on Lines 1 and 2 of Table 15 includes the Fairmont Dam and associated structures and equipment. These facilities are designed to meet annual water requirements and are allocated 100 percent to the Base cost component. The investment in the Baxter, Queen Lane, and Belmont raw water intakes, buildings, structures, and raw water pumping equipment is shown on Lines 3 and 4 of Table 15. These facilities are designed with adequate capacity to meet maximum day requirements. Investment in these facilities is allocated to Base and Extra Capacity components on a maximum day basis, that is 75 percent to Base and 25 percent to Maximum Day Extra Capacity.

The water purification and treatment facilities at the Baxter, Queen Lane, and Belmont treatment plants provide maximum day service and are allocated to Base and Extra Capacity components on a maximum day basis. The investment in treated water pumping facilities at all three treatment plants, as well as the booster pumping stations in the distribution system, is included in Lines 6 and 7 of Table 15. These facilities provide maximum hour service and are allocated to Base and Extra Capacity components on a maximum hour basis, that is, 57 percent to Base, 16 percent to Maximum Day Extra Capacity, and 27 percent to Maximum Hour Extra Capacity.

Transmission and distribution investment, including transmission and distribution mains, and filtered water storage facilities are designed to meet maximum hour

requirements of the system. Investment in these facilities is therefore allocated to Base and Extra Capacity components on a maximum hour basis.

Customer meters are wholly customer related facilities allocable to the Customer Meters cost component. Public fire protection service is comprised of the standard pressure fire system. Investment in these facilities is directly allocable to the respective cost components shown in Table 15.

Other general plant and equipment includes investment allocable to all of the above, and is allocated to cost components in proportion to the total of the preceding items of plant investment.

Q. PLEASE EXPLAIN THE PROCEDURES USED TO ALLOCATE THE TEST YEAR DEPRECIATION EXPENSE TO THE FUNCTIONAL COST COMPONENTS.

A. The annual depreciation expense of the water system is estimated to be \$27,966,000 for the test year Fiscal Year 2009. The annual depreciation expense to be distributed to customer classes is based on application of appropriate depreciation expense rates to the various categories of water utility property.

The allocation of the estimated depreciation expense to functional cost components is shown in Table 16, Exhibit (JRM-1). The various items of depreciation expense are allocated to cost components on the same basis as is the investment for the corresponding system element.

Q. HAVE YOU PREPARED A SUMMARY OF THE TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE PROVISION OF WATER SERVICE TO THE VARIOUS FUNCTIONAL COST COMPONENTS IN YOUR STUDY?

A. Yes, projected operation and maintenance expense for the test year is allocated to cost components as shown in Table 17, Exhibit (JRM-1). Operating expense is allocated to cost components generally in the same manner as plant investment and depreciation expense. It should be noted that as previously developed in Table 14, a total of \$7,629,000 has been added to the test year operation and maintenance expense to be met from water rates. The \$7,629,000 represents the cost of treating water plant sludge from the water treatment plants, which is discharged into the wastewater system. This cost, which occurs in the wastewater utility operations, is appropriately charged against the water utility. The total adjusted test year operation and maintenance expense to be recovered from rates for water service amounts to \$118,623,000.

Test year operation and maintenance expenses allocable to Bucks County recognize a proportionate share of the expenses related to that portion of the water system which directly serves the County. Allocated operating expenses to the County for raw water pumping, purification and treatment, and treated water pumping from the Baxter system are based on the ratio of projected test year water use and maximum demands from Bucks County to the projected test year total flow and maximum demand of the Baxter system. In addition, the County is allocated direct expenses related to maintaining the 48 inch main and meter connection, and a proportionate share of accounting and collecting, and administrative and general expenses. Allocated operation and maintenance expenses to Aqua Pennsylvania recognize the projected annual usage and maximum day demands for service to Aqua Pennsylvania relative to the annual production and maximum day demand of the overall water system,

excluding costs associated with mains less than 24 inches in diameter. After deducting the operating expenses directly allocable to Bucks County and Aqua Pennsylvania from the total expenses shown in Column 1 of Table 17, the remaining expenses are allocated to the retail customer classes as described below.

Raw water pumping expense, other than purchased power, is allocated to Base and Extra Capacity components on the maximum day basis of 75 percent Base and 25 percent Maximum Day Extra Capacity. Raw water pumping power is allocated 95 percent to Base and 5 percent to Maximum Day Extra Capacity in recognition of the operating characteristics of this equipment and the demand structure of electric rates.

Projected test year operating expense, exclusive of power, chemical costs, and sludge treatment and disposal costs, for the Baxter, Queen Lane, and Belmont treatment plants is allocated to the Base and Extra Capacity components on a maximum day basis of 75 percent and 25 percent, respectively. Chemical costs and sludge treatment and disposal costs, which generally vary directly with the quantity of water treated, are assigned wholly to the Base cost component.

Test year treatment plant operating expenses for pumping plant, exclusive of power costs, are allocated to Base and Extra Capacity cost components on a maximum hour basis of 57 percent Base, 16 percent Maximum Day Extra Capacity and 27 percent Maximum Hour Extra Capacity. Treatment plant power costs are allocated 90 percent to Base, 5 percent to Maximum Day Extra Capacity and 5 percent to Maximum Hour Extra Capacity in recognition of the effect of the demand structure of electric rates.

Transmission and distribution test year operating expenses associated with mains and reservoirs are allocated to Base and Extra Capacity cost components on a maximum hour basis.

Meter maintenance expense is allocated wholly to the Meter component of Customer costs. Projected fire hydrant maintenance expense is allocated wholly to the categories of Direct Public Fire Protection. Test year customer accounting and collection is allocated entirely to the Billing component of Customer costs. Administrative and general expense is allocated to cost components in proportion to the total of all other expenses excluding expenses for power and chemicals. The deposit into the Residual Fund which is allocable to operation and maintenance expense (Line 21) and the deposit from the Rate Stabilization Fund which is allocable to operation and maintenance expense (Line 22) are allocated to the various cost functions in proportion to Line 20 of Table 17.

The net operating expense to be recovered from all customers through charges for water service is derived by deducting miscellaneous other operating revenue and interest income from the total operating expense. Other operating revenue is allocated to the various cost components in proportion to the total operating expense allocable to retail customers, as shown on Line 25 of Table 17. Since virtually all of these revenues are generated from retail customers, no credit is applicable to wholesale service. The non-operating interest income which is assigned to operation and maintenance expense (Line 26) is allocated to the cost components in proportion to Line 20 of Table 17. The total net operation and maintenance expense to be recovered from water rates is shown on Line 27 of Table 17.

Q. AFTER COSTS ARE ALLOCATED TO FUNCTIONAL COST COMPONENTS, WHAT IS THE NEXT STEP IN THE OVERALL COST OF SERVICE ANALYSIS?

A. Costs are next distributed to customer classes. To do this customer groups with similar characteristics are assigned to specific classes. Units of service for each class are determined for each of the functional cost component categories.

Water utility customers are separated into two principal categories containing a number of individual classes. Each class represents a particular type of load on the system with characteristic hourly and daily demands. The two general categories are inside City retail and outside City wholesale. Inside City retail service includes the General Service class customers, which is comprised of Residential, Senior Citizens, Commercial, and Industrial classes. Other inside City retail customers include Municipal Service, Housing Authority, Charities and Schools, Public Fire Protection and Private Fire Protection. The outside City wholesale category represents water service to Bucks County and Aqua Pennsylvania.

Q. PLEASE EXPLAIN THE METHODOLOGY YOU USED TO DISTRIBUTE COSTS TO THE CUSTOMER CLASSES SERVED BY THE WATER UTILITY.

A. In allocating the responsibility for costs for service, Base costs, Extra Capacity costs, and Customer costs may be distributed to customer classes according to respective service requirements of the classes.

The cost of service responsibility for Base costs varies with the volume of water used, and may be distributed to customer classes on that basis. Extra Capacity costs are those associated with meeting peak rates of water use, and are distributed to customer

classes on the basis of respective extra capacity requirements. In determining the responsibility of each customer class for Extra Capacity costs, peak requirements of the various classes are estimated on the basis of an analysis of Department operating records, and experience in the study of other water utility systems.

Table 18, Exhibit (JRM-1), shows projected test year water use by retail customer classes, including annual and average day usage, the estimated total noncoincidental capacity factors for both maximum day and maximum hour requirements, and the resulting maximum day extra capacity requirements in excess of average day and maximum hour extra capacity requirements in excess of maximum day. Estimates of total annual water use, shown in Column 1 of the table, are based upon projections utilized for determining revenue under existing rates. The breakdown of projected usage between the General Service classes of Residential, Commercial, and Industrial is based upon an analysis of water bills by user code. Units of service for Bucks County and Aqua Pennsylvania are not included in Table 18, since this table is used for allocating costs among the retail customer classes.

As a basis for distribution of extra capacity costs to the various customer classes, respective noncoincidental peak requirements of each class are estimated. The sum of the noncoincidental peak requirements of the individual classes exceeds the experienced or coincidental peak of the system due to diversity in requirements among the classes.

Generally, Residential and Commercial customers place a more severe peak demand on the water system than Industrial customers. Therefore, Residential and Commercial customers are assigned higher extra capacity factors than the Industrial

class, since Industrial use is generally spread more uniformly throughout the day, and maximum rates of use tend to depart from the average less than the peak requirements of Residential and Commercial customer classes. Other customer classes including Municipal Service and Charities and Schools are projected to exhibit usage patterns similar to Commercial customers. Therefore, these classes are given the same extra capacity factors. The Senior Citizen and Housing Authority classes are projected to have usage patterns more closely related to the Residential class.

Fire Protection Extra Capacity requirements are based on standards for determining peak fire flow requirements. Fire protection capacity requirements are allocated between Public Fire Protection and Private Fire Protection in proportion to the relative total number of equivalent fire connections in each class.

Customer costs are distributed among customer classes on the basis of the number and size of water meters in service, and on the number of bills rendered. Meter related costs are allocated on the basis of the number of equivalent 5/8 inch meters serving each customer class. The number of equivalent meters estimated for each customer classification is based upon the total number of various size meters connected to the water system by the respective classes and the ratio of the capacity of various sized meters to the capacity of a 5/8 inch meter.

Billing related Customer costs are distributed on the basis of the number of equivalent bills for each class of customer. The estimated number of equivalent bills for each classification is based upon the respective number of bills rendered and the estimated ratios of meter reading, billing, and collection costs of customers with larger meters

to such costs attributable to customers with a 5/8 inch meter. The ratios used for these determinations are shown in Table 19, Exhibit (JRM-1).

Q. PLEASE SUMMARIZE THE TOTAL TEST YEAR COST OF SERVICE ALLOCATED TO BUCKS COUNTY AND AQUA PENNSYLVANIA.

A. Table 20, Exhibit (JRM-1), shows the test year cost of service for Bucks County. The total plant investment, depreciation expense, and operation and maintenance expense are taken from Bucks County's share of the costs reflected in the last column of Tables 15, 16, and 17, respectively. The rate of return on investment applicable to customers outside the City should reflect, in part, consideration of the City's ownership of facilities, and both the imbedded and current cost of money. On the basis of these considerations, a rate of return of 7.50 percent is considered appropriate at this time for service to Bucks County. The total test year cost of service allocable to Bucks County amounts to \$5,678,000.

The proposed rates applicable to the recovery of the allocated costs of service to Bucks County in Fiscal Year 2009 are shown in the lower portion of Table 20. The commodity charge, applicable to metered water usage, recovers the cost of power and chemical expenses. The demand charge, applicable to measured maximum rates of demand, recovers all other operation and maintenance expenses, except for customer related costs and maintenance of the transmission mains. These latter costs, along with depreciation and return on investment, are recovered through the annual lump sum payment. Table 20A shows the proposed rates for Bucks County for Fiscal Years 2010, 2011, and 2012. These proposed rates recognize the projected levels of

operation and maintenance expenses in those years and the impact which such costs have on the allocation of costs and resulting rates applicable to Bucks County.

Table 21, Exhibit (JRM-1), summarizes the test year cost of service for Aqua Pennsylvania. The total plant investment, depreciation expense, and operation and maintenance expense for Aqua Pennsylvania are included in the last column of Tables 15, 16 and 17, respectively. The total cost of service allocable to Aqua Pennsylvania, including a 7.50 percent rate of return on allocated investment, amounts to \$2,976,000. The bottom portion of Table 21 shows the existing contractual rates applicable to Aqua Pennsylvania. Table 21A shows the proposed rates for Aqua Pennsylvania for Fiscal Years 2010, 2011, and 2012. These proposed rates recognize the projected levels of operation and maintenance expenses in those years based on the allocation of costs and the resulting rates applicable to Aqua Pennsylvania.

Q. PLEASE DESCRIBE THE ALLOCATION OF COSTS OF SERVICE TO THE RETAIL CUSTOMERS OF THE WATER UTILITY.

A. Units costs of service applicable to the retail customer classes are developed by dividing the total cost allocated to each cost component by the total applicable units of service. The retail customer class responsibility for service is then obtained by applying unit costs of service to the number of units for which the customer class is responsible.

The revenue requirements of the system beyond operating expense and depreciation are considered the equivalent of return on investment. As discussed previously, the total return on investment in the system required in the test year amounts to

\$42,629,000, and when related to the total test year plant investment of \$1,178,875,000 as developed in Table 15, results in an overall system rate of return requirement of 3.62 percent. As previously discussed, for purposes of this study, a rate of return on investment of 7.50 percent has been used in the determination of cost of service to Bucks County and Aqua Pennsylvania. The required rate of return to be realized on the investment allocated to the inside City customers, after deducting the investment and associated return allocable to Bucks County and Philadelphia Suburban, amounts to approximately 3.49 percent.

Table 22, Exhibit (JRM-1), shows the development of retail customer unit costs of service applicable to the test year. Lines 3 through 6 show the determination of operating expense and depreciation expense unit costs of service applicable to all cost components. Lines 7 and 8 show the development of retail customers' plant investment per unit of service for all customer classes. Lines 9 and 10 show the determination of total return on investment and unit costs for return on investment for inside City retail customers.

The total retail customer unit costs of service are the sum of the test year unit costs for operation and maintenance expense, depreciation expense, and return on investment. Line 11 presents total unit costs of service applicable to all inside City retail customers. The unit Base cost of water is applicable to all water use. Unit Extra Capacity costs are annual costs associated with extra capacity requirements. Unit meter costs are annual costs that are applied to each equivalent meter, while unit billing costs are applicable to each equivalent bill issued.

Column 2 of Table 23, Exhibit (JRM-1), shows the test year costs of service allocated to the various customer classes. The projected revenue under existing rates for each class is shown in Column 1.

The City has indicated that the policy of charging certain classes of customers for water service at less than full cost of service will be continued. Currently such classes as Senior Citizens and Charities and Schools are to be billed at 75 percent of general customer rate levels. The Housing Authority is billed at 95 percent of general customer rate levels. Accordingly, a portion of allocated costs of service from classes receiving service at less than full cost of service rates must be recovered from all other inside City retail customer classes in order to recover the total test year cost of service for retail customers. Column 3 of Table 23 shows the adjusted cost of service to the inside City customer classes recognizing the reduction in recoverable costs of service from these classes subject to rate discounts.

Comparison of the adjusted costs of service in Column 3 with revenue under existing rates in Column 1 indicates that the required percentage increase in revenues varies somewhat from class to class.

Q. MR. MCKINLEY, ONCE THE ANNUAL TEST YEAR COSTS OF SERVICE HAVE BEEN ALLOCATED TO CUSTOMER CLASSES, WHAT IS THE NEXT STEP IN THE COST OF SERVICE STUDY FOR THE WATER UTILITY?

A. Utilizing the unit costs of service from Table 22, cost of service rates are designed which, when applied to the annual billing units for each customer class, will recover the allocated costs from the class. In recognition that there will be a proration of volume charge billings between existing and proposed rates during the first month

following the effective date of the rate increase, and that the billings subject to increase will not be fully collected during the period of July 1, 2008 through June 30, 2009, a lag factor must be calculated and applied to the cost of service rates to increase the rates to that level required to produce the increased receipts necessary to meet cash and debt service coverage requirements in Fiscal Year 2009.

Table 24, Exhibit (JRM-1), shows the proposed water rates for general service customers. The proposed rates reflect a continuation of the existing rate form, including a service charge which varies by meter size and declining block rates. Proposed schedules of rates applicable for each of the four Fiscal Years 2009, 2010, 2011, and 2012 are shown in Table 24.

The typical residential customer has a 5/8 inch meter and uses approximately 700 cubic feet of water per month. The impact of the combined rates for water and wastewater reflecting full cost of service on this typical residential customer in Fiscal Year 2009 results in an increase of approximately 7.8 percent increase. This is approximately 22 percent above the overall level of revenue increase required for the combined utilities of 6.4 percent.

In designing the proposed rates shown in Table 24 for the water utility for each fiscal year, the overall cost of service, the total revenue increase required from Table 12, and the collection factor patterns as applied to billings from current and prior fiscal years were incorporated into the analyses.

In Fiscal Year 2009, the level of increase to the first block rate, which is the block in which approximately 85 percent of the water usage by residential customers falls, is less than the level of increases to the rates for the second through the fourth blocks.

This is necessary to adjust the cost recovery distribution of the current rate blocks to the results of the cost of service analysis, which recognizes a shift in costs from Maximum Day Extra Capacity to the Base cost component based on recent system demand characteristics. In the Fiscal Years 2010, 2011, and 2012, the overall increases in the block rates are approximately the same for each block.

Table 25, Exhibit (JRM-1), shows the proposed rates for private fire connections and for public fire protection for each of the Fiscal Years 2009, 2010, 2011, and 2012.

Q. MR. MCKINLEY, TURNING ATTENTION BACK TO THE WASTEWATER UTILITY, WHAT DID YOU DETERMINE TO BE THE COST OF SERVICE FOR THE WASTEWATER UTILITY FOR PURPOSES OF YOUR STUDY?

A. In analyzing the costs of service of the wastewater utility for allocation to customer classes, the annual revenue requirements for Fiscal Year 2009 were selected as the test year revenue requirements. In determining costs of service for this test year to be met from charges for wastewater service, other operating revenue, and nonoperating income applicable to the wastewater utility are deducted from total revenue requirements. In addition the transfer to the Rate Stabilization Fund is also reflected as a revenue requirement to be met from wastewater rates. The determination of the annual cost of service to be recovered through charges for wastewater service is summarized in Table 26, Exhibit (JRM-1).

The elements comprising the test year annual cost of service as shown in Table 26 are assigned to the two cost categories of operating expense and capital costs. Operating expense consists of operation and maintenance expense, direct interdepartmental charges applicable to the wastewater utility, a portion of the deposit to the Residual

Fund, and a portion of the transfer to the Rate Stabilization Fund, and is reduced by the credit received from the water utility for the treatment of water plant sludge which is discharged to the wastewater system. Total operation and maintenance expenses are further reduced by other operating revenue and a portion of the interest income from various funds.

Capital costs consist of debt service on existing and proposed bonds, the Capital Account Deposit, a portion of the deposit to the Residual Fund, and a portion of the transfer to the Rate Stabilization Fund. Capital costs are reduced by the estimated amounts of interest income from various sources.

The total test year cost of service to be recovered from rates for wastewater service applicable to retail and wholesale customers amounts to \$313,868,000.

Q. MR. MCKINLEY, AFTER HAVING DETERMINED THE TEST YEAR TOTAL COST OF SERVICE TO BE RECOVERED FROM RATES FOR WASTEWATER SERVICE, WHAT IS THE NEXT STEP IN THE ALLOCATION OF THESE COSTS TO THE VARIOUS CLASSES OF CUSTOMERS SERVED BY THE UTILITY?

A. As indicated previously for the water utility, in allocating the test year cost of service to customer classes, revenue requirements are apportioned among the classes on a utility basis, that is, in terms of operating expense, depreciation expense and return on investment. The annual test year depreciation expense is estimated to total \$31,759,000 for the wastewater utility. In a publicly owned utility, such as the Philadelphia wastewater system, return on investment is the balance of the total annual revenue requirements for capital costs, over and above the allowance for

depreciation. Deduction of the estimated wastewater utility depreciation expense of \$31,759,000 from total capital cost requirements to be met from wastewater service revenue of \$110,417,000 leaves \$78,658,000 to be recovered from both inside City retail and outside City wholesale customers as return on investment on wastewater utility plant investment.

Q. HOW ARE THE TEST YEAR OPERATING AND CAPITAL COSTS ASSIGNED OR ALLOCATED TO THE VARIOUS CLASSES OF CUSTOMERS?

A. The basic underlying principle in developing cost of service rates is the determination of what causes the cost, or what elements in a wastewater system are responsible for causing the level of revenue requirements to be what they are. To make this determination, one must have a working knowledge of how a wastewater system operates.

Q. WOULD YOU BRIEFLY DESCRIBE HOW A WASTEWATER SYSTEM OPERATES AND SOME OF THE CONSIDERATIONS INVOLVED IN DESIGNING SUCH A SYSTEM?

A. A wastewater system includes many different facilities, each of which is designed to fulfill a specific requirement. The sewage collection system in the City of Philadelphia is comprised of both separate sanitary and storm sewers as well as combined sanitary and storm sewers which are designed to handle peak rates of sanitary and stormwater flows and to transport a large part of these flows to one of the three wastewater treatment plants for treatment prior to discharge into the rivers. The wastewater treatment plants are comprised of many different facilities. Certain of the facilities, such as the sedimentation basins, are sized on the basis of the average

annual volume of wastewater received at the plant. Other facilities, such as the aeration basins, are sized on the basis of the biochemical oxygen demand (BOD), a measurable pollutant which is contained in the influent wastewater, since these facilities are to provide the oxygen required to reduce this pollutant prior to discharge into the river. Still other facilities are sized on the basis of the amount of suspended solids, another readily measurable pollutant, contained in the influent wastewater. Certain other facilities, such as sludge disposal facilities, are designed on the basis of both BOD and suspended solids loadings.

Q. MR. MCKINLEY, AFTER YOU HAVE EXAMINED THE VARIOUS FACILITIES INCLUDED IN A PARTICULAR WASTEWATER SYSTEM, SUCH AS THE CITY OF PHILADELPHIA'S SYSTEM, AND HAVE DETERMINED THE BASES FOR WHICH FACILITIES OF THE SYSTEM WERE DESIGNED, HOW DO YOU USE THIS INFORMATION IN YOUR COST OF SERVICE ANALYSES?

A. The total costs of service are allocated to functional cost components recognizing the system characteristics of the utility and the parameter or parameters having the most significant influence on the magnitude of each element of cost. Operation and maintenance expense items are allocated directly to appropriate cost components, while the allocation of capital costs, in terms of depreciation expense and return on investment, is based upon a detailed allocation of related capital investment in test year plant in service.

Q. WHAT WOULD YOU RECOGNIZE AS THE FUNCTIONAL COST COMPONENTS FOR A WASTEWATER SYSTEM?

A. The cost components of a wastewater system normally include volume cost, capacity cost, strength cost and customer cost. Volume costs are operating and capital costs associated with the total volume of flow in a system. They include consideration of the volume of waste contributed directly by customers and volumes received as a result of nonpoint sources such as infiltration/inflow and stormwater flow into the system.

Capacity costs relate to the capital and operating costs associated with meeting peak flow conditions in the wastewater system.

Strength costs are associated with the treatment of BOD and suspended solids loadings in the influent wastewater received at the treatment plants. BOD is a measure of the oxygen requirement for removal of a portion of the pollutant loading influent to the treatment plants, while suspended solids is a measure of the pollutants in the wastewater which can ordinarily be removed by mechanical means such as screening or sedimentation.

Customer costs of a wastewater system are separated into elements related to meter reading, billing, collecting, and accounting costs related to the provision of wastewater service.

Q. MR. MCKINLEY, HAVE YOU PREPARED A SUMMARY OF THE TEST YEAR PLANT INVESTMENT IN WASTEWATER SYSTEMS USED IN YOUR STUDY TO ALLOCATE CAPITAL COSTS TO THE VARIOUS FUNCTIONAL COST COMPONENTS?

A. Yes, Table 27, Exhibit (JRM-1), summarizes the test year investment in the wastewater system used in the allocation of test year capital related costs of service.

The total test year investment of \$1,569,329,000 is the total original cost investment in facilities which are anticipated to be in service during the test year. Contributed plant, including federal grants on the three wastewater treatment plants and miscellaneous other contributions for collection system improvements, is deducted in arriving at the plant investment for cost allocation and rate design purposes.

Q. PLEASE EXPLAIN THE PROCEDURES USED TO ALLOCATE THE TEST YEAR PLANT INVESTMENT TO FUNCTIONAL COST COMPONENTS DISCUSSED PREVIOUSLY.

A. The wastewater collection system sewers are designed to carry maximum rates of wastewater flows, and the total \$1,000,622,000 investment is therefore allocated to the capacity functional cost component. Pumping stations located on the collection system must also have capacity to meet maximum flows and the related investment of \$29,222,000 is also assigned entirely to the capacity component.

The various functional elements of the water pollution control plants are designed on the basis of different parameters, and the respective investment for each element is allocated accordingly.

Water pollution control plant facilities such as flocculation, sedimentation basins, and recirculation pumping, are designed largely on the basis of total average flow projected for the plant. Therefore, related investment, which varies according to the size or capacity of such facilities, is allocated to the volume cost component.

The investment in facilities such as raw wastewater pumps, preliminary treatment, chlorine contact basins, wastewater conduits, and outfall lines varies according to

maximum, or peak, wastewater flow rates, and is allocated to the capacity functional cost component.

Aeration basins and oxygen, or air supply, facilities are designed principally on the basis of BOD, and the related investment is assigned to the BOD functional cost component.

The investment in sludge conditioning and disposal facilities depends upon both the suspended solids and BOD parameters, and is allocated to those two components of cost. The design of facilities handling only sludge from the primary sedimentation basins, such as the primary sludge pumps and scum disposal facilities, reflects the suspended solids content of the raw wastewater, and the related investment is therefore allocated to that cost component. The investment in facilities handling waste activated sludge, such as waste activated sludge thickeners, is allocated 50 percent to the suspended solids and 50 percent to the BOD functional cost components based upon the design loadings and degree of treatment provided.

Likewise, the investment in certain other facilities handling both primary and waste activated sludge, such as digesters and sludge dewatering and composting facilities, is allocated to the suspended solids functional cost component and to the BOD functional cost component. The percentage allocation to these cost components is derived from an analysis of the relative quantities of sludge from the two sources, and reflects the relative difficulty of treating waste activated sludge as compared with primary sludge. The resulting allocation percentages are 75 percent to the suspended solids functional cost component and 25 percent to the BOD functional cost component. The investment in the sludge force main at the Southeast plant is

allocated 75 percent to suspended solids and 25 percent to BOD functional cost components, based on design flows.

The raw wastewater pumping facilities at the Southwest plant are not used by the contract customers whose flow is tributary to the plant. Consequently, the investment in raw wastewater pumping facilities at the Southwest plant is allocated entirely to the Retail customer group.

Certain of the treatment and sludge related facilities located at or near the Southwest treatment plant, such as the digesters and the sludge processing and distribution facilities, are designed to also provide treatment and disposal of sludge from the Southeast treatment plant, and to provide disposal of sludge from the Northeast treatment plant. To properly recognize cost responsibility for these joint use facilities, a portion of the investment in both existing and expanded plant joint use facilities is allocated to the Southeast and Northeast plants.

Q. HAVE YOU PREPARED A SUMMARY OF THE TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE PROVISION OF WASTEWATER SERVICE TO THE VARIOUS FUNCTIONAL COST COMPONENTS IN YOUR STUDY?

A. Yes, Table 28, Exhibit (JRM-1), summarizes the allocation of the test year operation and maintenance expense. Revenue other than wastewater service revenue, shown in Table 26, Exhibit (JRM-1), to be available for meeting a portion of operating expenses is expected to be \$16,129,000 during the test year. Of this revenue, \$6,329,000 is related to projected penalties on overdue retail customer bills, and \$4,494,000 is related to other retail services. These credits are only allocable to retail

customers. Interest earnings on operating fund and Rate Stabilization Fund balances of \$1,544,000 is allocable to all customers, as is an operating grant estimated at \$500,000 annually which is included in Line 11 of Table 26. Accordingly, the net operation and maintenance expense utilized in the allocation of costs to wholesale customers amounts to \$219,960,000. The allocation of operation and maintenance expense to cost components is similar to that for capital investment discussed previously.

Q. AFTER COSTS ARE ALLOCATED TO FUNCTIONAL COST COMPONENTS, WHAT IS THE NEXT STEP IN THE OVERALL COST OF SERVICE ANALYSIS?

A. Costs are next distributed to customer classes. To do this customer groups with similar characteristics are assigned to specific classes. Units of service for each class are determined for each of the functional cost component categories.

The sum of the units of service for all customer classes for each particular cost component is divided into the total cost allocated to that component to arrive at unit costs of service. The unit costs are then applied to the units of service for each class, with the total class cost of service being determined by summing the cost of service for all cost components.

Q. PLEASE EXPLAIN THE METHODOLOGY YOU USED TO DISTRIBUTE COSTS TO THE CUSTOMER CLASSES SERVED BY THE WASTEWATER UTILITY.

A. As a basis for estimating the cost of providing wastewater service to each of the classifications of customers, the elements of cost of service are distributed among the

classes in proportion to respective service requirements. Analysis of resulting costs of service to each classification provides bases for design of a schedule of wastewater rates.

The units of service requirements of each customer class provide a means of proportionate distribution of costs, previously allocated to functional cost components, to the customer classes. Requirements indicative of service responsibility for distribution of various costs include the quantity of wastewater, the peak flow rate of wastewater, the strength of wastewater, the number and size of water meters, and the number of bills rendered.

Q. WHAT IS THE INITIAL STEP USED TO DISTRIBUTE COSTS TO THE VARIOUS CUSTOMER CLASSES SERVED BY THE WASTEWATER UTILITY?

A. We begin our analysis with the development of test year units of services applicable to each customer class served by the wastewater utility. Basic customer groupings include contract wholesale customers and retail customer classes.

The City is obligated to provide capacity in various wastewater system facilities to accept and treat wastewater from contract service customers up to the rates of flow and strength units of service specified in contracts between the City and the respective customers. The various contracts typically provide for maximum short-term flow rates expressed in cubic feet per second (cfs), maximum average daily flow rates expressed in million gallons per day (mgd), and maximum annual suspended solids and BOD loadings expressed in pounds. This obligation must be recognized in the allocation of those operating expenses and capital costs which are primarily

related to capacity installed to meet contract requirements. Therefore, these allocations are based upon the relationship of the contract service requirements to the total installed capacity of the respective facilities.

Table 29, Exhibit (JRM-1), summarizes the units of service applicable to contract customers used in the cost of service analysis. The top portion of the table, entitled "FY 2009 Test Year," indicates the projected volume and strength units anticipated to be contributed by the contract customers during the test year of the study period. These units are based on the historical measured annual volume, suspended solids, and BOD loadings for these customers and are used in the allocation of test year operation and maintenance expense to the contract customers. The test year capacity units for contract service are assumed to be the same as the contract maximum shown on Line 12 of Table 29, Exhibit (JRM-1), recognizing that these customers may, at any time, contribute up to their contract maximum short-term rate of flow.

The bottom portion of Table 29, Exhibit (JRM-1), entitled "Contract Maximum Units," is based upon the contractual rate of flow for each customer, including an allowance for infiltration/inflow downstream from the delivery point into the City's wastewater system. Contract maximum units for suspended solids and BOD are based upon the contractual strength loadings for those customers which have such provisions in their contracts or the estimated measured strength for each customer as applied to their contract maximum daily flow rate in mgd for those customers which do not have specific loadings in their contracts. Contract maximum units are used in the allocation of capital investment related costs to the contract customers.

Table 30, Exhibit (JRM-1), summarizes the test year units of service for volume, capacity, strength, and customer units of service for each of the customer classes. The test year units of service for the contract customers are taken from Table 29, Exhibit (JRM-1), Lines 1 through 12. For the retail customer classes the estimated sanitary wastewater quantities are obtained by applying an estimated factor of 95 percent to the projected test year water sales from each class as an allowance for water consumption which is not discharged into the wastewater system. The test year infiltration/inflow in the wastewater system assignable to the retail customer classes is based upon the total projected test year flow at all three treatment plants, less the estimated annual sanitary sewage contribution from the retail customers and the total annual flow projected for the contract service customers.

The responsibility of retail customers for sanitary wastewater capacity flow rates in the collection system, shown in Column 2 of Table 30, Exhibit (JRM-1), is estimated to be approximately 4 times the average daily flow computed from the annual volumes shown in Column 1. These estimated capacity requirements reflect consideration of the average ratio of maximum to average sanitary wastewater flow rates applicable over the entire system, which, due to customer diversity and the time of concentration of peak flows, is estimated to range downward from 6 to 8 in the upper reaches of the system to 1.5 to 2 in the lower reaches. The peak sanitary wastewater flow, exclusive of infiltration/inflow, from retail customers to the treatment plants, shown in Column 3 of the table, is estimated to be 1.5 times the average of such flow.

Retail customers' infiltration/inflow, which includes leakage into sewers and direct extraneous inflows, is estimated to have a peak in the collection system of 8 times the average rate of such flow, and at the water pollution control plants of 2.5 times the average flow.

The estimated strength units for each customer class are shown in Columns 4 and 5 of Table 30, Exhibit (JRM-1). Based upon an analysis of historical data, the wastewater reaching the water pollution control plants is estimated to have a weighted average suspended solids concentration of approximately 171 milligrams per liter (mg/l), and a weighted average BOD concentration of approximately 119 mg/l. These weighted averages are based on estimated influent concentrations at the three treatment plants.

The estimates of strength units for customers with excess strength wastewater are based upon an analysis of surcharge bills.

The strength units from contract customers, as measured at their point of discharge to the City sewers, are estimated for each contract customer based on projected study period flows and historical measured wastewater strength concentrations.

The estimated strength allowances for pollutants in infiltration/inflow are based upon judgment considering the very limited pertinent information available. Infiltration/inflow is assumed to have a suspended solids and BOD concentration of 100 mg/l and 25 mg/l, respectively.

Additional wastewater strength loadings at the treatment plants are attributable to water plant sludge from the Belmont and Queen Lane treatment plants. An estimate of the volume and pounds of sludge from the water treatment plants has been included in the units of service shown in Table 30 on Line 4.

The strength assigned to the retail customer sanitary wastewater accounts for the remainder of the total strength units projected to reach the plants. Resulting retail suspended solids and BOD concentrations are 235 mg/l and 230 mg/l, respectively. The resulting concentrations of retail wastes are in line with average values of the strength of wastewater measured at the customer's premises prior to dilution by infiltration/inflow based on previous studies performed by the Water Department.

Units of service applicable for the allocation of customer costs are summarized in Columns 6 and 7 of Table 30, Exhibit (JRM-1). The number of accounts and bills for each customer class and meter size are derived from billing information prepared by the Water Department. Equivalent meters are based upon factors relating the capacity of various size meters relative to the capacity associated with a 5/8 inch meter. This capacity based equivalent meter ratio was directed to be used by the Water Commissioner in his 1991 rate decision and has continued to be used in this filing to be consistent with the decision in that rate case.

Q. PLEASE EXPLAIN THE METHODOLOGY USED TO DISTRIBUTE COSTS TO THE CONTRACT SERVICE CUSTOMERS AFTER THEIR UNITS OF SERVICES ARE DEVELOPED.

A. Contract service is provided to customers under the provisions of agreements with ten separate governmental units outside the City.

Investment is distributed to contract service customers on the basis of the relationship of their individual contract maximum flows to the capacity of the respective facilities used. Only costs associated with facilities used directly by a customer are allocated to that customer.

The derivation of the investment per unit of capacity for the various components of the Northeast, Southwest, and Southeast water pollution control plants is shown in Table 31, Exhibit (JRM-1). The total investment allocated to each functional cost component is from Table 27, Exhibit (JRM-1). Capacities applicable to each component are based on current design conditions for the respective plants.

The application of unit investment in conveyance and treatment facilities to the applicable contract maximum units of service for each contract customer yields the test year investment allocable to that customer. The total investment distributed to each contract service customer serves as a basis for subsequently estimating the annual capital costs of service of the respective customers. It should be noted, however, that six of the contract service customers have made front-end capital contributions related to the investment in plant which provides them service. These customers include Bensalem, Bucks County, DELCORA, Lower Merion, Lower Southampton, and Upper Darby. It is anticipated that these customers will make additional upfront annual capital contributions in the future associated with applicable plant improvements, with the exception of Bucks County and perhaps DELCORA. Bucks County's recently revised contract recognizes the utility basis for the recovery of allocated capital investment, whereby annual capital costs are recovered through charges for depreciation and return on allocated future investment allocable to Bucks County, beyond its previous capital contributions. In addition, contract negotiations are currently underway with DELCORA, and it is anticipated that the new contract with DELCORA may also be based on the utility basis for capital cost recovery.

An adequate measure of the annual capital costs incurred by the City in providing service to contract service customers can be developed through application of the utility basis of cost determination, as discussed above in conjunction with Bucks County's new contract. The utility basis, in which annual capital costs are considered to consist of two elements, depreciation expense and return on investment, has long been accepted by regulatory agencies as a fair and equitable method of analysis of costs of providing utility service.

Depreciation expense is the loss, not restored by current maintenance, which occurs in the property due to wear and tear, decay, inadequacy, and obsolescence. Depreciation accounting is generally based upon an annual percentage of investment, based in turn upon the expected average service lives of the particular classes of property in the utility system.

For purposes of determining an estimated equivalent depreciation expense on test year plant in service, average depreciation rates used by the City, weighted by type of plant investment, and as used in this study are 2.5 percent for water pollution control plants and wastewater pumping stations, and 2.0 percent for the collection system. These average depreciation rates are applied to allocated test year plant investment less land to determine test year depreciation expense.

The rate of return on investment applicable for service to customers outside the City of Philadelphia should reflect, in part, consideration of the City's ownership of facilities and the cost of money. On the basis of these considerations, a rate of return of 7.50 percent is considered appropriate at this time for service to customers outside the City.

Operation and maintenance expense is distributed to contract service customers on the basis of projected test year units of service, rather than contract units of service used in the distribution of investment. Table 32, Exhibit (JRM-1), shows the computation of unit operating expense for system pumping and treatment applicable to contract service. Total operating expense for the various cost components is from Table 28, Exhibit (JRM-1). Total units of service applicable to each facility are based upon historical average flows and strengths through the respective facilities. It is noted that the total volume, capacity, suspended solids, and BOD units for the three treatment plants, Lines 7 through 18, equals the total system units of service for those cost elements as shown in Table 30, Exhibit (JRM-1).

Total projected sewage system maintenance expense in the test year is approximately 3.2 percent of the total estimated test year collection system investment. Contract service customers are allocated sewer maintenance expense on the basis of 3.2 percent of their respective allocated investment in the collection system.

Customer costs allocated to the contract service customers reflect estimates of costs of billing for wastewater service, including allowances for flow and strength monitoring, bill preparation, and calibration of the flow meters.

Table 33, Exhibit (JRM-1), summarizes the test year cost of service allocated to each of the contract wastewater customers. The total allocated investment shown in Column 1 of Table 33, Exhibit (JRM-1), includes conveyance, pumping, and treatment investment. Application of the contract maximum units of service from Table 29, Exhibit (JRM-1), to the unit investment from Table 31, Exhibit (JRM-1), yields the allocated investment in treatment facilities, with the balance of allocable

investment being related to pumping and conveyance facilities. Column 2 of Table 33, Exhibit (JRM-1), excludes costs associated with land, as depreciation is not generally applicable to investment in land.

The allocated operation and maintenance expense shown in Column 3 includes conveyance system maintenance expense, customer costs, and treatment and pumping related operating expenses. Application of the test year units of service for each customer to the unit pumping and treatment expense from Table 32, Exhibit (JRM-1), yields the test year allocated operation and maintenance expense for these facilities. Sewer maintenance expense is estimated at 3.2 percent of allocated collection system investment.

Depreciation expense in Column 4 is based upon 2 percent of the depreciable investment in the collection system and 2.5 percent of the depreciable investment in treatment and pumping facilities. Return on investment is based on 7.50 percent of the total test year allocated investment in Column 1. The total test year cost of service allocable to each contract wastewater customer, shown in Column 6, is the sum of Columns 3, 4, and 5.

Q. PLEASE EXPLAIN THE METHODOLOGY USED TO DISTRIBUTE COSTS TO THE RETAIL CUSTOMER CLASSES.

A. Wastewater service is provided on a retail basis to all customers inside the City. Table 34, Exhibit (JRM-1), summarizes the unit costs of service applicable to retail customers.

Operation and maintenance expense allocable to retail customers is the total system operation and maintenance expense less the operating expense allocated to wholesale

contract customers. The credits for penalties on overdue bills and other retail credits have also been recognized in determining the net operation and maintenance expense allocable to retail customers. Test year plant investment allocable to retail customers is the total plant investment less the allocated investment to wholesale contract customers.

The test year retail customer investment and operating expenses associated with the collection system have been separated between sanitary sewer related costs and stormwater related costs. An analysis of the collection system serving retail customers, including sewers carrying combined sanitary and stormwater flows and sewers carrying the respective flows in separate sewers, indicates that approximately 30 percent of the capacity of the system is for conveyance of sanitary flows and 70 percent is for stormwater drainage. On the basis of this analysis, the investment in sewers and the related sewer maintenance expense is estimated to be allocable 30 percent to sanitary wastewater and 70 percent to stormwater. Inlet cleaning expense is entirely related to the provision of stormwater drainage.

Costs of service for stormwater drainage are not related to the sanitary wastewater service requirements. The most appropriate theoretical measure of stormwater runoff responsibility by respective customer classes would be one which includes consideration of (1) the overall area of customer properties, and (2) stormwater runoff potential, the latter factor reflecting the relative slopes and physical characteristics of the properties, including the impervious area of the property.

As was established in the previous rate hearings and proceedings in 2001 and 2004, Black & Veatch was part of a consultant team that investigated an allocation

methodology and cost recovery system that recognized these measures of stormwater cost responsibility. As a part of these studies and evaluations of alternative stormwater cost allocation and cost recovery methodologies, in early 1995, the Water Department established a citizens advisory panel as a part of the stormwater cost allocation review process. This advisory group consisted of a cross-section of stakeholders within the community. Through a series of meetings over approximately a two year period, this citizens advisory group decided that an appropriate cost responsibility for stormwater related costs would be to recover 80 percent of total stormwater related costs (excluding fixed costs such as customer billing) based upon a customer's impervious area and 20 percent based upon a customer's total gross property area.

The citizens advisory group also recommended a three-tiered approach for residential customers utilizing a standardized property size for each tier and an associated flat rate charge. The three tiers were row homes, twins, and detached single family homes. All non-residential accounts would be billed based upon each property's individual gross and impervious area. Streets and parks were to be excluded from the stormwater charge, and the existing discounts available to senior citizens, charities and schools, and the Housing Authority would be retained.

During the course of the prior stormwater study, both during the time the citizens advisory group was active and for a period of time following the issuance of the advisory group's report, the project team and Water Department staff worked with other agencies in the City which were responsible for developing a Geographical Information System (GIS) for use by various agencies across the City. This GIS was

to be the foundation, linkage, and basis for the parcel-based billing system for the Water Department's new stormwater cost recovery system. As was reported during the rate proceedings in 2001 and 2004, the final delivery of the GIS did not contain sufficient accuracy for use by the Water Department as the basis for their new stormwater cost recovery system.

However, the findings from the studies made by the consulting team clearly indicated that the then existing basis of charge for stormwater cost recovery, one that solely recognized equivalent water meter size as a surrogate measure of the potential size of a customer's property, and hence the potential for stormwater runoff to occur, resulted in charges to residential properties, particularly the row homes and twins, that were significantly greater than would be supportable under a more theoretically appropriate parcel based cost recovery system.

Based on these prior studies and given the fact that the residential properties constituted such a large majority of the Water Department's customer base, the Water Department directed that the findings of the parcel based stormwater cost recovery study, as applied to the residential customer, would be utilized in establishing an appropriate recovery of stormwater costs for such customers in the 2001 rate proceedings.

In the 2001 rate proceedings, the move towards an appropriate level of stormwater cost recovery for residential accounts, utilizing the parcel-based system parameters recommended by the citizens advisory group, was phased-in equally over the three year rate period of Fiscal Years 2002 through 2004. This phase-in was also a recommendation of the citizens advisory group. As was the situation in the 2004 rate

proceedings, in the current rate study, no further phasing-in is required of stormwater related costs is proposed. The stormwater charge for the 5/8 inch meter size, utilized by nearly all residential accounts and some very small non-residential accounts, fully reflects the level of stormwater charge applicable to an average residential customer in terms of gross and impervious area. Accordingly, the stormwater charges for nearly all residential customers are representative of a parcel based system with the rates proposed for Fiscal Year 2009, as well as the proposed rates for Fiscal Years 2010 through 2012. The stormwater costs of service not recovered the 5/8 inch service charges are recovered from larger meter sizes on the basis of equivalent meter capacities, following the procedures utilized in the previous two rate proceedings.

This cost recovery of stormwater costs is a continuation of the more equitable basis of charge for stormwater service established in the previous two rate proceedings, in that residential accounts (represented by the 5/8 inch meters) are paying for stormwater in proportion to the 80 percent impervious and 20 percent gross area methodology recommended by the citizens advisory group. Those customers with a meter size greater than 5/8 inch, which are essentially all nonresidential accounts, are paying for the balance of the annual stormwater cost of service.

The rate of return required from inside City retail customers is derived by first deducting the total capital costs allocable to wholesale customers (depreciation plus return on investment) plus the annual depreciation expense allocable to retail customers from the total test year capital cost to be recovered from wastewater charges. The test year amount of return related costs to be recovered from retail customers amounts to \$74,415,000. The total plant investment allocable to retail

customers amounts to \$1,451,072,000, which is the total system plant investment in wastewater facilities less the plant investment allocable to wholesale customers. Dividing the revenue requirement for retail customer return by the allocable retail customer plant investment yields a rate of return for service to retail customers of 5.13 percent for the test year.

The inside City return is required to meet annual system capital requirements, in excess of total annual depreciation expense and return on investment allocated to customers outside the City. It is noted that in the combined water and wastewater systems, the overall average rate of return applicable to retail customers amounts to 4.41 percent, while the rate of return applicable to the wholesale customers of the two systems amounts to 7.50 percent. The difference in the retail customer rates of return between the water and wastewater systems is based upon the overall mix of operating versus capital related costs between the two utilities.

Table 35, Exhibit (JRM-1), shows the resulting allocation of test year costs of service to each of the retail customer classes. The units of service from Table 30, Exhibit (JRM-1), applied to the retail unit costs from Table 34, Exhibit (JRM-1), result in an initial allocation of costs to each class. The cost of service allocable to infiltration/inflow must be distributed back to the "rate paying" classes of retail service. As in the case of the allocation of stormwater costs, the relative customer class responsibility for infiltration/inflow cost is not exactly determinable, nor can it be directly related to the parameters of sanitary wastewater service.

In general, infiltration/inflow due to leakage in lateral sewers of individual residences would be expected to be less than in the services of individual large commercial or

industrial establishments. The greater length, due to larger lot frontage, and greater size of main sewer required for the larger customers would also contribute to potential increased infiltration/inflow with the size of customer. The number of equivalent meters of each customer class, discussed previously in this report, provides a reasonable means of recognizing both numbers and relative sizes of customers and provides a measure of class responsibility for infiltration/inflow cost.

The cost of service summarized in Table 35, Exhibit (JRM-1), reflects the redistribution of the cost of infiltration/inflow to the other classes of service based upon equivalent meters and volume. In accordance with the rate proceeding decisions issued in 1993, 2001, and 2004, the rate design for the current study reflects a 30 percent recovery of infiltration/inflow costs through the service charge and 70 percent through the volume charge.

Q. IN YOUR PREVIOUS ANSWERS REGARDING THE VARIOUS STEPS REQUIRED IN UNDERTAKING THIS RATE STUDY, YOU HAVE COVERED EVERYTHING UP TO THE LAST STEP, THE DESIGN OF RATES WHICH WILL RECOVER THE TEST YEAR COST OF SERVICE FROM THE VARIOUS RETAIL CUSTOMER CLASSES ON AN EQUITABLE BASIS. WOULD YOU BRIEFLY DISCUSS THIS LAST STEP?

A. The initial consideration in the derivation of a rate schedule is the establishment of equitable charges to the customers, commensurate with the cost of providing that service. The only method of assessing entirely equitable rates would be the determination of each customer's bill based on his particular service requirements. Since this is obviously impractical when dealing with thousands of customers, rates

are normally designed to fit average conditions for groups of customers having similar service requirements. Practicability also requires that rates be reasonably simple in application and subject to as few misinterpretations as possible.

The proposed charges for wastewater service to wholesale and retail service customers recognize the cost of service analyses discussed previously. The proposed charges for wholesale customers are shown in Tables 36, 36A, 36B, and 36C of Exhibit (JRM-1). These charges consist of unit charges for operation and maintenance expenses and annual lump sum charges to recover the fixed costs of maintenance of the collection system, customer costs, and capital costs for those customers which pay annual depreciation and return charges.

The rates in Table 36 are applicable to the Fiscal Year 2009 test year while the rates in Tables 36A, 36B, and 36C are applicable to Fiscal Years 2010, 2011, and 2012, respectively. The proposed charges for Fiscal Years 2010, 2011, and 2012 recognize the projected level of inflation in operation and maintenance expenses for those years and the impact which such cost increases would have on the charges to wholesale customers.

The proposed charges for wastewater service to retail service customers are presented in Table 37, Exhibit (JRM-1), and consist of a monthly service charge and a uniform volume charge applicable to billable water usage. Four schedules of retail rates are shown in Table 37, one applicable for each of the Fiscal Years 2009, 2010, 2011, and 2012. The proposed retail rates for each year recognize cost of service allocations and the overall increases in revenues for the wastewater utility for each year as

developed in Table 13, and the collection factor patterns as applied to billings from the current and the two prior fiscal years.

The top portion of Table 37, Exhibit (JRM-1), shows the proposed service charges applicable to retail wastewater service customers. In addition to the proposed service charges, a proposed uniform volume charge applicable to billable water usage is presented in this table and is based upon the cost allocation analysis and would be applicable to retail customers with normal strength wastewater. For those customers whose wastewater is in excess of normal strength, a proposed schedule of surcharge rates is also shown in Table 37.

Q. MR. MCKINLEY, IN DESIGNING THE COST OF SERVICE RATE SCHEDULE SHOWN IN TABLE 37, EXHIBIT (JRM-1), WERE THERE OTHER FACTORS, IN ADDITION TO THE UNIT COSTS OF SERVICE RESULTING FROM THE COST OF SERVICE ANALYSES, WHICH HAD TO BE CONSIDERED?

A. Yes. The proposed charges for wastewater service applicable to general service retail customers recognize that certain retail customer groups, including senior citizens, charities and schools, which receive a 25 percent discount, and the Philadelphia Housing Authority, which receives a 5 percent discount, are provided service on a discounted basis. It is anticipated that during the intended period of adequacy for the proposed rates, the existing discounts for these customers will continue to be applicable. In designing the proposed rates, the unit costs of service are adjusted to reflect the fact that these named customer groups will not pay full cost of service, and accordingly the unit costs and resulting rates applicable to general service customers must be increased to recover this cost of service deficit.

Q. BASED UPON THE PROPOSED SCHEDULES OF RETAIL WASTEWATER RATES, WHAT IS THE INCREASE TO THE AVERAGE RESIDENTIAL CUSTOMER'S COMBINED WATER AND WASTEWATER BILL RELATIVE TO THE BILL UNDER EXISTING RATES?

A. Table 38, Exhibit (JRM-1), shows a series of typical or representative combined water and wastewater bills under existing and proposed rates for the four Fiscal Years 2009, 2010, 2011, and 2012. In the City of Philadelphia, the average residential customer has a 5/8 inch meter and uses about 8.70 Mcf (thousand cubic feet) annually (approximately 700 cubic feet monthly). Under the proposed schedules of water and wastewater rates for Fiscal Year 2009, this customer's monthly bill would increase from \$49.35 to \$53.19, an increase of \$3.84 or about 7.8 percent; in Fiscal Year 2010 the increase is \$3.38, or about 6.4 percent; in Fiscal Year 2011 the increase is \$3.73, or about 6.6 percent; and, in Fiscal Year 2012 the increase is \$3.91, or about 6.5 percent

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY IN THIS MATTER?

A. Yes, it does.



**PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008**

**WATER DEPARTMENT  
PHILADELPHIA, PENNSYLVANIA**

**EXHIBIT JRM-1**

MARCH 2008



**BLACK & VEATCH**  
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**TABLE 1**  
**PROJECTED WATER UTILITY RECEIPTS**  
**UNDER EXISTING RATES**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
1	General Service Excluding Senior Citizens	137,196	136,001	134,247	132,398	130,550	128,775	127,010
2	Senior Citizens	2,441	2,291	2,145	1,996	1,847	1,698	1,550
3	Housing Authority	4,007	4,094	4,148	4,193	4,238	4,283	4,329
4	Charities and Schools	6,949	7,006	7,021	7,021	7,021	7,021	7,021
5	Subtotal General Customers	150,593	149,392	147,561	145,608	143,656	141,777	139,910
6	Bucks County	4,453	4,453	4,453	4,453	4,453	4,453	4,453
7	Aqua Pennsylvania	3,096	2,603	2,558	2,558	2,558	2,558	2,558
8	Municipal Service	5,963	7,522	7,522	7,522	7,522	7,522	7,522
9	Public Fire Protection	7,248	6,986	6,986	6,986	6,986	6,986	6,986
10	Private Fire Protection	1,688	1,688	1,688	1,688	1,688	1,688	1,688
11	<b>Total Water Sales</b>	<b>173,041</b>	<b>172,644</b>	<b>170,768</b>	<b>168,815</b>	<b>166,863</b>	<b>164,984</b>	<b>163,117</b>
12	Other Operating Revenues	8,112	8,055	8,006	7,958	7,910	7,863	7,817
	Nonoperating Income							
13	Interest Income on Debt Service Reserve Fund (a)	0	0	0	0	0	0	0
14	Interest Income on Construction Fund	815	1,104	1,406	777	1,338	1,676	1,343
15	Subtotal Interest Income on Capital Funds	815	1,104	1,406	777	1,338	1,676	1,343
16	Other (b)	1,769	1,504	1,096	883	895	824	829
17	Total Nonoperating Income	2,584	2,608	2,502	1,660	2,233	2,500	2,172
18	<b>Total Receipts</b>	<b>183,737</b>	<b>183,307</b>	<b>181,276</b>	<b>178,433</b>	<b>177,006</b>	<b>175,347</b>	<b>173,106</b>

(a) Excludes deposit into Residual Fund for Transfer to City General Fund.

(b) Includes interest income on Operating and Rate Stabilization Funds.

**TABLE 2**  
**PROJECTED WATER UTILITY**  
**OPERATION AND MAINTENANCE EXPENSE**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
1	Personal Services and Fringe Benefits	61,988	65,270	68,054	71,678	76,251	80,367	84,738
	Purchase of Services							
2	Power	6,743	7,224	7,480	8,475	10,004	10,855	11,769
3	Other	18,969	20,603	20,805	21,483	22,183	22,851	23,576
4	Subtotal	25,712	27,827	28,285	29,958	32,187	33,706	35,345
	Materials and Supplies							
5	Chemicals	13,161	15,899	17,513	19,342	21,368	23,517	25,863
6	Other	6,604	7,400	7,646	7,908	8,178	8,448	8,728
7	Subtotal	19,765	23,299	25,159	27,250	29,546	31,965	34,591
8	Equipment	945	1,313	1,352	1,393	1,435	1,478	1,521
9	Indemnities	2,320	2,320	2,389	2,461	2,535	2,611	2,689
10	Subtotal Water Operations	110,730	120,029	125,239	132,740	141,954	150,127	158,884
11	Interdepartmental Charges	18,797	19,829	20,400	21,142	22,072	22,884	23,732
12	<b>Total Expenses</b>	<b>129,527</b>	<b>139,858</b>	<b>145,639</b>	<b>153,882</b>	<b>164,026</b>	<b>173,011</b>	<b>182,616</b>

**TABLE 3**  
**PROJECTED WATER UTILITY**  
**CAPITAL IMPROVEMENT PROGRAM**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
1	Engineering and Administration	9,520	9,996	9,996	9,996	9,996	9,996	9,996
2	Water Treatment Plant Improvements	18,480	18,480	18,480	18,480	18,480	18,480	18,480
3	Distribution System Rehabilitation	21,980	21,980	21,980	21,980	21,980	21,980	21,980
4	Large Meter Replacement							
5	Vehicles	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>	<u>1,500</u>
6	Total Improvements	51,480	51,956	51,956	51,956	51,956	51,956	51,956
7	Inflation Adjustment (a)	<u>0</u>	<u>0</u>	<u>2,078</u>	<u>4,240</u>	<u>6,487</u>	<u>8,825</u>	<u>11,256</u>
8	Inflated Total	51,480	51,956	54,034	56,196	58,443	60,781	63,212
9	Cash Flow Adjustment	<u>(7,972)</u>	<u>(7,959)</u>	<u>(7,959)</u>	<u>(8,896)</u>	<u>(8,819)</u>	<u>(8,968)</u>	<u>(7,763)</u>
10	<b>Net Cash Financing Required</b>	<b>43,508</b>	<b>43,997</b>	<b>46,075</b>	<b>47,300</b>	<b>49,624</b>	<b>51,813</b>	<b>55,449</b>

(a) Allowance for inflation of 4.0 percent per year after 2009.

**TABLE 4**  
**PROJECTED FLOW OF FUNDS - CAPITAL IMPROVEMENTS FUND**  
**WATER UTILITY**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
	Disposition of Bond Proceeds							
1	Proceeds From Sale of Bonds	0	96,000	0	0	104,000	0	108,000
	Transfers:							
2	Debt Reserve Fund (a)	0	6,245	0	0	7,156	0	7,431
3	Cost of Bond Issuance (b)	0	1,440	0	0	1,560	0	1,620
4	Construction Fund (c)	0	88,315	0	0	95,284	0	98,949
5	Total Issue	0	96,000	0	0	104,000	0	108,000
	Construction Fund							
6	Beginning Balance	53,886	24,108	82,424	52,115	20,449	81,910	46,166
7	Transfer From Bond Proceeds	0	88,315	0	0	95,284	0	98,949
8	Capital Account Deposit, Grants, and Assessments	7,630	7,798	7,966	8,134	8,301	8,469	8,637
9	Penn Vest Loan	0	0	0	0	0	0	0
10	Transfer from Residual Fund	6,100	6,200	7,800	7,500	7,500	7,600	7,200
11	Total Available	67,616	126,421	98,190	67,749	131,534	97,979	160,952
12	Net Cash Financing Required	43,508	43,997	46,075	47,300	49,624	51,813	55,449
13	<b>Ending Balance</b>	<b>24,108</b>	<b>82,424</b>	<b>52,115</b>	<b>20,449</b>	<b>81,910</b>	<b>46,166</b>	<b>105,503</b>
	Debt Reserve Fund							
14	Beginning Balance	81,002	51,002	57,247	57,247	57,247	64,403	64,403
15	Transfer From Bond Proceeds	0	6,245	0	0	7,156	0	7,431
16	Ending Balance	81,002	57,247	57,247	57,247	64,403	64,403	71,834
17	Interest Income on Construction Fund	815	1,104	1,406	777	1,338	1,676	1,343
18	Interest Income on Debt Reserve Fund	1,031	1,094	1,156	1,156	1,539	1,630	1,677
19	Total Interest Income	1,846	2,198	2,562	1,933	2,877	3,306	3,020

(a) Amount of Debt Reserve Fund estimated to be equal to maximum future annual debt service payment.

(b) Cost of bond issuance assumed to be 1.5 percent of face amount of issue.

(c) Deposits equal proceeds from sale of bonds less transfers to Debt Reserve Fund and Costs of Issuance.

**TABLE 5**  
**SUMMARY OF EXISTING AND PROPOSED DEBT SERVICE**  
**WATER UTILITY**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
	Revenue Bonds							
1	Existing	75,632	74,070	73,076	73,071	75,204	76,147	76,238
	Proposed							
2	Fiscal Year 2008							
3	Fiscal Year 2009			6,245	6,245	6,245	6,245	6,245
4	Fiscal Year 2010							
5	Fiscal Year 2011							
6	Fiscal Year 2012						7,156	7,156
7	Fiscal Year 2013							
8	Fiscal Year 2014							
9	Total Proposed	<u>0</u>	<u>0</u>	<u>6,245</u>	<u>6,245</u>	<u>6,245</u>	<u>13,401</u>	<u>13,401</u>
10	Total Revenue Bonds	75,632	74,070	79,321	79,316	81,449	89,548	89,639
	Pennvest Loans							
11	Pennvest Loans - Revenue Bonds	384	384	384	384	384	384	384
12	Pennvest Loans - GO Bonds	<u>1,227</u>	<u>1,227</u>	<u>1,227</u>	<u>1,227</u>	<u>1,227</u>	<u>1,227</u>	<u>1,227</u>
13	<b>Total Debt Service</b>	<b>77,243</b>	<b>75,681</b>	<b>80,932</b>	<b>80,927</b>	<b>83,060</b>	<b>91,159</b>	<b>91,250</b>

**TABLE 6**  
**PROJECTED WASTEWATER UTILITY RECEIPTS**  
**UNDER EXISTING RATES**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
1	General Service Excluding Senior Citizens (a)	227,184	226,803	225,413	223,821	222,222	220,691	219,171
2	Senior Citizens	3,942	3,692	3,455	3,215	2,975	2,734	2,495
3	Housing Authority	6,534	6,651	6,738	6,811	6,886	6,959	7,033
4	Charities and Schools	18,585	18,704	18,733	18,734	18,734	18,734	18,734
5	Subtotal General Customers	256,245	255,850	254,339	252,581	250,817	249,118	247,433
6	Municipal Service	12,928	14,487	14,487	14,487	14,487	14,487	14,487
7	Contract Service	25,239	25,282	25,305	25,305	23,259	23,259	23,259
8	Surcharge	4,658	4,562	4,460	4,358	4,257	4,155	4,053
9	<b>Total Wastewater Sales</b>	<b>299,070</b>	<b>300,181</b>	<b>298,591</b>	<b>296,731</b>	<b>292,820</b>	<b>291,019</b>	<b>289,232</b>
10	Other Operating Revenues (b)	11,363	11,323	11,280	11,236	11,192	11,150	11,109
	Nonoperating Income							
11	Interest Income on Debt Service Reserve Fund (c)	0	0	0	0	0	0	0
12	Interest Income on Construction Fund	1,514	2,450	3,332	1,925	3,215	3,798	2,771
13	Subtotal Interest Income on Capital Funds	1,514	2,450	3,332	1,925	3,215	3,798	2,771
14	Other (d)	2,800	2,356	1,715	1,349	1,307	1,198	1,215
15	Total Nonoperating Income	4,314	4,806	5,047	3,274	4,522	4,996	3,986
16	<b>Total Receipts</b>	<b>314,747</b>	<b>316,310</b>	<b>314,918</b>	<b>311,241</b>	<b>308,534</b>	<b>307,165</b>	<b>304,327</b>

(a) Includes General Service, Scheduled (Flat Rate) and S Only.

(b) Includes no Clean Streams Grant revenues.

(c) Excludes deposit into Residual Fund for Transfer to City General Fund.

(d) Includes interest income on Operating and Rate Stabilization Funds.

**TABLE 7**  
**PROJECTED WASTEWATER UTILITY**  
**OPERATION AND MAINTENANCE EXPENSE**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
1	Personal Services and Fringe Benefits	91,914	96,771	100,898	106,270	113,057	119,161	125,637
	Purchase of Services							
2	Power	9,635	10,166	10,485	11,845	13,954	15,108	16,353
3	Other	42,070	44,037	44,807	46,389	48,064	49,739	51,423
4	Subtotal	51,705	54,203	55,292	58,234	62,018	64,847	67,776
	Materials and Supplies							
5	Chemicals	3,740	4,446	4,877	5,369	5,918	6,498	7,133
6	Other	8,880	9,933	10,260	10,612	10,984	11,351	11,725
7	Subtotal	12,620	14,379	15,137	15,981	16,902	17,849	18,858
8	Equipment	1,376	1,933	1,991	2,050	2,112	2,175	2,241
9	Indemnities	3,950	3,950	4,069	4,191	4,316	4,446	4,579
10	Subtotal Wastewater Operations	161,565	171,236	177,386	186,726	198,405	208,477	219,092
11	Interdepartmental Charges	34,194	36,028	37,070	38,421	40,112	41,592	43,136
12	<b>Total Expenses</b>	<b>195,759</b>	<b>207,264</b>	<b>214,456</b>	<b>225,147</b>	<b>238,517</b>	<b>250,069</b>	<b>262,228</b>

**TABLE 8**  
**PROJECTED WASTEWATER UTILITY**  
**CAPITAL IMPROVEMENT PROGRAM**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
	Wastewater Collection and Treatment							
1	Other Water Pollution Control Plant Improvements	23,520	23,520	23,520	23,520	23,520	23,520	23,520
	Sewers and Drainage							
2	Engineering and Administration	11,175	11,734	11,734	11,734	11,734	11,734	11,734
3	Storm Flood Relief	25,000	30,000	40,000	50,000	55,000	60,000	60,000
4	Reconstruction of Old Sewers	29,550	26,540	23,520	22,760	22,760	22,760	22,760
5	Vehicles	1,500	1,500	1,500	1,500	1,500	1,500	1,500
6	Total Improvements	90,745	93,294	100,274	109,514	114,514	119,514	119,514
7	Inflation Adjustment (a)	0	0	4,011	8,936	14,299	20,300	25,893
8	Inflated Total	90,745	93,294	104,285	118,450	128,813	139,814	145,407
9	Cash Flow Adjustment	(14,053)	(14,291)	(15,360)	(18,750)	(19,437)	(20,628)	(17,856)
10	<b>Net Cash Financing Required</b>	<b>76,692</b>	<b>79,003</b>	<b>88,925</b>	<b>99,700</b>	<b>109,376</b>	<b>119,186</b>	<b>127,551</b>

(a) Allowance for inflation of 4.0 percent per year after 2009.

TABLE 9

**PROJECTED FLOW OF FUNDS - CAPITAL IMPROVEMENTS FUND  
WASTEWATER UTILITY  
(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
	Disposition of Bond Proceeds							
1	Proceeds From Sale of Bonds	0	229,000	0	0	246,000	0	257,000
	Transfers:							
2	Debt Reserve Fund (a)	0	14,897	0	0	16,926	0	17,683
3	Cost of Bond Issuance (b)	0	3,435	0	0	3,690	0	3,855
4	Construction Fund (c)	0	210,668	0	0	225,384	0	235,462
5	Total Issue	0	229,000	0	0	246,000	0	257,000
	Construction Fund							
6	Beginning Balance	104,981	47,346	199,192	135,071	59,699	199,257	104,744
7	Transfer From Bond Proceeds	0	210,668	0	0	225,384	0	235,462
8	Capital Account Deposit, Grants, and Assessments	10,158	10,381	10,604	10,827	11,051	11,274	11,497
9	Penn Vest Loan	0	0	0	0	0	0	0
10	Transfer from Residual Fund	8,900	9,800	14,200	13,500	12,500	13,400	12,800
11	Total Available	124,038	278,195	223,996	159,399	308,633	223,931	364,504
12	Net Cash Financing Required	76,692	79,003	88,925	99,700	109,376	119,187	127,551
13	<b>Ending Balance</b>	<b>47,346</b>	<b>199,192</b>	<b>135,071</b>	<b>59,699</b>	<b>199,257</b>	<b>104,744</b>	<b>236,953</b>
	Debt Reserve Fund							
14	Beginning Balance	102,590	65,590	80,487	80,487	80,487	97,413	97,413
15	Transfer From Bond Proceeds	0	14,897	0	0	16,926	0	17,683
16	Ending Balance	102,590	80,487	80,487	80,487	97,413	97,413	115,096
17	Interest Income on Construction Fund	1,514	2,450	3,332	1,925	3,215	3,798	2,771
18	Interest Income on Debt Reserve Fund	1,325	1,475	1,626	1,626	2,250	2,466	2,577
19	Total Interest Income	2,839	3,925	4,958	3,551	5,465	6,264	5,348

(a) Amount of Debt Reserve Fund estimated to be equal to maximum future annual debt service payment.

(b) Cost of bond issuance assumed to be 1.5 percent of face amount of issue.

(c) Deposits equal proceeds from sale of bonds less transfers to Debt Reserve Fund and Costs of Issuance.

**TABLE 10**

**SUMMARY OF EXISTING AND PROPOSED DEBT SERVICE  
WASTEWATER UTILITY  
(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
	Revenue Bonds							
1	Existing	97,828	97,495	98,484	98,479	96,057	98,227	98,613
	Proposed							
2	Fiscal Year 2008							
3	Fiscal Year 2009			14,897	14,897	14,897	14,897	14,897
4	Fiscal Year 2010							
5	Fiscal Year 2011							
6	Fiscal Year 2012						16,926	16,926
7	Fiscal Year 2013							
8	Fiscal Year 2014							
9	Total Proposed	0	0	14,897	14,897	14,897	31,823	31,823
10	<b>Total Debt Service</b>	<b>97,828</b>	<b>97,495</b>	<b>113,381</b>	<b>113,376</b>	<b>110,954</b>	<b>130,050</b>	<b>130,436</b>

**TABLE 11**  
**PROJECTED REVENUE AND REVENUE REQUIREMENTS**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
<b>OPERATING REVENUE</b>								
1	Water Service - Existing Rates	173,041	172,644	170,768	168,815	166,863	164,984	163,117
2	Wastewater Service - Existing Rates	299,070	300,181	298,591	296,731	292,820	291,019	289,232
3	Total Service Revenue - Existing Rates	472,111	472,825	469,359	465,546	459,683	456,003	452,349
Additional Service Revenue Required								
	Year	Percent Increase	Months Effective					
4	FY 2009	6.40%	12	30,261	30,039	29,795	29,420	29,184
5	FY 2010	6.40%	12		31,961	31,702	31,303	31,052
6	FY 2011	6.40%	12			33,731	33,306	33,039
7	FY 2012	6.40%	12				35,438	35,154
8	FY 2013	13.10%	12					76,561
9	FY 2014	4.40%	12					28,851
10	Total Additional Service Revenue Required	0		30,261	62,000	95,228	129,467	204,990
11	Total Water & Wastewater Service Revenue	472,111	503,086	531,359	560,774	589,150	660,993	684,547
12	Transfer From/(To) Rate Stabilization Fund	35,420	23,590	33,610	25,825	18,890	(440)	(235)
Other Income (a)								
13	Other Operating Revenue (b)	19,475	19,378	19,286	19,194	19,102	19,013	18,926
14	Construction Fund Interest Income	2,329	3,554	4,738	2,702	4,553	5,474	4,114
15	Debt Reserve Fund Interest Income	0	0	0	0	0	0	0
16	Operating Fund Interest Income	1,188	1,075	604	625	754	808	821
17	Rate Stabilization Interest Income	3,381	2,785	2,207	1,607	1,448	1,214	1,223
18	Total Revenues	533,904	553,468	591,804	610,727	633,897	687,062	709,396
<b>OPERATING EXPENSES</b>								
19	Water & Wastewater Operations	272,294	291,266	302,625	319,465	340,359	358,604	377,976
20	Direct Interdepartmental Charges	52,991	55,857	57,470	59,563	62,184	64,476	66,868
21	Total Operating Expenses	325,285	347,123	360,095	379,028	402,543	423,080	444,844
22	<b>NET REVENUES AFTER OPERATIONS</b>	208,619	206,345	231,709	231,699	231,354	263,982	264,552
<b>DEBT SERVICE</b>								
Senior Debt Service								
Revenue Bonds								
23	Outstanding Bonds (c)	173,460	171,565	171,560	171,550	171,261	174,374	174,851
24	Pennvest Parity Bonds	384	384	384	384	384	384	384
25	Projected Future Bonds (d)	0	0	21,142	21,142	21,142	45,224	45,224
26	Total Senior Debt Service	173,844	171,949	193,086	193,076	192,787	219,982	220,459
27	<b>TOTAL SENIOR DEBT SERVICE COVERAGE (L22/L26)</b>	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x
Subordinate Debt Service								
28	Outstanding General Obligation Bonds	0	0	0	0	0	0	0
29	Pennvest Subordinate Bonds	1,227	1,227	1,227	1,227	1,227	1,227	1,227
30	Total Subordinate Debt Service	1,227	1,227	1,227	1,227	1,227	1,227	1,227
31	Total Debt Service on Bonds	175,071	173,176	194,313	194,303	194,014	221,209	221,686
32	<b>CAPITAL ACCOUNT DEPOSIT</b>	17,788	18,179	18,570	18,961	19,352	19,743	20,134
33	<b>TOTAL COVERAGE (L22/(L31+L32))</b>	1.08 x	1.07 x	1.08 x	1.08 x	1.08 x	1.09 x	1.09 x
<b>RESIDUAL FUND</b>								
34	Beginning of Year Balance	11,341	12,101	11,091	7,917	5,352	3,340	5,370
Plus:								
35	End of Year Revenue Fund Balance	15,760	14,990	18,826	18,435	17,988	23,030	22,732
36	Deposit for Transfer to City General Fund (e)	2,355	2,568	2,782	2,782	3,790	4,096	4,254
Less:								
37	Transfer to Construction Fund	15,000	16,000	22,000	21,000	20,000	21,000	20,000
38	Transfer to City General Fund	2,355	2,568	2,782	2,782	3,790	4,096	4,254
39	End of Year Balance	12,101	11,091	7,917	5,352	3,340	5,370	8,102
<b>RATE STABILIZATION FUND</b>								
40	Beginning of Year Balance	185,069	149,649	126,059	92,449	66,624	47,734	48,174
41	Deposit From/(To) Revenue Fund	(35,420)	(23,590)	(33,610)	(25,825)	(18,890)	440	235
42	End of Year Balance	149,649	126,059	92,449	66,624	47,734	48,174	48,409

- (a) Includes other operating and nonoperating income, including interest income on funds and accounts transferable to the Revenue Fund.  
(b) Includes Residual Fund interest and interest earnings on Debt Service Reserve substitution funds deposited in the Special Water Infrastructure Account.  
(c) Assumes a variable rate of 4.00% over the life of the Variable Rate Series 1997B Bonds.  
(d) Assumes term of 30 years, level annual principal and interest payments, 5.00% interest for FY 2009 and 5.5% interest for FY 2012 & FY 2014.  
(e) Transfer of interest earnings from the Bond Reserve Account must first go to the Residual Fund as shown in Line 36 to satisfy the requirements for the Transfer to the City General Fund, with the balance (if any) included in Line 15 going to the Revenue Fund.

**TABLE 12**  
**PROJECTED REVENUE AND REVENUE REQUIREMENTS**  
**WATER OPERATIONS**  
**(in thousands of dollars)**

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
<b>OPERATING REVENUE</b>								
1	Water Service - Existing Rates (a)	173,041	172,644	170,768	168,815	166,863	164,984	163,117
Additional Service Revenue Required								
	Year	Percent Increase	Months Effective					
2	FY 2009	9.60%	12	16,574	16,394	16,206	16,019	15,838
3	FY 2010	9.60%	12	17,968	17,762	17,557	17,359	17,162
4	FY 2011	9.60%	12	19,467	19,242	19,025	18,810	18,616
5	FY 2012	9.60%	12		21,089	20,852	20,616	20,380
6	FY 2013	17.60%	12			41,898	41,424	40,950
7	FY 2014	4.90%	12					13,563
8	Total Additional Service Revenue Required	0	16,574	34,362	53,435	73,907	114,972	127,234
9	Total Water Service Revenue	173,041	189,218	205,130	222,250	240,770	279,956	290,351
10	Transfer From/(To) Rate Stabilization Fund	44,250	36,955	33,530	25,870	19,835	(135)	(75)
Other Income								
11	Other Operating Revenue	8,112	8,055	8,006	7,958	7,910	7,863	7,817
12	Construction Fund Interest Income	815	1,104	1,406	777	1,338	1,676	1,343
13	Debt Reserve Fund Interest Income	0	0	0	0	0	0	0
14	Operating Fund Interest Income (b)	530	483	287	294	364	379	381
15	Rate Stabilization Interest Income	1,239	1,021	809	589	531	445	448
16	Total Revenues	227,987	236,836	249,168	257,738	270,748	290,184	300,265
<b>OPERATING EXPENSES</b>								
17	Water Operations	110,730	120,030	125,239	132,739	141,954	150,127	158,884
18	Direct Interdepartmental Charges	18,797	19,829	20,400	21,142	22,072	22,884	23,732
19	Water Treatment Plant Sludge	7,236	7,629	7,879	8,214	8,518	9,254	9,621
20	Total Operating Expenses	136,763	147,488	153,518	162,095	172,544	182,265	192,237
21	<b>NET REVENUES AFTER OPERATIONS</b>	91,224	89,348	95,650	95,643	98,204	107,919	108,028
<b>DEBT SERVICE</b>								
Senior Debt Service								
Revenue Bonds								
22	Outstanding Bonds	75,632	74,070	73,076	73,071	75,204	76,147	76,238
23	Pennvest Parity Bonds	384	384	384	384	384	384	384
24	Projected Future Bonds	0	0	6,245	6,245	6,245	13,401	13,401
25	Total Senior Debt Service	76,016	74,454	79,705	79,700	81,833	89,932	90,023
26	<b>TOTAL SENIOR DEBT SERVICE COVERAGE (L21/L25)</b>	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x
Subordinate Debt Service								
27	Outstanding General Obligation Bonds	0	0	0	0	0	0	0
28	Pennvest Subordinate Bonds	1,227	1,227	1,227	1,227	1,227	1,227	1,227
29	Total Subordinate Debt Service	1,227	1,227	1,227	1,227	1,227	1,227	1,227
30	Total Debt Service on Bonds	77,243	75,681	80,932	80,927	83,060	91,159	91,250
31	<b>CAPITAL ACCOUNT DEPOSIT</b>	7,630	7,798	7,966	8,134	8,301	8,469	8,637
32	<b>TOTAL COVERAGE (L21/(L30+L31))</b>	1.07 x	1.07 x	1.07 x	1.07 x	1.07 x	1.08 x	1.08 x
<b>RESIDUAL FUND</b>								
33	Beginning of Year Balance	3,847	4,098	3,767	2,719	1,801	1,144	1,835
Plus:								
34	End of Year Revenue Fund Balance	6,351	5,869	6,752	6,582	6,843	8,291	8,141
35	Deposit for Transfer to City General Fund	1,031	1,094	1,156	1,156	1,539	1,630	1,677
Less:								
36	Transfer to Construction Fund	6,100	6,200	7,800	7,500	7,500	7,600	7,200
37	Transfer to City General Fund	1,031	1,094	1,156	1,156	1,539	1,630	1,677
38	End of Year Balance	4,098	3,767	2,719	1,801	1,144	1,835	2,776
<b>RATE STABILIZATION FUND</b>								
39	Beginning of Year Combined Utilities Balance	185,069	149,649	126,059	92,449	66,624	47,734	48,174
40	Deposit From/(To) Revenue Fund	(44,250)	(36,955)	(33,530)	(25,870)	(19,835)	135	75
41	Balance Available for Sewer Utility	140,819	112,694	92,529	66,579	46,789	47,869	48,249

(a) Revenue from rates effective Jul 1, 2007.

(b) Includes Residual Fund interest and interest earnings on Debt Service Reserve substitution funds deposited in the Special Water Infrastructure Account.

**TABLE 13**  
**PROJECTED REVENUE AND REVENUE REQUIREMENTS**  
**WASTEWATER OPERATIONS**  
(in thousands of dollars)

Line No.	Description	Fiscal Year Ending June 30,						
		2008	2009	2010	2011	2012	2013	2014
<b>OPERATING REVENUE</b>								
1	Wastewater Service - Existing Rates (a)	299,070	300,181	298,591	296,731	292,820	291,019	289,232
Additional Service Revenue Required								
	Year	Percent Increase	Months Effective					
2	FY 2009	4.56%	12	13,687	13,645	13,589	13,401	13,346
3	FY 2010	4.48%	12	13,993	13,940	13,746	13,693	13,641
4	FY 2011	4.40%	12		14,264	14,064	14,014	13,965
5	FY 2012	4.30%	12			14,349	14,302	14,256
6	FY 2013	10.01%	12				34,663	34,523
7	FY 2014	4.03%	12					15,288
8	Total Additional Service Revenue Required	0	13,687	27,638	41,793	55,560	90,018	104,964
9	Total Wastewater Service Revenue	299,070	313,868	326,229	338,524	348,380	381,037	394,196
10	Transfer From/(To) Rate Stabilization Fund	(8,830)	(13,365)	80	(45)	(945)	(305)	(160)
Other Income								
11	Other Operating Revenue	11,363	11,323	11,280	11,236	11,192	11,150	11,109
12	Construction Fund Interest Income	1,514	2,450	3,332	1,925	3,215	3,798	2,771
13	Debt Reserve Fund Interest Income	0	0	0	0	0	0	0
14	Operating Fund Interest Income (b)	658	592	317	331	390	429	440
15	Rate Stabilization Interest Income	2,142	1,764	1,398	1,018	917	769	775
16	Total Revenues	305,917	316,632	342,636	352,989	363,149	396,878	409,131
<b>OPERATING EXPENSES</b>								
17	Wastewater Operations	161,564	171,236	177,386	186,726	198,405	208,477	219,092
18	Direct Interdepartmental Charges	34,194	36,028	37,070	38,421	40,112	41,592	43,136
19	Water Treatment Plant Sludge	(7,236)	(7,629)	(7,879)	(8,214)	(8,518)	(9,254)	(9,621)
20	Total Operating Expenses	188,522	199,635	206,577	216,933	229,999	240,815	252,607
21	<b>NET REVENUES AFTER OPERATIONS</b>	117,395	116,997	136,059	136,056	133,150	156,063	156,524
<b>DEBT SERVICE</b>								
Senior Debt Service								
Revenue Bonds								
22	Outstanding Bonds	97,828	97,495	98,484	98,479	96,057	98,227	98,613
23	Pennvest Parity Bonds	0	0	0	0	0	0	0
24	Projected Future Bonds	0	0	14,897	14,897	14,897	31,823	31,823
25	Total Senior Debt Service	97,828	97,495	113,381	113,376	110,954	130,050	130,436
26	<b>TOTAL SENIOR DEBT SERVICE COVERAGE (L21/L25)</b>	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x	1.20 x
27	Total Debt Service on Bonds	97,828	97,495	113,381	113,376	110,954	130,050	130,436
28	<b>CAPITAL ACCOUNT DEPOSIT</b>	10,158	10,381	10,604	10,827	11,051	11,274	11,497
29	<b>TOTAL COVERAGE (L21/(L27+L28))</b>	1.08 x	1.08 x	1.09 x	1.09 x	1.09 x	1.10 x	1.10 x
<b>RESIDUAL FUND</b>								
30	Beginning of Year Balance	7,494	8,003	7,324	5,198	3,551	2,196	3,535
Plus:								
31	End of Year Revenue Fund Balance	9,409	9,121	12,074	11,853	11,145	14,739	14,591
32	Deposit for Transfer to City General Fund	1,324	1,474	1,626	1,626	2,251	2,466	2,577
Less:								
33	Transfer to Construction Fund	8,900	9,800	14,200	13,500	12,500	13,400	12,800
34	Transfer to City General Fund	1,324	1,474	1,626	1,626	2,251	2,466	2,577
35	End of Year Balance	8,003	7,324	5,198	3,551	2,196	3,535	5,326
<b>RATE STABILIZATION FUND</b>								
36	Balance Available for Sewer Utility	140,819	112,694	92,529	66,579	46,789	47,869	48,249
37	Deposit From/(To) Revenue Fund	8,830	13,365	(80)	45	945	305	160
38	End of Year Combined Utilities Balance	149,649	126,059	92,449	66,624	47,734	48,174	48,409

(a) Revenue from rates effective Jul 1, 2007.

(b) Includes Residual Fund interest and interest earnings on Debt Service Reserve substitution funds deposited in the Special Water Infrastructure Account.

**TABLE 14**

**ESTIMATED WATER UTILITY COST OF SERVICE  
Test Year 2009**

Line No.	(1) Operating Expense	(2) Capital Cost	(3) Total
	\$	\$	\$
<b>REVENUE REQUIREMENTS</b>			
1	Operations & Maintenance Expense	120,030,000	120,030,000
2	Water Treatment Plant Sludge	7,629,000	7,629,000
Existing Bond Debt Service			
3	Revenue Bonds	74,454,000	74,454,000
4	Subordinate Bonds	1,227,000	1,227,000
5	Proposed Bond Debt Service	0	0
6	Capital Account Deposit	7,798,000	7,798,000
7	Direct Interdepartmental Charges	19,829,000	19,829,000
8	Residual Fund Deposit	3,748,000	5,869,000
9	Deposit (From)/To Rate Stabilization Fund	<u>(23,598,000)</u>	<u>(36,955,000)</u>
10	Total	127,638,000	199,881,000
<b>DEDUCTIONS OF FUNDS FROM OTHER SOURCES</b>			
11	Other Operating Revenue	8,055,000	8,055,000
12	Non-Operating Income	<u>960,000</u>	<u>2,608,000</u>
13	<b>COST OF SERVICE TO BE DERIVED FROM RATES</b>	<b>118,623,000</b>	<b>70,595,000</b>
		<b>189,218,000</b>	

TABLE 15

**ALLOCATION OF TEST YEAR WATER PLANT INVESTMENT  
TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3) Extra Capacity		(5)	(6) Public Fire		(8)
		Estimated Test Year Plant Investment	Base	Maximum Day	Maximum Hour in Excess of Maximum Day	Customer Meters	Standard Pressure	High Pressure	Wholesale Direct
		\$	\$	\$	\$	\$	\$	\$	\$
<b>Raw Water Supply and Pumping</b>									
Source of Supply									
1	Land	200,000	200,000						
2	Buildings and Equipment	3,956,000	3,956,000						
Power and Pumping									
3	Land	31,000	23,000	7,000					1,000
4	Buildings and Equipment	19,538,000	13,997,000	4,666,000					875,000
5	Total Raw Water Supply and Pumping	23,725,000	18,176,000	4,673,000	0	0	0	0	876,000
<b>Purification and Treatment</b>									
Power and Pumping (a)									
6	Land	71,000	39,000	11,000	18,000				3,000
7	Buildings and Equipment	39,092,000	20,582,000	5,777,000	9,750,000				2,983,000
Treatment									
8	Land	1,325,000	929,000	310,000					86,000
9	Buildings and Equipment	271,801,000	188,830,000	62,943,000					20,028,000
10	Total Purification and Treatment	312,289,000	210,380,000	69,041,000	9,768,000	0	0	0	23,100,000
<b>Transmission and Distribution</b>									
11	Mains	674,619,000	378,587,000	106,270,000	179,331,000				10,431,000
12	Meters	69,548,000				69,548,000			
13	Hydrants	9,200,000					9,200,000		
Filtered Water Storage									
14	Land	182,000	98,000	28,000	46,000				10,000
15	Buildings and Equipment	24,975,000	13,493,000	3,788,000	6,391,000				1,303,000
High Pressure Fire System									
16	Land								
17	Mains								
18	Buildings and Equipment								0
19	Total Transmission and Distribution	778,524,000	392,178,000	110,086,000	185,768,000	69,548,000	9,200,000	0	11,744,000
20	<b>Subtotal</b>	<b>1,114,538,000</b>	<b>620,734,000</b>	<b>183,800,000</b>	<b>195,536,000</b>	<b>69,548,000</b>	<b>9,200,000</b>	<b>0</b>	<b>35,720,000</b>
<b>Administrative and General</b>									
21	Land	205,000	113,000	34,000	36,000	13,000	2,000		7,000
22	Buildings and Equipment	64,132,000	35,714,000	10,575,000	11,250,000	4,001,000	529,000	0	2,063,000
23	Total Administrative and General	64,337,000	35,827,000	10,609,000	11,286,000	4,014,000	531,000	0	2,070,000
24	<b>Total Water Plant Investment</b>	<b>1,178,875,000</b>	<b>656,561,000</b>	<b>194,409,000</b>	<b>206,822,000</b>	<b>73,562,000</b>	<b>9,731,000</b>	<b>0</b>	<b>37,790,000</b>

(a) Includes booster pumping

**TABLE 16**

**ALLOCATION OF TEST YEAR WATER PLANT DEPRECIATION EXPENSE  
TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3) Extra Capacity		(5)	(6) Public Fire		(8)
		Total Test Year Depreciation Investment	Base	Maximum Day	Maximum Hour in Excess of Maximum Day	Customer Meters	Protection - Direct		Wholesale Direct
		\$	\$	\$	\$	\$	\$	\$	\$
<b>Raw Water Supply and Pumping</b>									
1	Source of Supply	99,000	99,000						
2	Power and Pumping	404,000	290,000	96,000					18,000
3	Total Raw Water Supply and Pumping	503,000	389,000	96,000	0	0	0	0	18,000
<b>Purification and Treatment</b>									
4	Power and Pumping (a)	779,000	413,000	116,000	195,000				55,000
5	Treatment	6,286,000	4,367,000	1,455,000					464,000
6	Total Purification and Treatment	7,065,000	4,780,000	1,571,000	195,000	0	0	0	519,000
<b>Transmission and Distribution</b>									
7	Mains	12,459,000	6,992,000	1,963,000	3,311,000				193,000
8	Meters	4,868,000				4,868,000			
9	Hydrants	230,000					230,000		
10	Filtered Water Storage	985,000	532,000	149,000	252,000				52,000
11	High Pressure Fire System	0						0	
12	Total Transmission and Distribution	18,542,000	7,524,000	2,112,000	3,563,000	4,868,000	230,000	0	245,000
13	<b>Subtotal</b>	<b>26,110,000</b>	<b>12,693,000</b>	<b>3,779,000</b>	<b>3,758,000</b>	<b>4,868,000</b>	<b>230,000</b>	<b>0</b>	<b>782,000</b>
14	<b>Administrative and General</b>	<b>1,856,000</b>	<b>1,034,000</b>	<b>306,000</b>	<b>326,000</b>	<b>116,000</b>	<b>15,000</b>	<b>0</b>	<b>59,000</b>
15	<b>Total Water Plant Depreciation Expense</b>	<b>27,966,000</b>	<b>13,727,000</b>	<b>4,085,000</b>	<b>4,084,000</b>	<b>4,984,000</b>	<b>245,000</b>	<b>0</b>	<b>841,000</b>

(a) Includes booster pumping

TABLE 17

**ALLOCATION OF TEST YEAR WATER OPERATION & MAINTENANCE EXPENSE  
TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3) Extra Capacity		(5)	(6)	(7)	(8)	(9)
		Total Test Year Operation & Maintenance Expense	Base	Maximum Day	Maximum Hour in Excess of Maximum Day	Meters	Billing	Standard Pressure	High Pressure	Wholesale Direct
		\$	\$	\$	\$	\$	\$	\$	\$	\$
<b>Raw Water Pumping</b>										
1	Purchased Power	2,351,000	2,148,000	113,000						90,000
2	Other	3,378,000	2,373,000	791,000						214,000
3	Total Raw Water Pumping	5,729,000	4,521,000	904,000	0	0	0	0	0	304,000
<b>Purification and Treatment</b>										
Power and Pumping (a)										
4	Purchased Power	3,896,000	3,295,000	183,000	183,000					235,000
5	Other	6,757,000	3,488,000	979,000	1,652,000					638,000
Treatment										
6	Purchased Power	662,000	558,000	31,000	31,000					42,000
7	Chemicals	15,855,000	14,794,000							1,061,000
8	Other	32,076,000	22,317,000	7,439,000						2,320,000
9	Water Treatment Plant Sludge	7,629,000	6,991,000							638,000
10	Subtotal Other (b)	39,705,000	29,308,000	7,439,000	0	0	0	0	0	2,958,000
11	Total Purification & Treatment	66,875,000	51,443,000	8,632,000	1,866,000					4,934,000
<b>Transmission and Distribution</b>										
12	Mains	33,805,000	19,143,000	5,374,000	9,068,000					220,000
13	Meters	3,212,000				3,212,000				
14	Hydrants	2,517,000						2,517,000		
15	Filtered Water Storage	1,264,000	707,000	198,000	335,000					24,000
16	High Pressure Fire System	0								0
17	Total T&D	40,798,000	19,850,000	5,572,000	9,403,000	3,212,000	0	2,517,000	0	244,000
18	Customer Accting & Collection	22,950,000					22,948,000			2,000
19	Administration & General	11,136,000	5,047,000	1,553,000	1,162,000	338,000	2,412,000	265,000	0	359,000
20	Subtotal Water Operating Expense	147,488,000	80,861,000	16,661,000	12,431,000	3,550,000	25,360,000	2,782,000	0	5,843,000
21	Residual Fund Deposit	3,748,000	2,056,000	423,000	316,000	90,000	644,000	71,000	0	148,000
22	Deposit To/(From) RSF	(23,598,000)	(12,937,000)	(2,666,000)	(1,989,000)	(568,000)	(4,058,000)	(445,000)	0	(935,000)
23	Total Water Operating Expense	127,638,000	69,980,000	14,418,000	10,758,000	3,072,000	21,946,000	2,408,000	0	5,056,000
24	Adjustment for Wholesale Contracts	0	0	0	0	0	0	0	0	0
25	Other Operating Revenue	8,055,000	4,575,000	943,000	704,000	201,000	1,435,000	158,000	0	39,000
26	Non-Operating Income	960,000	527,000	108,000	81,000	23,000	165,000	18,000	0	38,000
27	Total Operating Expense Less Other Operating Revenue	118,623,000	64,878,000	13,367,000	9,973,000	2,848,000	20,346,000	2,232,000	0	4,979,000

(a) Includes booster pumping.

(b) Includes wastewater utility cost of treating water treatment plant sludge of \$7,629,000.

**TABLE 18**

**ESTIMATED UNITS OF SERVICE FOR  
RETAIL WATER CUSTOMERS  
Test Year 2009**

Line No.	Customer Class	(1)	(2)	(4) Maximum Day Extra Capacity			(7) Maximum Hour Extra Capacity			(9) Customer Costs	
		Total Test Year Water Use	Average Daily Water Use	Capacity Factor	Total Capacity	Extra Capacity (a)	Capacity Factor	Total Capacity	Extra Capacity (b)	Equiv. Meters	Equiv. Bills
		Mcf	Mcf/day (1)/365	%	Mcf/day (2)x(3)/100	Mcf/day (4)-(2)	%	Mcf/day (2)x(6)/100	Mcf/day (7)-(4)		
1	Residential	2,836,000	7,770	200	15,540	7,770	360	27,970	12,430	363,157	4,327,335
2	Senior Citizens	99,000	270	200	540	270	360	970	430	16,484	197,766
3	Commercial	2,187,100	5,990	180	10,780	4,790	270	16,170	5,390	126,622	995,726
4	Industrial	709,700	1,940	160	3,100	1,160	180	3,490	390	16,858	41,972
5	Housing Authority	221,700	610	200	1,220	610	360	2,200	980	9,192	79,719
6	Charities & Schools	531,100	1,450	180	2,610	1,160	270	3,910	1,300	26,230	67,661
7	Municipal Service	460,000	1,260	180	2,270	1,010	270	3,400	1,130	12,754	28,773
8	Fire Protection										
9	Public	0	0		990	990		2,570	1,580	0	0
10	Private	0	0		120	120		320	200	3,624	300,106
11	<b>Total Retail</b>	<b>7,044,600</b>	<b>19,290</b>		<b>37,170</b>	<b>17,880</b>		<b>61,000</b>	<b>23,830</b>	<b>574,921</b>	<b>6,039,058</b>

(a) Capacity in excess of average daily use.

(b) Capacity in excess of maximum day.

Mcf - thousand cubic feet

**TABLE 19**  
**EQUIVALENT METER**  
**AND BILL RATIOS**

Meter Size (Inches)	Equivalent Factors	
	Meters Capacity Basis	Bills
5/8	1.0	1.0
3/4	1.5	1.0
1	2.5	1.1
1-1/4	3.8	1.2
1-1/2	5.0	1.2
2	8.0	1.5
3	15.0	2.0
4	25.0	4.0
6	50.0	7.0
8	80.0	10.0
10	115.0	15.0
12	215.0	20.0

## TABLE 20

### SUMMARY OF TEST YEAR COSTS OF WATER SERVICE ALLOCATED TO BUCKS COUNTY AND PROPOSED RATES

#### COST OF SERVICE

Operating Expense		\$3,128,000
Depreciation Expense		584,000
Return on Investment		
Allocated Investment	\$26,217,000	
Return @ 7.50%		<u>1,966,000</u>
Total Allocated Cost of Service		5,678,000

#### FY 2009 TEST YEAR PROPOSED RATES

Commodity Charge (\$/Mcf)	1.110
Demand Charge (\$/mgd of maximum demand)	78,898
Lump Sum Payment (\$/year)	2,940,000

Mcf - Thousand cubic feet  
mgd - Million gallons per day

## TABLE 20A

### SUMMARY OF FY 2010, FY 2011, AND FY 2012 PROPOSED RATES FOR BUCKS COUNTY

#### FY 2010 PROPOSED RATES

Commodity Charge (\$/Mcf)	1,237
Demand Charge (\$/mgd of maximum demand)	84,204
Lump Sum Payment (\$/year)	2,967,000

#### FY 2011 PROPOSED RATES

Commodity Charge (\$/Mcf)	1,428
Demand Charge (\$/mgd of maximum demand)	91,551
Lump Sum Payment (\$/year)	3,003,000

#### FY 2012 PROPOSED RATES

Commodity Charge (\$/Mcf)	1,651
Demand Charge (\$/mgd of maximum demand)	99,347
Lump Sum Payment (\$/year)	3,036,000

Mcf - Thousand cubic feet  
mgd - Million gallons per day

## TABLE 21

### SUMMARY OF TEST YEAR COSTS OF WATER SERVICE ALLOCATED TO AQUA PENNSYLVANIA

#### COST OF SERVICE

Operating Expense		\$1,851,000
Depreciation Expense		257,000
Return on Investment		
Allocated Investment	\$11,573,000	
Return @ 7.50%		<u>868,000</u>
Total Allocated Cost of Service		2,976,000

#### CONTRACTUAL RATES

Commodity Charge (\$/Mg)		0.202
Lump Sum Payment (\$/year)		2,497,000

Mg - Thousand gallons

## TABLE 21A

### SUMMARY OF FY 2010, FY 2011, AND FY 2012 PROPOSED RATES FOR AQUA PENNSYLVANIA

#### FY 2010 PROPOSED RATES

Commodity Charge (\$/Mg)	0.221
Lump Sum Payment (\$/year)	2,618,000

#### FY 2011 PROPOSED RATES

Commodity Charge (\$/Mg)	0.250
Lump Sum Payment (\$/year)	2,789,000

#### FY 2012 PROPOSED RATES

Commodity Charge (\$/Mg)	0.285
Lump Sum Payment (\$/year)	2,969,000

Mg - Thousand gallons

TABLE 22

TEST YEAR UNIT COSTS OF WATER SERVICE FOR RETAIL CUSTOMERS  
Test Year 2009

Line No.	Description	(1)	(2)	Extra Capacity		(5)	(6)	(7)
		Total Test Year Retail Cost	Base	Maximum Day	Maximum Hour in Excess of Maximum Day	Customer Costs Meters	Customer Costs Billing	Direct Public Fire Protection
		\$						
	Total Retail Customer Units of Service							
1	Number		7,044,600	17,880	23,830	574,921	6,039,058	
2	Units		Mcf	Mcf/day	Mcf/day	Equiv. Meters	Equiv. Bills	
	Operating Expense							
3	Total Expense - \$	113,644,000	64,878,000	13,367,000	9,973,000	2,848,000	20,346,000	2,232,000
4	Unit Expense - \$/Unit		9.2096	747.5951	418.5061	4.9537	3.3691	
	Depreciation Expense							
5	Total Expense - \$	27,125,000	13,727,000	4,085,000	4,084,000	4,984,000		245,000
6	Unit Expense - \$/Unit		1.9486	228.4676	171.3806	8.6690		
	Plant Investment							
7	Total Investment - \$	1,141,085,000	656,561,000	194,409,000	206,822,000	73,562,000		9,731,000
8	Unit Investment - \$/Unit		93.2006	10,872.9866	8,679.0600	127.9515		
	Unit Return on Investment							
9	Total Return - \$	39,795,000	22,898,000	6,780,000	7,213,000	2,565,000		339,000
10	Inside City - \$/Unit		3.2504	379.1954	302.6822	4.4623		
	Total Unit Costs of Service							
11	Inside City - \$/Unit		14.4086	1,355.2581	892.5689	18.0850	3.3691	
	Mcf - thousand cubic feet							
	(a) Retail Rate of Return = 3.49%							

TABLE 23

**COMPARISON OF TEST YEAR COSTS OF SERVICE  
AND ADJUSTED COST OF SERVICE  
WITH REVENUES UNDER EXISTING RATES  
Test Year 2009**

Line No.	Customer Class	(1) Revenue Under Existing Rates	(2) Allocated Cost of Service	(3) Adjusted Cost of Service	(4) Indicated Increase (Decrease) Required
		\$	\$	\$	%
<b>Retail</b>					
General Service					
1	Residential	79,571,000	83,633,000	85,442,000	7.4%
2	Senior Citizens	2,291,000	3,140,000	2,406,000	5.0%
3	Commercial	45,121,000	48,461,000	49,509,000	9.7%
4	Industrial	<u>11,309,000</u>	<u>12,592,000</u>	<u>12,864,000</u>	13.8%
5	Subtotal General Service	138,292,000	147,826,000	150,221,000	8.6%
6	Housing Authority	4,094,000	5,331,000	5,174,000	26.4%
7	Charities and Schools	7,006,000	11,086,000	8,495,000	21.3%
8	Municipal Service	7,522,000	9,334,000	9,536,000	26.8%
Fire Protection					
9	Private	1,688,000	1,419,000	1,450,000	-14.1%
Public					
10	Standard Pressure	6,986,000	5,568,000	5,688,000	-18.6%
11	High Pressure (a)	<u>0</u>	<u>0</u>	<u>0</u>	na
12	Subtotal Public Fire Protection	<u>6,986,000</u>	<u>5,568,000</u>	<u>5,688,000</u>	-18.6%
13	Total Retail Service	165,588,000	180,564,000	180,564,000	9.0%
<b>Wholesale</b>					
14	Bucks County	4,453,000	5,678,000	5,678,000	27.5%
15	Aqua Pennsylvania	<u>2,603,000</u>	<u>2,976,000</u>	<u>2,976,000</u>	14.3%
16	Total Wholesale	7,056,000	8,654,000	8,654,000	22.6%
17	<b>Total System</b>	<b>172,644,000</b>	<b>189,218,000</b>	<b>189,218,000</b>	<b>9.6%</b>

(a) Public high pressure fire system decommissioned and charged discontinued in FY 2008.

**TABLE 24**

**PROPOSED WATER RATES FOR  
GENERAL SERVICE**

**SERVICE CHARGE**

<u>Meter Size</u>	<u>FY 2009 Monthly Charge</u>	<u>FY 2010 Monthly Charge</u>	<u>FY 2011 Monthly Charge</u>	<u>FY 2012 Monthly Charge</u>
Inches	\$	\$	\$	\$
5/8	5.22	5.56	5.99	6.44
3/4	6.03	6.42	6.89	7.39
1	8.01	8.52	9.12	9.74
1-1/4	10.47	11.13	11.88	12.65
1-1/2	12.41	13.19	14.04	14.92
2	18.34	19.49	20.70	21.97
3	31.45	33.40	35.40	37.49
4	54.82	58.23	61.80	65.52
6	106.03	112.60	119.40	126.50
8	165.32	175.54	186.00	196.94
10	239.91	254.74	269.99	285.94
12	419.47	445.24	471.01	497.99

**QUANTITY CHARGE**

<u>Monthly Water Usage</u>	<u>FY 2009 Charge per Mcf</u>	<u>FY 2010 Charge per Mcf</u>	<u>FY 2011 Charge per Mcf</u>	<u>FY 2012 Charge per Mcf</u>
	\$	\$	\$	\$
First 2 Mcf	24.77	27.33	30.12	33.20
Next 98 Mcf	19.97	22.03	24.33	26.86
Next 1,900 Mcf	18.38	20.25	22.42	24.77
Over 2,000 Mcf	13.97	15.40	17.06	18.87

Mcf - Thousand cubic feet

**TABLE 25****PROPOSED RATES FOR  
FIRE PROTECTION****PRIVATE FIRE PROTECTION**

Size of Meter or Connection	FY 2009 Monthly Charge	FY 2010 Monthly Charge	FY 2011 Monthly Charge	FY 2012 Monthly Charge
Inches	\$	\$	\$	\$
4" or less	18.99	20.42	22.21	24.08
6	34.46	37.07	40.31	43.70
8	50.90	54.79	59.59	64.60
10	75.38	81.12	88.22	95.64
12	112.57	121.36	131.97	143.07

**PUBLIC FIRE PROTECTION**

	FY 2009 Annual Charge	FY 2010 Annual Charge	FY 2011 Annual Charge	FY 2012 Annual Charge
	\$	\$	\$	\$
Standard Pressure	5,688,000	6,121,000	6,566,000	7,022,000
High Pressure	0	0	0	0

**TABLE 26**

**ESTIMATED WASTEWATER UTILITY COST OF SERVICE  
Test Year 2009**

Line No.	(1) Operating Expense	(2) Capital Cost	(3) Total
	\$	\$	\$
<b>REVENUE REQUIREMENTS</b>			
1	Operations & Maintenance Expense	171,236,000	171,236,000
2	Water Treatment Plant Sludge	(5,686,000)	(7,629,000)
	Existing Bond Debt Service		
3	Revenue Bonds	97,495,000	97,495,000
4	Subordinate Bonds	0	0
5	Proposed Bond Debt Service	0	0
6	Capital Account Deposit	10,381,000	10,381,000
7	Direct Interdepartmental Charges	36,028,000	36,028,000
8	Residual Fund Deposit	5,979,000	9,121,000
9	Deposit (From)/To Rate Stabilization Fund	8,761,000	13,365,000
10	Total	216,318,000	329,997,000
<b>DEDUCTIONS OF FUNDS FROM OTHER SOURCES</b>			
11	Other Operating Revenue	11,323,000	11,323,000
12	Non-Operating Income	1,544,000	4,806,000
13	<b>COST OF SERVICE TO BE DERIVED FROM RATES</b>	<b>203,451,000</b>	<b>313,868,000</b>

**TABLE 27**

**TEST YEAR INVESTMENT IN THE WASTEWATER SYSTEM  
SUMMARY OF ALLOCATIONS TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Cost Component	Total Direct Investment (a)
		\$
	<b>COLLECTION SYSTEM</b>	
1	Sewers - Capacity	1,000,622,000
2	Pumping Stations - Capacity	<u>29,222,000</u>
3	Total Collection System	1,029,844,000
	<b>WATER POLLUTION CONTROL PLANTS</b>	
	Northeast Plant:	
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, & Lower Southampton	
4	- Capacity	4,040,000
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton	
5	Volume	56,746,000
6	Capacity	34,179,000
7	Suspended Solids	73,507,000
8	BOD	<u>82,819,000</u>
9	Subtotal	247,251,000
10	Total Northeast Plant	251,291,000
	Southwest Plant:	
11	Retail - Capacity	17,822,000
	Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby	
12	Volume	44,764,000
13	Capacity	14,111,000
14	Suspended Solids	45,951,000
15	BOD	<u>34,917,000</u>
16	Total Southwest Plant	157,565,000
	Southeast Plant:	
	Retail and Springfield (Wyndmoor)	
17	Volume	34,991,000
18	Capacity	37,991,000
19	Suspended Solids	28,959,000
20	BOD	<u>28,688,000</u>
21	Total Southeast Plant	130,629,000
22	Total Water Pollution Control Plants	539,485,000
23	<b>Total Investment</b>	<b>1,569,329,000</b>

(a) Includes Administration and General costs.

TABLE 28

**OPERATION AND MAINTENANCE EXPENSE  
APPLICABLE TO CONTRACT SERVICE  
Test Year 2009**

Line No.	Cost Component	Net Operation & Maintenance Expense
		\$
	<b>COLLECTION SYSTEM</b>	
	Sewer Maintenance	
1	All Customers - Capacity	32,481,000
	Inlet Cleaning	
2	Retail - Storm Capacity	14,573,000
	Neill Drive Pumping Station	
	Retail and Lower Merion	
3	Total Volume	35,000
4	Total Capacity	24,000
	Central Schuylkill Pumping Station	
	Retail and Springfield (excl. Wyndmoor)	
5	Total Volume	725,000
6	Total Capacity	1,051,000
	All Other Pumping Stations	
	Retail	
7	Total Volume	1,785,000
8	Total Capacity	14,364,000
9	Total Collection Systems	65,038,000
	<b>WATER POLLUTION CONTROL PLANTS</b>	
	Northeast Plant:	
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland & Lower Southampton	
10	Volume	391,000
11	Capacity	1,640,000
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton	
12	Volume	11,776,000
13	Capacity	2,241,000
14	Suspended Solids	20,970,000
15	BOD	14,512,000
	Southwest Plant:	
	Retail	
16	Volume	69,000
17	Capacity	321,000
	Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby	
18	Volume	10,399,000
19	Capacity	3,296,000
20	Suspended Solids	16,382,000
21	BOD	10,525,000
	Southeast Plant:	
	Retail and Springfield (Wyndmoor)	
22	Volume	7,093,000
23	Capacity	3,093,000
24	Suspended Solids	9,548,000
25	BOD	2,962,000
26	Total Water Pollution Control Plants	115,218,000
	<b>CUSTOMER COSTS</b>	
	All Customers	
27	Equivalent Bills	30,621,000
	Equivalent Meters	
28	Industrial Waste Unit	2,389,000
29	Other	5,517,000
30	Excess Strength Wastewater - Direct	1,177,000
31	Total Customer Costs	39,704,000
32	<b>Total Operation &amp; Maintenance Expense</b>	<b>219,960,000</b>

**TABLE 29**  
**OUTSIDE CITY CONTRACT SERVICE**  
**UNITS OF WASTEWATER SERVICE**  
**Test Year 2009**

Line No.	(1) Units	(2) Abington	(3) Bensalem	(4) Bucks County	(5) Cheltenham	(6) Lower Moreland	(7) Lower Southampton	(8) Total Northeast	(9) DELCORA	(10) Southwest WPC Plant				(14) Southeast WPC Plant	(15) Total
										Lower Merion	Springfield (Excluding Wyndmoor)	Upper Darby	Total Southwest	Springfield (Wyndmoor)	
<b>FY 2009 Test Year</b>															
Volume															
1	Sanitary Wastewater (Mcf)	107,000	160,000	969,000	361,000	64,000	324,000	1,985,000	1,404,000	331,000	134,000	572,000	2,441,000	21,000	4,447,000
2	Infiltration (Mcf)	4,400	5,600	40,200	9,800	4,200	7,500	71,700	0	14,900	2,200	16,600	33,700	900	106,300
3	Total (Mcf)	111,400	165,600	1,009,200	370,800	68,200	331,500	2,056,700	1,404,000	345,900	136,200	588,600	2,474,700	21,900	4,553,300
Suspended Solids															
4	Sanitary Wastewater (1,000 lbs)	1,222	2,226	11,730	2,996	599	3,841	22,614	12,528	3,470	1,957	5,568	23,523	114	46,251
5	Infiltration (1,000 lbs)	27	35	251	61	26	47	447	0	93	14	104	211	6	664
6	Total (1,000 lbs)	1,249	2,261	11,981	3,057	625	3,888	23,061	12,528	3,563	1,971	5,672	23,734	120	46,915
BOD															
7	Sanitary Wastewater (1,000 lbs)	1,035	2,376	9,856	2,636	483	2,547	18,933	11,214	2,974	1,865	4,747	20,800	90	39,823
8	Infiltration (1,000 lbs)	7	9	63	15	7	12	113	0	23	3	26	52	1	166
9	Total (1,000 lbs)	1,042	2,385	9,919	2,651	490	2,559	19,046	11,214	2,997	1,868	4,773	20,852	91	39,989
<b>Contract Maximum Units</b>															
Capacity															
10	Sanitary Wastewater (Mcf/day)	799	1,014	7,351	1,793	775	1,364	13,096	13,392	2,728	397	3,024	19,541	167	32,804
11	Infiltration (Mcf/day)	20	20	170	40	20	30	300	0	60	10	70	140	0	440
12	Total (Mcf/day)	819	1,034	7,521	1,833	795	1,394	13,396	13,392	2,788	407	3,094	19,681	167	33,244
Volume															
13	Sanitary Wastewater (Mcf)	217,292	299,271	1,171,123	654,370	70,755	348,409	2,761,220	2,439,840	707,553	156,150	829,545	4,133,088	48,797	6,943,105
14	Infiltration (Mcf)	4,400	5,600	40,200	9,800	4,200	7,500	71,700	0	14,900	2,200	16,600	33,700	900	106,300
15	Total (Mcf)	221,692	304,871	1,211,323	664,170	74,955	355,909	2,832,920	2,439,840	722,453	158,350	846,145	4,166,788	49,697	7,049,405
Suspended Solids															
16	Sanitary Wastewater (1,000 lbs)	2,481	3,734	13,400	5,431	592	3,651	29,289	21,771	7,250	1,200	7,349	37,570	200	67,059
17	Infiltration (1,000 lbs)	27	35	251	61	26	47	447	0	93	14	104	211	6	664
18	Total (1,000 lbs)	2,508	3,769	13,651	5,492	618	3,698	29,736	21,771	7,343	1,214	7,453	37,781	206	67,723
BOD															
19	Sanitary Wastewater (1,000 lbs)	2,102	5,340	13,400	4,777	568	3,651	29,838	19,487	6,871	1,050	6,831	34,239	155	64,232
20	Infiltration (1,000 lbs)	7	9	63	15	7	12	113	0	23	3	26	52	1	166
21	Total (1,000 lbs)	2,109	5,349	13,463	4,792	575	3,663	29,951	19,487	6,894	1,053	6,857	34,291	156	64,398

Mcf - thousand cubic feet  
Mcf/day - thousand cubic feet per day  
lbs - pounds

**TABLE 30**

**UNITS OF WASTEWATER SERVICE  
Test Year 2009**

Line No.	Customer Class	(1)	(2)		(3)	(4)	(5)	(6)	(7)
		FY 2009 Test Year Volume	Capacity Flow Rate		Pumping and Treatment	Strength		Customer Costs	
			Collection System			Suspended Solids	BOD	Equiv. Meters	Equiv. Bills
		Mcf	Mcf/day	Mcf/day	1,000 lbs	1,000 lbs			
1	General Service Excluding Senior Citizens	5,497,628	60,250	22,594	80,617	78,902	497,162	5,337,752	
2	Senior Citizens	93,940	1,029	386	1,378	1,348	16,467	197,546	
3	Surcharge				4,396	12,874			
4	Water Treatment Plant Sludge	535,349	5,867	2,200	22,960				
5	Housing Authority	210,615	2,308	866	3,088	3,023	9,191	79,738	
6	Charities	503,318	5,516	2,068	7,381	7,224	26,147	67,316	
7	Municipal Service	<u>508,250</u>	<u>5,570</u>	<u>2,089</u>	<u>7,453</u>	<u>7,294</u>	<u>14,267</u>	<u>30,693</u>	
8	Subtotal Retail Service	7,349,100	80,540	30,203	127,273	110,665	563,234	5,713,045	
9	Infiltration/Inflow	<u>10,543,600</u>	<u>231,092</u>	<u>72,216</u>	<u>65,774</u>	<u>16,444</u>			
10	Total Retail Service	17,892,700	311,632	102,419	193,047	127,109	563,234	5,713,045	
	Contract Service								
11	Sanitary	4,447,000	32,804	32,804	46,251	39,823			
12	Infiltration/Inflow	<u>106,300</u>	<u>440</u>	<u>440</u>	<u>663</u>	<u>166</u>			
13	Total Contract Service	4,553,300	33,244	33,244	46,914	39,989			
14	<b>Total System</b>	<b>22,446,000</b>	<b>344,876</b>	<b>135,663</b>	<b>239,961</b>	<b>167,098</b>	<b>563,234</b>	<b>5,713,045</b>	

Mcf - Thousand cubic feet  
lbs - pounds

TABLE 31

WATER POLLUTION CONTROL PLANT INVESTMENT PER UNIT OF CAPACITY  
Test Year 2009

Line No.	Cost Component	(1)	(2)	(3)
		Direct Investment \$	Units of Capacity	Unit Investment \$
Northeast Water Pollution Control Plant				
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton				
1	- Capacity	4,040,000	370 mgd = 49,470 Mcf/day	81.6657 /Mcf/day
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton				
2	Volume	56,746,000	76,650 mg = 10,247,000 Mcf	5.5378 /Mcf
3	Capacity	34,179,000	420 mgd = 56,150 Mcf/day	608.7088 /Mcf/day
4	Suspended Solids	73,507,000	173,240,000 lbs	424.3073 /1,000 lbs
5	BOD	82,819,000	128,491,000 lbs	644.5510 /1,000 lbs
Southwest Water Pollution Control Plant				
6	Retail - Capacity	17,822,000	50 mgd = 6,684 Mcf/day	2,666.3674 /Mcf/day
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby				
7	Volume	44,764,000	73,000 mg = 9,759,000 Mcf	4.5869 /Mcf
8	Capacity	14,111,000	400 mgd = 53,476 Mcf/day	263.8754 /Mcf/day
9	Suspended Solids	45,951,000	133,824,000	343.3698 /1,000 lbs
10	BOD	34,917,000	83,723,000	417.0520 /1,000 lbs
Southeast Water Pollution Control Plant				
Retail and Springfield (Wyndmoor)				
11	Volume	34,991,000	40,880 mg = 5,465,000 Mcf	6.4027 /Mcf
12	Capacity	37,991,000	224 mgd = 29,947 Mcf/day	1,268.6079 /Mcf/day
13	Suspended Solids	28,959,000	66,065,000 lbs	438.3410 /1,000 lbs
14	BOD	28,688,000	56,940,000 lbs	503.8286 /1,000 lbs

mg - million gallons  
mgd - million gallons per day  
Mcf - thousand cubic feet  
Mcf/day - thousand cubic feet per day  
lbs - pounds

**TABLE 32**

**UNIT PUMPING AND TREATMENT OPERATION AND MAINTENANCE EXPENSE  
APPLICABLE FOR CONTRACT SERVICE  
Test Year 2009**

Line No.	Cost Component	(1)	(2)	(3)
		Net Operating Expense	Projected TY Units of Service	Unit Operating Expense
		\$		\$/Unit
<b>PUMPING STATIONS</b>				
Neill Drive Pumping Station				
Retail and Lower Merion				
1	Total Volume	35,000	69,650 Mcf	0.5025
2	Total Capacity	24,000	370 Mcf/day	64.8649
Central Schuylkill Pumping Station				
Retail and Springfield (excl. Wyndmoor)				
3	Total Volume	725,000	2,715,700 Mcf	0.2670
4	Total Capacity	1,051,000	22,110 Mcf/day	47.5351
<b>WATER POLLUTION CONTROL PLANTS</b>				
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton				
5	Volume	391,000	6,499,000 Mcf	0.0602
6	Capacity	1,640,000	39,280 Mcf/day	41.7515
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton				
7	Volume	11,776,000	8,783,000 Mcf	1.3408
8	Capacity	2,241,000	53,084 Mcf/day	42.2161
9	Suspended Solids	20,970,000	115,646 1,000 lbs	181.3292
10	BOD	14,512,000	78,503 1,000 lbs	184.8592
Southwest Plant:				
Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby				
11	Volume	10,399,000	9,271,000 Mcf	1.1217
12	Capacity	3,296,000	56,034 Mcf/day	58.8214
13	Suspended Solids	16,382,000	85,064 1,000 lbs	192.5844
14	BOD	10,525,000	62,424 1,000 lbs	168.6050
Southeast Plant:				
Retail and Springfield (Wyndmoor)				
15	Volume	7,093,000	4,392,000 Mcf	1.6150
16	Capacity	3,093,000	26,545 Mcf/day	116.5191
17	Suspended Solids	9,548,000	39,251 1,000 lbs	243.2549
18	BOD	2,962,000	26,171 1,000 lbs	113.1787

NA - Not Applicable

Mcf - thousand cubic feet

Mcf/day - thousand cubic feet per day

lbs - pounds

**TABLE 33**

**SUMMARY OF ALLOCATED COST OF SERVICE  
FOR CONTRACT CUSTOMERS  
Test Year 2009**

Customer	(1) Allocated Investment	(2) Allocated Depreciable Investment	(3) O&M Expense	(4) Depreciation Expense	(5) Return on Investment	(6) Allocated Cost of Service
	\$	\$	\$	\$	\$	\$
Abington	4,707,000	4,691,000	673,000	115,000	353,000	1,141,000
Bensalem	8,558,000	8,530,000	1,255,000	(a)	(a)	1,255,000
Bucks County	27,936,000	27,836,000	6,118,000	0	0	6,118,000
Cheltenham	10,562,000	10,523,000	1,664,000	261,000	792,000	2,717,000
DELCORA	30,328,000	30,194,000	6,709,000	(a)	(a)	6,709,000
Lower Merion	11,254,000	11,212,000	1,869,000	(a)	(a)	1,869,000
Lower Moreland	2,232,000	2,226,000	407,000	52,000	167,000	627,000
Lower Southampton	8,354,000	8,328,000	1,823,000	(a)	(a)	1,823,000
Springfield (less Wyndmoor)	2,457,000	2,451,000	979,000	58,000	184,000	1,221,000
Springfield (Wyndmoor)	1,030,000	1,029,000	113,000	24,000	77,000	214,000
Upper Darby	10,839,000	10,794,000	2,776,000	(a)	(a)	2,776,000
<b>Total</b>	<b>118,257,000</b>	<b>117,814,000</b>	<b>24,386,000</b>	<b>510,000</b>	<b>1,573,000</b>	<b>26,470,000</b>

(a) It is assumed that Bensalem, DELCORA, Lower Merion, Lower Southampton, and Upper Darby contribute their entire allocated plant investment, and therefore, are not allocated any depreciation expense or return on investment.

**TABLE 34**  
**UNIT COSTS OF RETAIL WASTEWATER SERVICE**  
**Test Year 2009**

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		Collection System					Water Pollution Control Plants					Customer Costs			
		Total	Pumping Station		Sanitary Sewers	Storm Costs	Volume	Capacity	Suspended Solids	BOD	Meter Costs	Billing		Retail	Industrial Waste Unit
			Volume	Capacity	Capacity							Sanitary	Stormwater	Customers	Direct Excess Wastewater
1	Total Units of Service														
2	Units	\$	Mcf	Mcf/day	Mcf/day	Meters	Mcf	Mcf/day	1,000 lbs.	1,000 lbs.	Eq. Meters	Eq. Bills	Eq. Bills	Eq. Meters	\$
3	Quantity		17,892,700	102,419	311,632	563,234	17,892,700	102,419	193,047	127,109	563,234	5,713,045	5,713,045	563,234	
4	Operation and Maintenance Expense														
5	Total Expense - \$	184,751,000	2,363,000	14,560,000	9,133,000	35,078,000	22,717,000	7,897,000	35,993,000	19,782,000	5,212,000	15,831,000	12,880,000	2,193,000	1,112,000
6	Unit Expense - \$/unit		0.1321	142.1601	29.3076	62.2793	1.2696	77.1048	186.4468	155.6302	9.2537	2.7710	2.2545	3.8936	0
7	Capital Costs														
8	Total Plant Investment - \$	1,451,072,000		28,970,000	297,481,200	694,122,800	101,383,000	93,639,000	122,738,000	112,738,000					
9	Unit Plant Investment - \$/unit			282.8577	954.5913	1,232.3880	5.6662	914.2737	635.7934	886.9396					
10	Depreciable Plant Investment - \$	1,447,893,000		28,970,000	296,936,400	692,851,600	101,063,000	93,368,000	122,332,000	112,372,000					
11	Unit Depreciable Plant Investment - \$/unit			282.8577	952.8431	1,230.1310	5.6483	911.6277	633.6902	884.0601					
12	Depreciation Expense - \$	31,249,000		725,000	5,939,000	13,857,000	2,527,000	2,334,000	3,058,000	2,809,000					
13	Unit Depreciation Expense - \$/unit			7.0714	19.0569	24.6026	0.1412	22.7907	15.8423	22.1015					
14	Unit Return on Investment														
15	Total Return - \$	74,415,000		1,485,000	15,256,000	35,597,000	5,199,000	4,802,000	6,294,000	5,782,000					
16	Inside City - \$/Unit (a)			14.5058	48.9543	63.2006	0.2906	46.8867	32.6054	45.4850					
17	Total Unit Capital Costs														
18	(Line 10 + Line 12) - \$/unit			21.5772	68.0112	87.8032	0.4318	69.6774	48.4477	67.5865					
19	Total Unit Costs of Service														
20	Inside City (Line 4 + Line 13) - \$/unit		0.1321	163.7373	97.3188	150.0825	1.7014	146.7822	234.8945	223.2167	9.2537	2.7710	2.2545	3.8936	0.0000

Mcf - Thousand cubic feet  
lbs - pounds  
(a) Retail rate of return = 5.1283 %.

**TABLE 35**

**WASTEWATER RETAIL COST OF SERVICE  
Test Year 2009**

Line No.	Customer Class	(1) Operating Expense \$	(2) Capital Cost \$	(3) Total \$
<b>Retail Service</b>				
1	General Service excluding Senior Citizens	149,372,000	87,273,000	236,645,000
2	Senior Citizens	3,910,000	2,323,000	6,233,000
3	Surcharge	3,935,000	1,083,000	5,018,000
4	Housing Authority	4,078,000	2,315,000	6,393,000
5	"N" Charities	4,106,000	2,390,000	6,496,000
6	"6 Cent" Charities	5,452,000	3,578,000	9,030,000
7	Municipal	8,212,000	4,759,000	12,971,000
8	<b>Total Retail (a)</b>	<b>179,065,000</b>	<b>103,721,000</b>	<b>282,786,000</b>

(a) Excludes costs associated with water treatment plant sludge of \$7,629,000.

**TABLE 36**

**SUMMARY OF TEST YEAR CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS  
Test Year 2009**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Unit Costs				
		Annual Lump Sum	Volume	Capacity (a)	Suspended Solids	BOD
		\$	\$/Mcf	\$/cfs	\$/1,000 lbs	\$/1,000 lbs
1	Abington	498,000	1.4517	7,421	184.9134	185.9625
2	Bensalem	85,000	1.4517	7,421	184.9134	185.9625
3	Bucks County (b)	66,000	1.4517	7,421	184.9134	185.9625
4	Cheltenham	1,098,000	1.3892	3,731	184.9134	185.9625
5	Lower Moreland	261,000	1.4517	7,421	184.9134	185.9625
6	Lower Southampton	64,000	1.4517	7,421	184.9134	185.9625
7	DELCORA	0	1.1217	5,115	192.5844	168.6050
8	Lower Merion (c)(d)	112,000	1.1582	5,198	196.2802	169.5196
9	Springfield (less Wyndmoor)	293,000	1.4296	9,408	196.2802	169.5196
10	Upper Darby	37,000	1.1582	5,198	196.2802	169.5196
11	Springfield (Wyndmoor)	<u>120,000</u>	1.6842	10,067	256.0578	114.4362
12	Total	2,634,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5251 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$66.02 per Mcf/day (\$5,704 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE 36A**

**SUMMARY OF PROJECTED FY 2010 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.4843	7,348	185.5215	188.3766
2	Bensalem	85,000	1.4843	7,348	185.5215	188.3766
3	Bucks County (b)	66,000	1.4843	7,348	185.5215	188.3766
4	Cheltenham	1,098,000	1.4200	3,686	185.5215	188.3766
5	Lower Moreland	261,000	1.4843	7,348	185.5215	188.3766
6	Lower Southampton	64,000	1.4843	7,348	185.5215	188.3766
7	DELCORA	0	1.1311	5,099	193.5689	171.3330
8	Lower Merion (c)(d)	112,000	1.1679	5,182	197.2836	172.2624
9	Springfield (less Wyndmoor)	294,000	1.4478	9,428	197.2836	172.2624
10	Upper Darby	37,000	1.1679	5,182	197.2836	172.2624
11	Springfield (Wyndmoor)	<u>120,000</u>	1.7096	10,028	256.9935	115.9064
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5551 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$67.67 per Mcf/day (\$5,847 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE 36B**

**SUMMARY OF PROJECTED FY 2011 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.5893	7,638	194.1554	201.1572
2	Bensalem	85,000	1.5893	7,638	194.1554	201.1572
3	Bucks County (b)	66,000	1.5893	7,638	194.1554	201.1572
4	Cheltenham	1,098,000	1.5173	3,816	194.1554	201.1572
5	Lower Moreland	261,000	1.5893	7,638	194.1554	201.1572
6	Lower Southampton	64,000	1.5893	7,638	194.1554	201.1572
7	DELCORA	0	1.1980	5,333	203.1720	185.0571
8	Lower Merion (c)(d)	112,000	1.2369	5,422	207.0710	186.0610
9	Springfield (less Wyndmoor)	294,000	1.5259	9,852	207.0710	186.0610
10	Upper Darby	37,000	1.2369	5,422	207.0710	186.0610
11	Springfield (Wyndmoor)	<u>120,000</u>	1.8250	10,489	269.4468	123.6152
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5551 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$71.82 per Mcf/day (\$6,205 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE 36C**

**SUMMARY OF PROJECTED FY 2012 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Suspended Solids	BOD
		\$	\$/Mcf	\$/cfs	\$/1,000 lbs	\$/1,000 lbs
1	Abington	498,000	1.7154	8,007	204.1477	217.9484
2	Bensalem	85,000	1.7154	8,007	204.1477	217.9484
3	Bucks County (b)	66,000	1.7154	8,007	204.1477	217.9484
4	Cheltenham	1,098,000	1.6314	3,983	204.1477	217.9484
5	Lower Moreland	261,000	1.7154	8,007	204.1477	217.9484
6	Lower Southampton	64,000	1.7154	8,007	204.1477	217.9484
7	DELCORA	0	1.2821	5,635	214.6076	203.8065
8	Lower Merion (c)(d)	112,000	1.3238	5,731	218.7260	204.9121
9	Springfield (less Wyndmoor)	294,000	1.6213	10,354	218.7260	204.9121
10	Upper Darby	37,000	1.3238	5,731	218.7260	204.9121
11	Springfield (Wyndmoor)	<u>120,000</u>	1.9723	11,103	284.3272	133.7348
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

(a) Annual Cost.

(b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.

(c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5702 per Mcf is applicable for costs related to the Neill Drive Pump Station.

(d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$73.75 per Mcf/day (\$6,372 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE 37**

**PROPOSED WASTEWATER RATES  
FOR GENERAL SERVICE**

**SERVICE CHARGE**

<u>Meter Size</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>
<u>Inches</u>	<u>Monthly</u>	<u>Monthly</u>	<u>Monthly</u>	<u>Monthly</u>
	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>
	\$	\$	\$	\$
5/8	16.78	17.35	17.94	18.48
3/4	78.59	84.47	88.78	92.15
1	127.94	137.74	144.81	150.25
1-1/4	191.92	206.84	217.47	225.59
1-1/2	250.48	270.12	284.03	294.59
2	398.51	429.94	452.11	468.88
3	742.81	801.79	843.17	874.37
4	1,241.62	1,339.88	1,409.01	1,461.20
6	2,477.84	2,674.40	2,812.43	2,916.51
8	3,958.06	4,272.62	4,493.18	4,659.36
10	5,693.08	6,145.24	6,462.44	6,701.50
12	10,600.18	11,445.83	12,037.04	12,481.52

**QUANTITY CHARGE**

<u>Monthly Water Usage</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>
	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>
	<u>per Mcf</u>	<u>per Mcf</u>	<u>per Mcf</u>	<u>per Mcf</u>
	\$	\$	\$	\$
All Billable Water Usage	19.78	20.76	21.83	22.93
Groundwater Charge	8.32	8.66	8.98	9.27

**SURCHARGE RATES**

BOD (\$/lb in excess of 250 mg/l)	0.292	0.304	0.322	0.344
SS (\$/lb in excess of 350 mg/l)	0.308	0.313	0.328	0.344

Mcf - Thousand cubic feet  
mg/l - milligrams per liter

**TABLE 38**

**COMPARISON OF TYPICAL COMBINED WATER AND WASTEWATER BILLS  
UNDER EXISTING AND PROPOSED ALTERNATIVE RATES**

(1) Meter Size	(2) Monthly Use Mcf	(3) Existing Rates \$	(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
			FY 2009		FY 2010		FY 2011		FY 2012		FY 2009		FY 2010		FY 2011		FY 2012	
			Proposed Rates	% Proposed of Existing	Proposed Rates	% Proposed of Existing	Proposed Rates	% Proposed of FY 2009	Proposed Rates	% Proposed of FY 2010	Proposed Rates	% Proposed of FY 2011	Proposed Rates	% Proposed of FY 2012				
Inches			\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%		
5/8	0.0	21.69	22.00	1.4	22.91	4.1	23.93	4.5	24.92	4.1								
5/8	0.3	33.55	35.37	5.4	37.34	5.6	39.52	5.8	41.76	5.7								
5/8	0.5	41.45	44.28	6.8	46.96	6.1	49.91	6.3	52.99	6.2								
5/8	<b>0.7</b>	<b>49.35</b>	<b>53.19</b>	<b>7.8</b>	<b>56.57</b>	<b>6.4</b>	<b>60.30</b>	<b>6.6</b>	<b>64.21</b>	<b>6.5</b>								
5/8	0.8	53.31	57.64	8.1	61.38	6.5	65.49	6.7	69.82	6.6								
5/8	1.7	88.87	97.74	10.0	104.66	7.1	112.25	7.3	120.34	7.2								
5/8	2.7	125.22	138.93	10.9	149.04	7.3	160.14	7.4	172.03	7.4								
5/8	3.3	146.22	162.78	11.3	174.72	7.3	187.84	7.5	201.91	7.5								
1	1.7	215.07	211.69	(1.6)	228.01	7.7	242.25	6.2	255.41	5.4								
1	5.0	331.90	344.30	3.7	370.81	7.7	396.31	6.9	421.62	6.4								
1	8.0	436.87	463.55	6.1	499.18	7.7	534.79	7.1	570.99	6.8								
1	17.0	751.78	821.30	9.2	884.29	7.7	950.23	7.5	1,019.10	7.2								
2	7.0	706.91	704.70	(0.3)	759.56	7.8	807.51	6.3	852.06	5.5								
2	16.0	1,021.82	1,062.45	4.0	1,144.67	7.7	1,222.95	6.8	1,300.17	6.3								
2	33.0	1,616.65	1,738.20	7.5	1,872.10	7.7	2,007.67	7.2	2,146.60	6.9								
2	100.0	3,960.98	4,401.45	11.1	4,739.03	7.7	5,100.39	7.6	5,482.53	7.5								
4	30.0	2,467.17	2,498.54	1.3	2,692.41	7.8	2,867.19	6.5	3,033.10	5.8								
4	170.0	7,232.07	7,952.24	10.0	8,558.41	7.6	9,195.89	7.4	9,857.40	7.2								
4	330.0	12,524.87	14,057.84	12.2	15,120.01	7.6	16,275.89	7.6	17,489.40	7.5								
4	500.0	18,148.47	20,545.04	13.2	22,091.71	7.5	23,798.39	7.7	25,598.40	7.6								
6	150.0	7,968.81	8,476.47	6.4	9,127.10	7.7	9,771.91	7.1	10,419.69	6.6								
6	500.0	19,546.81	21,832.47	11.7	23,480.60	7.5	25,259.41	7.6	27,114.69	7.3								
6	1,000.0	36,086.81	40,912.47	13.4	43,985.60	7.5	47,384.41	7.7	50,964.69	7.6								
6	1,500.0	52,626.81	59,992.47	14.0	64,490.60	7.5	69,509.41	7.8	74,814.69	7.6								
8	750.0	29,488.78	32,911.98	11.6	35,394.26	7.5	38,069.26	7.6	40,852.98	7.3								
8	1,500.0	54,298.78	61,531.98	13.3	66,151.76	7.5	71,256.76	7.7	76,627.98	7.5								
8	2,000.0	70,838.78	80,611.98	13.8	86,656.76	7.5	93,381.76	7.8	100,477.98	7.6								
8	3,000.0	100,058.78	114,361.98	14.3	122,816.76	7.4	132,271.76	7.7	142,277.98	7.6								
10	600.0	26,492.50	28,997.59	9.5	31,194.58	7.6	33,485.01	7.3	35,829.12	7.0								
10	1,700.0	62,880.50	70,973.59	12.9	76,305.58	7.5	82,160.01	7.7	88,299.12	7.5								
10	3,300.0	110,790.50	126,296.59	14.0	135,616.58	7.4	145,992.01	7.7	156,949.12	7.5								
10	6,000.0	189,684.50	217,421.59	14.6	233,248.58	7.3	250,995.01	7.6	269,809.12	7.5								

Mcf - Thousand cubic feet



**PUBLIC HEARING ON  
PROPOSED WATER AND WASTEWATER RATES  
2008**

**WATER DEPARTMENT  
PHILADELPHIA, PENNSYLVANIA**

**EXHIBIT JRM-2**

**MARCH 2008**



**BLACK & VEATCH**  
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**TABLE A - 1**

**ESTIMATED WASTEWATER UTILITY COST OF SERVICE  
Test Year 2009**

Line No.	(1) Operating Expense	(2) Capital Cost	(3) Total
	\$	\$	\$
<b>REVENUE REQUIREMENTS</b>			
1	Operations & Maintenance Expense	171,236,000	171,236,000
2	Water Treatment Plant Sludge	(5,686,000)	(7,629,000)
	Existing Bond Debt Service		
3	Revenue Bonds	97,495,000	97,495,000
4	Subordinate Bonds	0	0
5	Proposed Bond Debt Service	0	0
6	Capital Account Deposit	10,381,000	10,381,000
7	Direct Interdepartmental Charges	36,028,000	36,028,000
8	Residual Fund Deposit	5,979,000	9,121,000
9	Deposit (From)/To Rate Stabilization Fund	8,761,000	13,365,000
10	<b>Total</b>	<b>216,318,000</b>	<b>329,997,000</b>
<b>DEDUCTIONS OF FUNDS FROM OTHER SOURCES</b>			
11	Other Operating Revenue	11,323,000	11,323,000
12	Non-Operating Income	1,544,000	4,806,000
13	<b>COST OF SERVICE TO BE DERIVED FROM RATES</b>	<b>203,451,000</b>	<b>313,868,000</b>

TABLE A - 2

ALLOCATION OF TEST YEAR INVESTMENT FOR THE  
NORTHEAST WATER POLLUTION CONTROL PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)
		Total Investment \$1,000	Retail, Abington, Bensalem, Bucks Cty W&SA, & Lower Southampton Capacity \$1,000	Volume \$1,000	Retail, Abington, Bensalem, Bucks Cty W&SA, Cheltenham, Lower Moreland, and Lower Southampton Capacity \$1,000	Suspended Solids \$1,000	BOD \$1,000
NON-WATER POLLUTION ABATEMENT PROGRAM FACILITIES							
1	Primary Sedimentation Basins	4,947		4,947			
2	Pumping Station	1,572			1,572		
3	Aeration Facilities	16,348					16,348
4	Primary Sludge Pumps	1,097				1,097	
5	Scum Ejectors	172				172	
6	Effluent Conduit	9			9		
7	Final Sedimentation Basins	8,604		8,604			
8	Recirculation Pumps	1,549		1,549			
9	Digesters	16,843				12,632	4,211
10	Sludge Dewatering	4,049				3,037	1,012
11	Frankford Grit Chamber	354			354		
12	Chlorination Facilities	5,408			5,408		
13	Aeration Tank No. 1	1,133					1,133
14	Sludge Thickener Building	3,401				1,701	1,700
15	Sludge Transfer Station	874				656	218
16	Subtotal All Above	66,360		15,100	7,343	19,295	24,622
17	Administrative and General Facilities						
18	Administrative and General Plant	46,444					
19	Land	954					
20	Subtotal	47,398		10,785	5,245	13,782	17,586
21	Total Non-Water Pollution Abatement Program Facilities	113,758		25,885	12,588	33,077	42,208
WATER POLLUTION ABATEMENT PROGRAM FACILITIES							
22	New Preliminary Treatment Building	41,398	10,350		31,048		
23	Primary Sedimentation Tanks Modifications	53,264		53,264			
24	Blower Building	16,703					16,703
25	Aeration Tank No. 1	38,944					38,944
26	Chlorination Facilities	21,963			21,963		
27	New Sludge Thickener Building	41,626				20,813	20,813
28	Effluent Conduits	2,312			2,312		
29	New Final Sedimentation Tanks	25,808		25,808			
30	Sludge Digestion System Modifications	34,754				26,066	8,688
31	Composting Facilities	30,280				22,710	7,570
32	Sludge Dewatering	12,596				9,447	3,149
33	Sludge Transfer Station	24,681				18,511	6,170
34	Loading Terminal/Barges	5,524				4,143	1,381
35	Subtotal	349,853	10,350	79,072	55,323	101,690	103,418
36	Admin. and General Facilities	48,036	1,421	10,857	7,596	13,962	14,200
37	Adjustment for Joint Use Facilities	4,877				3,658	1,219
38	Total Water Pollution Abatement Program Facilities	402,766	11,771	89,929	62,919	119,310	118,837
39	TOTAL NORTHEAST WPC PLANT BOOK COST	516,524	11,771	115,814	75,507	152,387	161,045
40	Less Federal Grants	265,233	7,731	59,068	41,328	78,880	78,226
41	ADJUSTED TOTAL NORTHEAST WPC PLANT INVESTMENT	251,291	4,040	56,746	34,179	73,507	82,819

TABLE A - 3

**ALLOCATION OF TEST YEAR INVESTMENT FOR THE  
SOUTHWEST WATER POLLUTION CONTROL PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)
		Total Investment	Retail Capacity	Volume	Capacity	Suspended Solids	BOD
		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
<b>NON-WATER POLLUTION ABATEMENT PROGRAM FACILITIES</b>							
1	Raw Wastewater Pumping Station	6,841	6,841				
2	Sludge Digestion Facilities	5,132				3,745	1,387
3	Scum Incineration	1,965				1,965	
4	Settling Tanks	13,122		13,122			
5	Sludge Handling	2,198				1,649	549
6	Chlorination Facilities	1,228			1,228		
7	Aeration Tanks	707					707
8	Oxygen Supply	1,286					1,286
9	Effluent Pump Station	101			101		
10	Sludge Thickener Building	1,936				968	968
11	Composting Facilities	1,033				775	258
12	Sludge Gas Facilities	3,055				2,291	764
13	Subtotal	38,604	6,841	13,122	1,329	11,393	5,919
14	Administrative and General Facilities						
15	Administrative and General Plant	47,979					
16	Land	694					
17	Subtotal	48,673	8,625	16,545	1,676	14,365	7,462
18	Adjustment for Joint Use Facilities	(2,935)				(2,325)	(610)
19	Total Non-Water Pollution Abatement Program Facilities	84,342	15,466	29,667	3,005	23,433	12,771
<b>WATER POLLUTION ABATEMENT PROGRAM FACILITIES</b>							
21	Influent Pumping Station	6,386	6,386				
22	Preliminary Treatment Building	24,513			24,513		
23	Primary Sedimentation Tanks	11,248		11,248			
24	Aeration Tanks	16,566					16,566
25	Oxygen Supply System	14,248					14,248
26	Compressor Building	3,771					3,771
27	Final Tanks	29,630		29,630			
28	Scum Concentration Building	1,387				1,387	
29	Sludge Thickener Building	12,682				6,341	6,341
30	Sludge Digestion Facilities	31,442				22,942	8,500
31	Effluent Pumping Station	5,990			5,990		
32	New Centrifuges	11,167				8,148	3,019
33	Composting Facilities	21,811				16,359	5,452
34	Sludge Dewatering	9,075				6,806	2,269
35	Sludge Gas Facilities	7,325				5,345	1,980
36	Subtotal	207,241	6,386	40,878	30,503	67,328	62,146
37	Admin. and Gen'l. Facilities	34,355	1,059	6,776	5,057	11,161	10,302
38	Adjust. for Joint Use Facilities	(10,345)			(474)	(7,385)	(2,486)
39	Total Water Pollution Abatement Program Facilities	231,251	7,445	47,654	35,086	71,104	69,962
40	TOTAL SOUTHWEST WPC PLANT BOOK COST	315,593	22,911	77,321	38,091	94,537	82,733
41	Less Federal Grants	158,028	5,089	32,557	23,980	48,586	47,816
42	<b>ADJUSTED TOTAL SOUTHWEST WPC PLANT INVESTMENT</b>	<b>157,565</b>	<b>17,822</b>	<b>44,764</b>	<b>14,111</b>	<b>45,951</b>	<b>34,917</b>

TABLE A - 4

**ALLOCATION OF TEST YEAR INVESTMENT FOR THE  
SOUTHEAST WATER POLLUTION CONTROL PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3)	(4)	(5)
		Total Investment	Volume	Capacity	Suspended Solids	BOD
Retail and Springfield (Wyndmoor)						
		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
<b>NON-WATER POLLUTION ABATEMENT PROGRAM FACILITIES</b>						
1	Main Pumping Station	1,933		1,933		
2	Grit Chambers	5,671		5,671		
3	Outfall Line	922		922		
4	Sludge Digestion Facilities	2,478			1,963	515
5	Settling Tanks & Flocc. Channel	8,354	8,354			
6	Sludge Force Main	5,068			3,801	1,267
7	Subtotal	24,426	8,354	8,526	5,764	1,782
8	Administrative and General Facilities					
9	Administrative and General Plant	20,759				
10	Land	158				
11	Subtotal	20,917	7,154	7,301	4,936	1,526
12	Adjustment for Joint Use Facilities	2,935			2,325	610
13	Total Non-Water Pollution Abatement Program Facilities	48,278	15,508	15,827	13,025	3,918
<b>WATER POLLUTION ABATEMENT PROGRAM FACILITIES</b>						
14	Influent Pump, Stat. and Screen & Grit Chamber	25,223		25,223		
15	Primary Sedimentation Tanks	21,377	21,377			
16	Compressor Building	25,115				25,115
17	Air Supply Facilities	23,574				23,574
18	Final Sedimentation	26,356	26,356			
19	Effluent Pumping Station	13,042		13,042		
20	Effluent Conduit	11,726		11,726		
21	Scum Concentration Facilities	3,709			3,709	
22	Sludge Force Main	1,966			1,475	491
23	Preliminary Treatment Bldg.	4,171		4,171		
24	Sludge Thickeners	4,710			2,355	2,355
25	Sludge Digesters	15,180			12,025	3,155
26	Sludge Disposal Facilities	5,391			4,271	1,120
27	Composting Facilities	10,639			7,979	2,660
28	Sludge Dewatering	4,425			3,319	1,106
29	Sludge Gas Facilities	3,536			2,801	735
30	Subtotal	200,140	47,733	54,162	37,934	60,311
31	Admin. and Gen'l. Facilities	44,138	10,527	11,945	8,366	13,300
32	Adjustment for Joint Use Facilities	5,468		474	3,727	1,267
33	Total Water Pollution Abatement Program Facilities	249,746	58,260	66,581	50,027	74,878
34	TOTAL SOUTHEAST WPC PLANT BOOK COST	298,024	73,768	82,408	63,052	78,796
35	Less Federal Grants	167,395	38,777	44,417	34,093	50,108
36	<b>ADJUSTED TOTAL SOUTHEAST WPC PLANT INVESTMENT</b>	<b>130,629</b>	<b>34,991</b>	<b>37,991</b>	<b>28,959</b>	<b>28,688</b>

**TABLE A - 5**

**TEST YEAR INVESTMENT IN THE WASTEWATER SYSTEM  
SUMMARY OF ALLOCATIONS TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Cost Component	Total Direct Investment (a)
		\$
	<b>COLLECTION SYSTEM</b>	
1	Sewers - Capacity	1,000,622,000
2	Pumping Stations - Capacity	<u>29,222,000</u>
3	Total Collection System	1,029,844,000
	<b>WATER POLLUTION CONTROL PLANTS</b>	
	Northeast Plant:	
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, & Lower Southampton	
4	- Capacity	4,040,000
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton	
5	Volume	56,746,000
6	Capacity	34,179,000
7	Suspended Solids	73,507,000
8	BOD	<u>82,819,000</u>
9	Subtotal	247,251,000
10	Total Northeast Plant	251,291,000
	Southwest Plant:	
11	Retail - Capacity	17,822,000
	Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby	
12	Volume	44,764,000
13	Capacity	14,111,000
14	Suspended Solids	45,951,000
15	BOD	<u>34,917,000</u>
16	Total Southwest Plant	157,565,000
	Southeast Plant:	
	Retail and Springfield (Wyndmoor)	
17	Volume	34,991,000
18	Capacity	37,991,000
19	Suspended Solids	28,959,000
20	BOD	<u>28,688,000</u>
21	Total Southeast Plant	130,629,000
22	Total Water Pollution Control Plants	539,485,000
23	<b>Total Investment</b>	<b>1,569,329,000</b>

(a) Includes Administration and General costs.

TABLE A - 6

ALLOCATION OF TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE  
COLLECTION SYSTEM TO FUNCTIONAL COST COMPONENTS  
Test Year 2009

Line No.	Description	(1)	(2)	Retail			(6)	(7)	Retail & Springfield (excluding Wyndmoor)	
		Total	All Customers Capacity	Volume	Capacity	Storm Capacity	Retail & Lower Merion Volume	Capacity	Volume	Capacity
		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
1	Sewer Maintenance	20,787	20,787							
2	Inlet Cleaning	8,366				8,366				
3	Pump Stations									
4	Neill Drive									
5	Power	41					35	6		
6	Other	12						12		
7	Central Schuylkill									
8	Power	859							730	129
9	Other	601								601
10	All Other Pumping Stations									
11	Power	2,114		1,797	317					
12	Other	9,154			9,154					
13	Total Collection System	41,934	20,787	1,797	9,471	8,366	35	18	730	730

TABLE A - 7

ALLOCATION OF TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE  
NORTHEAST WPC PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Total Operation & Maintenance Expense	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton Volume	Capacity	Volume	Capacity	Suspended Solids	BOD
		\$	\$	\$	\$	\$	\$	\$
Personal Services:								
1	Raw Wastewater Pumping	651,472		651,472				
2	Preliminary Treatment	1,266,751			899,393	367,358		
3	Primary Sedimentation	511,225			511,225			
4	Aeration	2,112,760						2,112,760
5	Secondary Sedimentation	515,749			515,749			
6	Recirculating Pumping	380,025			380,025			
7	Chlorination	357,405			218,017	139,388		
8	Primary Sludge Pumping	104,055					104,055	
9	Secondary Sludge Thickening	253,350					126,675	126,675
10	Sludge Digestion	1,990,609					1,492,957	497,652
11	Sludge Holding Tanks	144,772					108,579	36,193
12	Sludge Dewatering	366,453					274,840	91,613
13	Grit and Screening Incineration	814,340			545,608	268,732		
14	Scum and Grease Incineration	194,537					194,537	
15	Laboratory	674,093					337,047	337,046
16	Subtotal Personal Services	10,337,596		651,472	3,070,017	775,478	2,638,690	3,201,939
Purchase of Services, Materials, Supplies, and Equipment:								
17	Raw Wastewater Pumping	194,314		194,314				
18	Preliminary Treatment	307,065				307,065		
19	Primary Sedimentation	143,937			143,937			
20	Aeration	215,905						215,905
21	Secondary Sedimentation	165,527			165,527			
22	Recirculating Pumping	62,372			62,372			
23	Chlorination	3,089,455			3,089,455			
24	Primary Sludge Pumping	26,388					26,388	
25	Secondary Sludge Thickening	31,186					15,593	15,593
26	Sludge Digestion	405,421					304,066	101,355
27	Sludge Holding Tanks	57,575					43,181	14,394
28	Sludge Dewatering	45,580					34,185	11,395
29	Grit and Screening Incineration	129,543				129,543		
30	Scum and Grease Incineration	35,984					35,984	
31	Laboratory	278,277					139,139	139,138
32	Subtotal Purchase of Services, Materials, Supplies & Equipment	5,188,529		194,314	3,461,291	436,608	598,536	497,780
33	Subtotal All Above	15,526,125		845,786	6,531,308	1,212,086	3,237,226	3,699,719
Administrative and General:								
34	Personal Services	2,660,176		167,643	790,008	199,554	679,015	823,956
35	Other	431,508		16,160	287,861	36,311	49,778	41,398
36	Subtotal Administration & General	3,091,684		183,803	1,077,869	235,865	728,793	865,354
Power Requirements:								
37	Raw Wastewater Pumping	466,370	396,415	69,955				
38	Preliminary Treatment	3,854			3,276	578		
39	Primary Sedimentation	30,834			26,209	4,625		
40	Aeration	2,555,401						2,555,401
41	Secondary Sedimentation	30,834			26,209	4,625		
42	Recirculating Pumping	107,920			91,732	16,188		
43	Chlorination	7,709			6,553	1,156		
44	Primary Sludge Pumping	3,854					3,854	
45	Secondary Sludge Thickening	289,073					144,537	144,536
46	Sludge Digestion	65,523					49,142	16,381
47	Sludge Dewatering	69,377					52,033	17,344
48	Grit and Screening Incineration	61,669			52,419	9,250		
49	Scum and Grease Incineration	3,854					3,854	
50	Subtotal Power Requirements	3,696,272	396,415	69,955	206,398	36,422	253,420	2,733,662
51	Sludge Disposal	12,671,230					9,503,423	3,167,807
52	<b>Total Northeast WPC Plant Expense</b>	<b>34,985,311</b>	<b>396,415</b>	<b>1,099,544</b>	<b>7,815,575</b>	<b>1,484,373</b>	<b>13,722,862</b>	<b>10,466,542</b>

TABLE A - 8

ALLOCATION OF TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE  
SOUTHWEST WPC PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Total Operation & Maintenance Expense	Volume	Capacity	Volume	Capacity	Retail, DELCORA, Lower Merion, Springfield (w/o Wyndmoor) and Upper Darby	
		\$	\$	\$	\$	\$	Suspended Solids	BOD
	Personal Services							
1	Raw Wastewater Pumping	133,098		133,098				
2	Preliminary Treatment	1,756,898			1,282,536	474,362		
3	Flocculation	319,436			319,436			
4	Primary Sedimentation	463,182			463,182			
5	Aeration	942,336						942,336
6	Secondary Sedimentation	798,590			798,590			
7	Recirculating Pumping	298,140			298,140			
8	Chlorination	452,534			266,995	185,539		
9	Effluent Pumping	372,675				372,675		
10	Primary Sludge Pumping	340,732					340,732	
11	Secondary Sludge Thickening	282,168					138,262	143,906
12	Sludge Digestion	1,078,096					808,572	269,524
13	Sludge Holding Tanks	183,676					137,757	45,919
14	Sludge Dewatering	838,519					628,889	209,630
15	Sludge Lagoon	7,986					5,990	1,996
16	Grit and Screening Incineration	738,696			502,313	236,383		
17	Scum and Grease Incineration	187,669					187,669	
18	Laboratory	681,463					340,732	340,731
19	Subtotal Personal Services	9,875,894		133,098	3,931,192	1,268,959	2,588,603	1,954,042
	Purchase of Services, Materials, Supplies, and Equipment:							
20	Raw Wastewater Pumping	32,577		32,577				
21	Preliminary Treatment	372,928				372,928		
22	Flocculation	193,290			193,290			
23	Primary Sedimentation	108,900			108,900			
24	Aeration	212,216						212,216
25	Secondary Sedimentation	228,659			228,659			
26	Recirculating Pumping	95,249			95,249			
27	Chlorination	846,963			846,963			
28	Effluent Pumping	10,859				10,859		
29	Primary Sludge Pumping	122,551					122,551	
30	Secondary Sludge Thickening	21,718					10,642	11,076
31	Sludge Digestion	214,309					160,732	53,577
32	Sludge Holding Tanks	75,625					56,719	18,906
33	Sludge Dewatering	453,052					339,789	113,263
34	Sludge Lagoon	4,189					3,142	1,047
35	Grit and Screening Incineration	95,869				95,869		
36	Scum and Grease Incineration	30,715					30,715	
37	Laboratory	244,792					122,396	122,396
38	Subtotal Purchase of Services, Materials, Supplies & Equipment	3,364,461		32,577	1,473,061	479,656	846,686	532,481
39	Subtotal All Above	13,240,355		165,675	5,404,253	1,748,615	3,435,289	2,486,523
	Administrative & General							
40	Personal Services	2,389,600		32,205	951,202	307,041	626,346	472,806
41	Other	372,800		3,610	163,223	53,148	93,817	59,002
42	Subtotal Administration & General	2,762,400		35,815	1,114,425	360,189	720,163	531,808
	Power Requirements							
43	Raw Wastewater Pumping	81,291	69,097	12,194				
44	Preliminary Treatment	5,419			4,606	813		
45	Flocculation	260,518			221,440	39,078		
46	Primary Sedimentation	20,516			17,439	3,077		
47	Aeration	2,538,215						2,538,215
48	Secondary Sedimentation	52,259			44,420	7,839		
49	Recirculating Pumping	138,582			117,795	20,787		
50	Chlorination	11,226			9,542	1,684		
51	Effluent Pumping	34,065			28,955	5,110		
52	Primary Sludge Pumping	3,097					3,097	
53	Secondary Sludge Thickening	339,100					166,159	172,941
54	Sludge Digestion	79,258					59,444	19,814
55	Sludge Dewatering	58,065					43,549	14,516
56	Grit and Screening Incineration	36,000			30,600	5,400		
57	Scum and Grease Incineration	5,516					5,516	
58	Subtotal Power Requirements	3,663,127	69,097	12,194	474,797	83,788	277,765	2,745,486
59	Sludge Disposal	8,402,587					6,301,940	2,100,647
60	<b>Total Southwest WPC Plant Expense</b>	<b>28,068,469</b>	<b>69,097</b>	<b>213,684</b>	<b>6,993,475</b>	<b>2,192,592</b>	<b>10,735,157</b>	<b>7,864,464</b>

TABLE A - 9

**ALLOCATION OF TEST YEAR OPERATION AND MAINTENANCE EXPENSE FOR THE  
SOUTHEAST WPC PLANT TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1)	(2)	(3)	(4)	(5)
		Total Operation & Maintenance Expense \$	Volume \$	Capacity \$	Suspended Solids \$	BOD \$
	Personal Services					
1	Raw Wastewater Pumping	638,041		638,041		
2	Preliminary Treatment	906,204	652,467	253,737		
3	Flocculation	277,409	277,409			
4	Primary Sedimentation	323,644	323,644			
5	Aeration	323,644				323,644
6	Secondary Sedimentation	402,243	402,243			
7	Recirculating Pumping	194,186	194,186			
8	Chlorination	309,774	195,158	114,616		
9	Effluent Pumping	245,045		245,045		
10	Primary Sludge Pumping	258,915			258,915	
11	Waste Sludge Pumping	189,563			161,129	28,434
12	Sludge Digestion	359,366			305,461	53,905
13	Sludge Holding Tanks	195,306			166,010	29,296
14	Sludge Dewatering	279,507			237,581	41,926
15	Sludge Lagoon	2,662			2,263	399
16	Grit and Screening Incineration	246,232	167,438	78,794		
17	Scum and Grease Incineration	62,556			62,556	
18	Scum Pumping	258,915			258,915	
19	Primary Sludge Transfer Pumping	134,081			134,081	
20	Waste Activated Sludge Xfer Pumping	124,834			106,109	18,725
21	Laboratory	443,855			221,928	221,927
22	Subtotal Personal Services	6,175,982	2,212,545	1,330,233	1,914,948	718,256
	Purchase of Services, Materials, Supplies, and Equipment:					
23	Raw Wastewater Pumping	39,726		39,726		
24	Preliminary Treatment	115,974		115,974		
25	Flocculation	48,696	48,696			
26	Primary Sedimentation	31,396	31,396			
27	Aeration	48,696				48,696
28	Secondary Sedimentation	39,726	39,726			
29	Recirculating Pumping	23,707	23,707			
30	Chlorination	1,019,158	1,019,158			
31	Effluent Pumping	20,504		20,504		
32	Primary Sludge Pumping	37,163			37,163	
33	Waste Sludge Pumping	23,707			20,151	3,556
34	Sludge Digestion	71,437			60,721	10,716
35	Sludge Holding Tanks	43,789			37,221	6,568
36	Sludge Dewatering	151,018			128,365	22,653
37	Sludge Lagoon	1,396			1,187	209
38	Grit and Screening Incineration	31,957		31,957		
39	Scum and Grease Incineration	10,239			10,239	
40	Scum Pumping	37,163			37,163	
41	Primary Sludge Transfer Pumping	13,456			13,456	
42	Waste Activated Sludge Xfer Pumping	12,815			10,893	1,922
43	Laboratory	51,900			25,950	25,950
44	Subtotal Purchase of Services, Materials, Supplies & Equipment	1,873,623	1,162,683	208,161	382,509	120,270
45	Subtotal All Above	8,049,605	3,375,228	1,538,394	2,297,457	838,526
	Administrative & General					
46	Personal Services	1,723,865	617,574	371,300	534,508	200,483
47	Other	104,613	64,918	11,623	21,357	6,715
48	Subtotal Administration & General	1,828,478	682,492	382,923	555,865	207,198
	Power Requirements					
49	Raw Wastewater Pumping	366,259	311,320	54,939		
50	Flocculation	563,846	479,269	84,577		
51	Primary Sedimentation	22,490	19,117	3,373		
52	Aeration	488,346				488,346
53	Secondary Sedimentation	16,064	13,654	2,410		
54	Recirculating Pumping	38,554	32,771	5,783		
55	Chlorination	4,819	4,096	723		
56	Effluent Pumping	43,373	36,867	6,506		
57	Primary Sludge Pumping	1,606			1,606	
58	Waste Sludge Pumping	4,819			4,096	723
59	Sludge Digestion	26,420			22,457	3,963
60	Sludge Dewatering	19,355			16,452	2,903
61	Grit and Screening Incineration	12,000	10,200	1,800		
62	Scum and Grease Incineration	1,839			1,839	
63	Scum Pumping	4,819			4,819	
64	Primary Sludge Transfer Pumping	33,734			33,734	
65	Waste Activated Sludge Xfer Pumping	17,670			15,020	2,650
66	Subtotal Power Requirements	1,666,013	907,294	160,111	100,023	498,585
67	Sludge Disposal	3,807,122			3,236,054	571,068
68	<b>Total Southeast WPC Plant Expense</b>	<b>15,351,218</b>	<b>4,965,014</b>	<b>2,081,428</b>	<b>6,189,399</b>	<b>2,115,377</b>

**TABLE A - 10**

**ALLOCATION OF TEST YEAR OPERATION AND MAINTENANCE EXPENSE  
FOR PAYMENTS TO OTHER FUNDS, INDUSTRIAL WASTE UNIT, AND  
ADMINISTRATIVE & GENERAL EXPENSE TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Description	(1) Total	(2) A&G	(3) Equivalent Bills-All Customers	(4) Streets	(5) Direct to Excess Strength	(6) Equivalent Meters-All Customers
		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
1	Water Revenue Bureau	17,687		17,687			
2	Joint Direct Expense	63,314	57,455	2,264			3,595
3	Payment to Law Department	2,902	2,902				
4	Payment to Public Properties	2,267	2,267				
5	Payment to General Fund	13,172	11,380		1,792		
6	Industrial Waste Unit	2,324				767	1,557
7	Total	101,666	74,004	19,951	1,792	767	5,152

TABLE A - 11

**TEST YEAR OPERATION AND MAINTENANCE EXPENSE  
SUMMARY OF ALLOCATIONS TO FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Cost Component	(1)	(2)	(3)	(4) O&M Expense Deductions		(5)	(6)
		Direct Operation & Maintenance Expense \$1,000	Administrative & General Expense \$1,000	Total Operation & Maintenance Expense \$1,000	Less Interest Income \$1,000	Less Grants \$1,000	Net Operation & Maintenance Expense \$1,000	
<b>COLLECTION SYSTEM</b>								
Sewer Maintenance								
1	All Customers - Capacity	21,163	11,545	32,708	227	0		32,481
Inlet Cleaning								
2	Retail - Storm Capacity	9,495	5,180	14,675	102	0		14,573
Neill Drive Pumping Station								
Retail and Lower Merion								
3	Total Volume	35	0	35	0	0		35
4	Total Capacity	18	6	24	0	0		24
Central Schuylkill Pumping Station								
Retail and Springfield (excl. Wyndmoor)								
5	Total Volume	730	0	730	5	0		725
6	Total Capacity	730	328	1,058	7	0		1,051
All Other Pumping Stations								
Retail								
7	Total Volume	1,797	0	1,797	12	0		1,785
8	Total Capacity	9,471	4,994	14,465	101	0		14,364
9	Total Collection Systems	43,439	22,053	65,492	454	0		65,038
<b>WATER POLLUTION CONTROL PLANTS</b>								
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland & Lower Southampton								
10	Volume	396	0	396	3	2		391
11	Capacity	1,100	559	1,659	12	7		1,640
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton								
12	Volume	7,816	4,094	11,910	83	51		11,776
13	Capacity	1,484	783	2,267	16	10		2,241
14	Suspended Solids	13,818	7,390	21,208	147	91		20,970
15	BOD	10,467	4,210	14,677	102	63		14,512
Southwest Plant:								
Retail								
16	Volume	69	0	69	0	0		69
17	Capacity	214	110	324	2	1		321
Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby								
18	Volume	6,993	3,524	10,517	73	45		10,399
19	Capacity	2,193	1,140	3,333	23	14		3,296
20	Suspended Solids	10,832	5,739	16,571	117	72		16,382
21	BOD	7,864	2,781	10,645	74	46		10,525
Southeast Plant:								
Retail and Springfield (Wyndmoor)								
22	Volume	4,965	2,209	7,174	50	31		7,093
23	Capacity	2,081	1,047	3,128	22	13		3,093
24	Suspended Solids	6,284	3,372	9,656	67	41		9,548
25	BOD	2,115	881	2,996	21	13		2,962
26	Total Water Pollution Control Plants	78,691	37,839	116,530	812	500		115,218
<b>CUSTOMER COSTS</b>								
All Customers								
27	Equivalent Bills	19,951	10,884	30,835	214	0		30,621
Equivalent Meters								
28	Industrial Waste Unit	1,557	849	2,406	17	0		2,389
29	Other	3,595	1,961	5,556	39	0		5,517
30	Excess Strength Wastewater - Direct	767	418	1,185	8	0		1,177
31	Total Customer Costs	25,870	14,112	39,982	278	0		39,704
32	<b>Total Operation &amp; Maintenance Expense</b>	<b>148,000</b>	<b>74,004</b>	<b>222,004</b>	<b>1,544</b>	<b>500</b>		<b>219,960</b>

**TABLE A - 12**

**UNITS OF WASTEWATER SERVICE  
Test Year 2009**

Line No.	Customer Class	(1)	(2)		(3)	(4)	(5)	(6)	(7)
		FY 2009 Test Year Volume	Capacity Flow Rate		Pumping and Treatment	Strength		Customer Costs	
			Collection System			Suspended Solids	BOD	Equiv. Meters	Equiv. Bills
		Mcf	Mcf/day	Mcf/day	1,000 lbs	1,000 lbs			
1	General Service Excluding Senior Citizens	5,497,628	60,250	22,594	80,617	78,902	497,162	5,337,752	
2	Senior Citizens	93,940	1,029	386	1,378	1,348	16,467	197,546	
3	Surcharge				4,396	12,874			
4	Water Treatment Plant Sludge	535,349	5,867	2,200	22,960				
5	Housing Authority	210,615	2,308	866	3,088	3,023	9,191	79,738	
6	Charities	503,318	5,516	2,068	7,381	7,224	26,147	67,316	
7	Municipal Service	<u>508,250</u>	<u>5,570</u>	<u>2,089</u>	<u>7,453</u>	<u>7,294</u>	<u>14,267</u>	<u>30,693</u>	
8	Subtotal Retail Service	7,349,100	80,540	30,203	127,273	110,665	563,234	5,713,045	
9	Infiltration/Inflow	<u>10,543,600</u>	<u>231,092</u>	<u>72,216</u>	<u>65,774</u>	<u>16,444</u>			
10	Total Retail Service	17,892,700	311,632	102,419	193,047	127,109	563,234	5,713,045	
	Contract Service								
11	Sanitary	4,447,000	32,804	32,804	46,251	39,823			
12	Infiltration/Inflow	<u>106,300</u>	<u>440</u>	<u>440</u>	<u>663</u>	<u>166</u>			
13	Total Contract Service	4,553,300	33,244	33,244	46,914	39,989			
14	<b>Total System</b>	<b>22,446,000</b>	<b>344,876</b>	<b>135,663</b>	<b>239,961</b>	<b>167,098</b>	<b>563,234</b>	<b>5,713,045</b>	

Mcf - Thousand cubic feet  
lbs - pounds

**TABLE A - 13**

**ESTIMATED AVERAGE  
WASTEWATER STRENGTH CONCENTRATIONS  
FOR CONTRACT CUSTOMERS  
Test Year 2009**

Customer	Average Wastewater Strength Concentration	
	Suspended	
	Solids	BOD
	mg/l	mg/l
Abington	183	155
Bensalem	223	238
Bucks County	194	163
Cheltenham	133	117
DELCORA	143	128
Lower Merion	168	144
Lower Moreland	150	121
Lower Southhampton	190	126
Springfield (excluding Wyndoor)	234	223
Springfield (Wyndoor)	87	69
Upper Darby	156	133

mg/l - milligram per liter

**TABLE A - 14**  
**EQUIVALENT METER**  
**AND BILL RATIOS**

Meter Size (Inches)	Equivalent Factors	
	Meters Capacity Basis	Bills
5/8	1.0	1.0
3/4	1.5	1.0
1	2.5	1.1
1-1/4	3.8	1.2
1-1/2	5.0	1.2
2	8.0	1.5
3	15.0	2.0
4	25.0	4.0
6	50.0	7.0
8	80.0	10.0
10	115.0	15.0
12	215.0	20.0

**TABLE A - 15**  
**OUTSIDE CITY CONTRACT SERVICE**  
**UNITS OF WASTEWATER SERVICE**  
**Test Year 2009**

Line No.	(1) Units	(2) Abington	(3) Bensalem	(4) Bucks County	(5) Cheltenham	(6) Lower Moreland	(7) Lower Southampton	(8) Total Northeast	Northeast WPC Plant					Southwest WPC Plant			(14) Springfield Wyndmoor	(15) Total
									DELCO	DELCO	DELCO	DELCO	DELCO	DELCO	Springfield (Excluding Wyndmoor)	Upper Darby		
<b>FY 2009 Test Year</b>																		
<b>Volume</b>																		
1	Sanitary Wastewater (Mcf)	107,000	160,000	969,000	361,000	64,000	324,000	1,985,000	1,404,000	331,000	134,000	572,000	2,441,000	21,000	4,447,000			
2	Infiltration (Mcf)	4,400	5,600	40,200	9,800	4,200	7,500	71,700	0	14,900	2,200	16,600	33,700	900	106,300			
3	Total (Mcf)	111,400	165,600	1,009,200	370,800	68,200	331,500	2,056,700	1,404,000	345,900	136,200	588,600	2,474,700	21,900	4,553,300			
<b>Suspended Solids</b>																		
4	Sanitary Wastewater (1,000 lbs)	1,222	2,226	11,730	2,996	599	3,841	22,614	12,528	3,470	1,957	5,568	23,523	114	46,251			
5	Infiltration (1,000 lbs)	27	35	251	61	26	47	447	0	93	14	104	211	6	664			
6	Total (1,000 lbs)	1,249	2,261	11,981	3,057	625	3,888	23,061	12,528	3,563	1,971	5,672	23,734	120	46,915			
<b>BOD</b>																		
7	Sanitary Wastewater (1,000 lbs)	1,035	2,376	9,856	2,636	483	2,547	18,933	11,214	2,974	1,865	4,747	20,800	90	39,823			
8	Infiltration (1,000 lbs)	7	9	63	15	7	12	113	0	23	3	26	52	1	166			
9	Total (1,000 lbs)	1,042	2,385	9,919	2,651	490	2,559	19,046	11,214	2,997	1,868	4,773	20,852	91	39,989			
<b>Contract Maximum Units</b>																		
<b>Capacity</b>																		
10	Sanitary Wastewater (Mcf/day)	799	1,014	7,351	1,793	775	1,364	13,096	13,392	2,728	397	3,024	19,541	167	32,804			
11	Infiltration (Mcf/day)	20	20	170	40	20	30	300	0	60	10	70	140	0	440			
12	Total (Mcf/day)	819	1,034	7,521	1,833	795	1,394	13,396	13,392	2,788	407	3,094	19,681	167	33,244			
<b>Volume</b>																		
13	Sanitary Wastewater (Mcf)	217,292	299,271	1,171,123	654,370	70,755	348,409	2,761,220	2,439,840	707,553	156,150	829,545	4,133,088	48,797	6,943,105			
14	Infiltration (Mcf)	4,400	5,600	40,200	9,800	4,200	7,500	71,700	0	14,900	2,200	16,600	33,700	900	106,300			
15	Total (Mcf)	221,692	304,871	1,211,323	664,170	74,955	355,909	2,832,920	2,439,840	722,453	158,350	846,145	4,166,788	49,697	7,049,405			
<b>Suspended Solids</b>																		
16	Sanitary Wastewater (1,000 lbs)	2,481	3,734	13,400	5,431	592	3,651	29,289	21,771	7,250	1,200	7,349	37,570	200	67,059			
17	Infiltration (1,000 lbs)	27	35	251	61	26	47	447	0	93	14	104	211	6	664			
18	Total (1,000 lbs)	2,508	3,769	13,651	5,492	618	3,698	29,736	21,771	7,343	1,214	7,453	37,781	206	67,723			
<b>BOD</b>																		
19	Sanitary Wastewater (1,000 lbs)	2,102	5,340	13,400	4,777	568	3,651	29,838	19,487	6,871	1,050	6,831	34,239	155	64,232			
20	Infiltration (1,000 lbs)	7	9	63	15	7	12	113	0	23	3	26	52	1	166			
21	Total (1,000 lbs)	2,109	5,349	13,463	4,792	575	3,663	29,951	19,487	6,894	1,053	6,857	34,291	156	64,398			

Mcf - thousand cubic feet  
Mcf/day - thousand cubic feet per day  
lbs - pounds

TABLE A - 16

WATER POLLUTION CONTROL PLANT INVESTMENT PER UNIT OF CAPACITY  
Test Year 2009

Line No.	Cost Component	(1)	(2)	(3)
		Direct Investment	Units of Capacity	Unit Investment
		\$		\$
Northeast Water Pollution Control Plant				
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton				
1	- Capacity	4,040,000	370 mgd = 49,470 Mcf/day	81.6657 /Mcf/day
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton				
2	Volume	56,746,000	76,650 mg = 10,247,000 Mcf	5.5378 /Mcf
3	Capacity	34,179,000	420 mgd = 56,150 Mcf/day	608.7088 /Mcf/day
4	Suspended Solids	73,507,000	173,240,000 lbs	424.3073 /1,000 lbs
5	BOD	82,819,000	128,491,000 lbs	644.5510 /1,000 lbs
Southwest Water Pollution Control Plant				
6	Retail - Capacity	17,822,000	50 mgd = 6,684 Mcf/day	2,666.3674 /Mcf/day
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby				
7	Volume	44,764,000	73,000 mg = 9,759,000 Mcf	4.5869 /Mcf
8	Capacity	14,111,000	400 mgd = 53,476 Mcf/day	263.8754 /Mcf/day
9	Suspended Solids	45,951,000	133,824,000	343.3698 /1,000 lbs
10	BOD	34,917,000	83,723,000	417.0520 /1,000 lbs
Southeast Water Pollution Control Plant				
Retail and Springfield (Wyndmoor)				
11	Volume	34,991,000	40,880 mg = 5,465,000 Mcf	6.4027 /Mcf
12	Capacity	37,991,000	224 mgd = 29,947 Mcf/day	1,268.6079 /Mcf/day
13	Suspended Solids	28,959,000	66,065,000 lbs	438.3410 /1,000 lbs
14	BOD	28,688,000	56,940,000 lbs	503.8286 /1,000 lbs

mg - million gallons  
mgd - million gallons per day  
Mcf - thousand cubic feet  
Mcf/day - thousand cubic feet per day  
lbs - pounds

TABLE A - 17

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
ABINGTON TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
1	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton Capacity	Mcf/day	81.6657	819		66,884	67,000
2	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton Volume	Mcf	5.5378	221,692		1,227,686	1,228,000
3	Capacity	Mcf/day	608.7088	819		498,533	499,000
4	SS	1,000 lbs	424.3073	2,508		1,064,163	1,064,000
5	BOD	1,000 lbs	644.5510	2,109		1,359,358	1,359,000
6	Total Treatment					4,216,624	4,217,000
Conveyance							
7	Shady Lane & City Line	cfs	58,421	1.3680	1.02250	81,718	82,000
8	Pennypack & City Line	cfs	49,045	7.6940	1.02250	385,843	386,000
9	Cottman and Orville	cfs	45,328	0.4800	1.02250	22,247	22,000
10	Total Conveyance					489,808	490,000
11	<b>Total Allocated System Investment</b>					<b>4,706,432</b>	<b>4,707,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

TABLE A - 18

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
BENSALEM TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
<b>Treatment</b>							
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton							
1	Capacity	Mcf/day	81.6657	1,034		84,442	84,000
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton							
2	Volume	Mcf	6	304,871		1,688,315	1,688,000
3	Capacity	Mcf/day	609	1,034		629,405	629,000
4	SS	1,000 lbs	424	3,769		1,599,214	1,599,000
5	BOD	1,000 lbs	645	5,349		3,447,703	3,448,000
6	<b>Total Treatment</b>					<b>7,449,079</b>	<b>7,448,000</b>
<b>Conveyance</b>							
7	A-1	cfs	84,833	0.3700	1.02250	32,094	32,000
8	A-2	cfs	105,688	0.8800	1.02250	95,098	95,000
9	A-3	cfs	117,743	0.1200	1.02250	14,447	14,000
10	A-4	cfs	115,847	0.0800	1.02250	9,476	9,000
11	B	cfs	131,354	0.8400	1.02250	112,820	113,000
12	C	cfs	72,634	0.7500	1.02250	55,701	56,000
13	D	cfs	67,910	0.4600	1.02250	31,941	32,000
14	E	cfs	204,911	0.3800	1.02250	79,618	80,000
15	F	cfs	49,726	0.5800	1.02250	29,490	29,000
16	G-1	cfs	48,680	0.2700	1.02250	13,439	13,000
17	G-2	cfs	48,680	0.5100	1.02250	25,385	25,000
18	H	cfs	64,044	2.7200	1.02250	178,119	178,000
19	J-1	cfs	133,427	0.6760	1.02250	92,226	92,000
20	J-2	cfs	38,820	0.1610	1.02250	6,391	6,000
21	J-3	cfs	258,008	0.3830	1.02250	101,040	101,000
22	K-1	cfs	204,907	0.4300	1.02250	90,092	90,000
23	K-2	cfs	66,776	2.1300	1.02250	145,433	145,000
24	<b>Total Conveyance</b>					<b>1,112,810</b>	<b>1,110,000</b>
25	<b>Total Allocated System Investment</b>					<b>8,561,889</b>	<b>8,558,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

**TABLE A - 19**

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
BUCKS COUNTY  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton							
1	Capacity	Mcf/day	81.6657	7,521		614,208	614,000
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton							
2	Volume	Mcf	5.5378	1,211,323		6,708,065	6,708,000
3	Capacity	Mcf/day	608.7088	7,521		4,578,099	4,578,000
4	SS	1,000 lbs	424.3073	13,651		5,792,219	5,792,000
5	BOD	1,000 lbs	644.5510	13,463		8,677,590	8,678,000
6	<b>Total Treatment</b>					<u>26,370,181</u>	<u>26,370,000</u>
Conveyance							
7	Large Sewers	cfs	18,000	85.08	1.02250	1,565,897	1,566,000
8	<b>Total Conveyance</b>					<u>1,565,897</u>	<u>1,566,000</u>
9	<b>Total Allocated System Investment</b>					<b>27,936,078</b>	<b>27,936,000</b>
cfs - cubic feet per second Mcf - Thousand cubic feet lbs - pounds							

**TABLE A - 20**

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
CHELTENHAM TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
<b>Treatment</b>							
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton							
1	Capacity	Mcf/day		1,833			
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton							
2	Volume	Mcf	5.5378	664,170		3,678,041	3,678,000
3	Capacity	Mcf/day	608.7088	1,833		1,115,763	1,116,000
4	SS	1,000 lbs	424.3073	5,492		2,330,296	2,330,000
5	BOD	1,000 lbs	644.5510	4,792		3,088,688	3,089,000
6	<b>Total Treatment</b>					<u>10,212,788</u>	<u>10,213,000</u>
<b>Conveyance</b>							
7	Cheltenham and Tacony Creek	cfs	15,378	18.00	1.02250	283,032	283,000
8	Bouvier Street	cfs	23,315	2.75	1.02250	65,559	66,000
9	<b>Total Conveyance</b>					<u>348,591</u>	<u>349,000</u>
10	<b>Total Allocated System Investment</b>					<b>10,561,379</b>	<b>10,562,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

**TABLE A - 21**

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
DELCORA  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby							
1	Volume	Mcf	4.5869	2,439,840		11,191,302	11,191,000
2	Capacity	Mcf/day	263.8754	13,392		3,533,819	3,534,000
3	SS	1,000 lbs	343.3698	21,771		7,475,504	7,476,000
4	BOD	1,000 lbs	417.0520	19,487		8,127,092	8,127,000
5	Total Treatment					30,327,717	30,328,000
6	Conveyance					0	0
7	<b>Total Allocated System Investment</b>					<b>30,327,717</b>	<b>30,328,000</b>

cfs - cubic feet per second

Mcf - Thousand cubic feet

lbs - pounds

**TABLE A - 22**

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
LOWER MERION TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
<b>Treatment</b>							
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby							
1	Volume	Mcf	4,5869	722,453		3,313,820	3,314,000
2	Capacity	Mcf/day	263.8754	2,788		735,685	736,000
3	SS	1,000 lbs	343.3698	7,343		2,521,364	2,521,000
4	BOD	1,000 lbs	417.0520	6,894		2,875,156	2,875,000
5	<b>Total Treatment</b>					<b>9,446,025</b>	<b>9,446,000</b>
<b>Conveyance</b>							
6	City Avenue & 73rd Street	cfs	30,189	2,860	1.0225	88,283	88,000
7	City Avenue & 66th Street	cfs	35,407	15,880	1.0225	574,914	575,000
8	City Avenue & Overbrook Station	cfs	69,259	2,290	1.0225	162,172	162,000
9	City Avenue & 59th Street	cfs	132,481	0,330	1.0225	44,702	45,000
10	City Avenue & 54th Street	cfs	57,917	0,050	1.0225	2,961	3,000
11	City Avenue & 51st Street	cfs	60,355	8,470	1.0225	522,709	523,000
12	City Avenue & Conshohocken Avenue	cfs	103,583	0,390	1.0225	41,306	41,000
13	City Avenue & Presidential Boulevard	cfs					
13	Sewers and Meter Station	cfs	134,831	1,300	1.0225	179,224	179,000
14	Neill Drive Pump Station	cfs	143,297	1,300	1.0225	190,478	190,000
15	Barclay Building & Friends Central School Charged Inside Rates	cfs	43,227	0,052	1.0225	2,298	2,000
16	<b>Total Conveyance</b>					<b>1,809,047</b>	<b>1,808,000</b>
17	<b>Total Allocated System Investment</b>					<b>11,255,072</b>	<b>11,254,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

TABLE A - 23

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
LOWER MORELAND TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
1	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton Capacity	Mcf/day	81.6657	795		64,924	65,000
2	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton Volume	Mcf	5.5378	74,955		415,086	415,000
3	Capacity	Mcf/day	608.7088	795		483,923	484,000
4	SS	1,000 lbs	424.3073	618		262,222	262,000
5	BOD	1,000 lbs	644.5510	575		370,617	371,000
6	Total Treatment					1,596,772	1,597,000
Conveyance							
7	Woodhaven Road and City Line	cfs	195,719	0.4140	1.0225	82,851	83,000
8	Erwin Street and County Line	cfs	94,589	0.0650	1.0225	6,287	6,000
9	Moreland Road and Pine Road	cfs	64,910	0.0350	1.0225	2,323	2,000
10	Pine Road and Radburn Road	cfs	66,406	0.0380	1.0225	2,580	3,000
11	Welsh Road and County Line	cfs	66,860	0.6060	1.0225	41,429	41,000
12	City Line and Red Lion	cfs	66,860	0.0170	1.0225	1,162	1,000
13	Conveyance Line	cfs	62,555	7.7960	1.0225	498,652	499,000
14	Total Conveyance					635,284	635,000
15	<b>Total Allocated System Investment</b>					<b>2,232,056</b>	<b>2,232,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

TABLE A - 24

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
LOWER SOUTHAMPTON TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
1	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton Capacity	Mcf/day	81.6657	1,394		113,842	114,000
2	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton Volume	Mcf	5.5378	355,909		1,970,953	1,971,000
3	Capacity	Mcf/day	608.7088	1,394		848,540	849,000
4	SS	1,000 lbs	424.3073	3,698		1,569,088	1,569,000
5	BOD	1,000 lbs	644.5510	3,663		2,360,990	2,361,000
6	Total Treatment					6,863,413	6,864,000
Conveyance							
7	Treose and City Line	cfs	92,315	15.79	1.0225	1,490,451	1,490,000
8	Total Conveyance					1,490,451	1,490,000
9	<b>Total Allocated System Investment</b>					<b>8,353,864</b>	<b>8,354,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

TABLE A - 25

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
SPRINGFIELD (EXCL. WYNDMOOR) TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby							
1	Volume	Mcf	4,5869	158,350		726,336	726,000
2	Capacity	Mcf/day	263.8754	407		107,397	107,000
3	SS	1,000 lbs	343.3698	1,214		416,851	417,000
4	BOD	1,000 lbs	417.0520	1,053		439,156	439,000
5	Total Treatment					1,689,740	1,689,000
Conveyance (a)							
Erdenheim and Stenton							
6	Sewers	cfs	139,780	2.00	1.0225	285,850	286,000
7	Central Schuylkill Pump Station	cfs	13,211	2.00	1.0225	27,016	27,000
8	Meter Station	ea	35,702	1.00	1.0225	36,505	37,000
9	Total					349,371	350,000
Northwestern and Stenton							
10	Sewers	cfs	139,780	2.60	1.0225	371,605	372,000
11	Central Schuylkill Pump Station	cfs	13,211	2.60	1.0225	35,121	35,000
12	Meter Station	ea	10,270	1.00	1.0225	10,501	11,000
13	Total					417,227	418,000
14	Total Conveyance					766,598	768,000
15	<b>Total Allocated System Investment</b>					<b>2,456,338</b>	<b>2,457,000</b>

cfs - cubic feet per second  
Mcf - Thousand cubic feet  
lbs - pounds

(a) Excludes connection at Northwestern and Thomas which accounts for less than one half of one percent of township flow.

TABLE A - 26

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
SPRINGFIELD (WYNDMOOR) TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
Retail and Springfield (Wyndmoor)							
1	Volume	Mcf	6.4027	49,697		318,195	318,000
2	Capacity	Mcf/day	1,268.6079	167		211,858	212,000
3	SS	1,000 lbs	438.3410	206		90,298	90,000
4	BOD	1,000 lbs	503.8286	156		78,597	79,000
5	Total Treatment					698,948	699,000
Conveyance							
6		cfs	167,854	1.93	1.0225	331,247	331,000
7	Total Conveyance					331,247	331,000
8	<b>Total Allocated System Investment</b>					<b>1,030,195</b>	<b>1,030,000</b>

cfs - cubic feet per second

Mcf - Thousand cubic feet

lbs - pounds

TABLE A - 27

**WASTEWATER SYSTEM INVESTMENT  
ALLOCATED TO  
UPPER DARBY  
Test Year 2009**

Line No.	Cost Component	Units	Investment Per Unit \$	Number of Contract Units	Infiltration/Inflow Capacity Allocation Factor	Allocated Investment \$	Allocated Investment Rounded \$
Treatment							
Retail, DELCORA, Lower Merion, Springfield, (excluding Wyndmoor), and Upper Darby							
1	Volume	Mcf	4.5869	846,145		3,881,183	3,881,000
2	Capacity	Mcf/day	263.8754	3,094		816,430	816,000
3	SS	1,000 lbs	343.3698	7,453		2,558,963	2,559,000
4	BOD	1,000 lbs	417.0520	6,857		2,859,726	2,860,000
5	Total Treatment					10,116,302	10,116,000
Conveyance							
6	60th Street and Cobbs Creek Parkway	cfs	20,191	35.00	1.0225	722,585	723,000
7	Total Conveyance					722,585	723,000
8	<b>Total Allocated System Investment</b>					<b>10,838,887</b>	<b>10,839,000</b>
cfs - cubic feet per second Mcf - Thousand cubic feet lbs - pounds							

**TABLE A - 28**

**UNIT PUMPING AND TREATMENT OPERATION AND MAINTENANCE EXPENSE  
APPLICABLE FOR CONTRACT SERVICE  
Test Year 2009**

Line No.	Cost Component	(1)	(2)	(3)
		Net Operating Expense	Projected TY Units of Service	Unit Operating Expense
		\$		\$/Unit
<b>PUMPING STATIONS</b>				
Neill Drive Pumping Station				
Retail and Lower Merion				
1	Total Volume	35,000	69,650 Mcf	0.5025
2	Total Capacity	24,000	370 Mcf/day	64.8649
Central Schuylkill Pumping Station				
Retail and Springfield (excl. Wyndmoor)				
3	Total Volume	725,000	2,715,700 Mcf	0.2670
4	Total Capacity	1,051,000	22,110 Mcf/day	47.5351
<b>WATER POLLUTION CONTROL PLANTS</b>				
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton				
5	Volume	391,000	6,499,000 Mcf	0.0602
6	Capacity	1,640,000	39,280 Mcf/day	41.7515
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton				
7	Volume	11,776,000	8,783,000 Mcf	1.3408
8	Capacity	2,241,000	53,084 Mcf/day	42.2161
9	Suspended Solids	20,970,000	115,646 1,000 lbs	181.3292
10	BOD	14,512,000	78,503 1,000 lbs	184.8592
Southwest Plant:				
Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby				
11	Volume	10,399,000	9,271,000 Mcf	1.1217
12	Capacity	3,296,000	56,034 Mcf/day	58.8214
13	Suspended Solids	16,382,000	85,064 1,000 lbs	192.5844
14	BOD	10,525,000	62,424 1,000 lbs	168.6050
Southeast Plant:				
Retail and Springfield (Wyndmoor)				
15	Volume	7,093,000	4,392,000 Mcf	1.6150
16	Capacity	3,093,000	26,545 Mcf/day	116.5191
17	Suspended Solids	9,548,000	39,251 1,000 lbs	243.2549
18	BOD	2,962,000	26,171 1,000 lbs	113.1787
NA - Not Applicable				
Mcf - thousand cubic feet				
Mcf/day - thousand cubic feet per day				
lbs - pounds				

**TABLE A - 29**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**ABINGTON TOWNSHIP**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	490,000	x	3.20%		15,680
		Operating Expense Per Unit				
NE Treatment Plants: Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton						
2	Volume	0.0602	\$/Mcf	111,400	Mcf	6,706
3	Capacity	41.7515	\$/Mcf/day	819	Mcf/day	34,194
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton						
4	Volume	1.3408	\$/Mcf	111,400	Mcf	149,365
5	Capacity	42.2161	\$/Mcf/day	819	Mcf/day	34,575
6	Suspended Solids	181.3292	\$/1,000 lbs	1,249	1,000 lbs	226,480
7	BOD	184.8592	\$/1,000 lbs	1,042	1,000 lbs	192,623
8	Customer Costs					13,800
9	Total					673,423
10	Total - Rounded					673,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Abington.

**TABLE A - 30**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**BENSALEM TOWNSHIP**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
	Collection System:					
1	Sewer Maintenance (a)	1,110,000	x	3.20%		35,520
		Operating Expense Per Unit				
	NE Treatment Plants:					
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton					
2	Volume	0.0602	\$/Mcf	165,600	Mcf	9,969
3	Capacity	41.7515	\$/Mcf/day	1,034	Mcf/day	43,171
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton					
4	Volume	1.3408	\$/Mcf	165,600	Mcf	222,036
5	Capacity	42.2161	\$/Mcf/day	1,034	Mcf/day	43,651
6	Suspended Solids	181.3292	\$/1,000 lbs	2,261	1,000 lbs	409,985
7	BOD	184.8592	\$/1,000 lbs	2,385	1,000 lbs	440,889
8	Customer Costs					49,400
9	Total					1,254,621
10	Total - Rounded					1,255,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Bensalem.

**TABLE A - 31**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**BUCKS COUNTY W&SA**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
	Collection System:					
1	Sewer Maintenance (a)	1,566,000	x	3.20%		50,112
		Operating Expense Per Unit				
	NE Treatment Plants:					
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton					
2	Volume	0.0602	\$/Mcf	1,009,200	Mcf	60,754
3	Capacity	41.7515	\$/Mcf/day	7,521	Mcf/day	314,013
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton					
4	Volume	1.3408	\$/Mcf	1,009,200	Mcf	1,353,135
5	Capacity	42.2161	\$/Mcf/day	7,521	Mcf/day	317,507
6	Suspended Solids	181.3292	\$/1,000 lbs	11,981	1,000 lbs	2,172,505
7	BOD	184.8592	\$/1,000 lbs	9,919	1,000 lbs	1,833,618
8	Customer Costs					16,200
9	Total					6,117,844
10	Total - Rounded					6,118,000
	Mcf - Thousand cubic feet					
	lbs - pounds					

(a) Based on investment in sewers serving Bucks County W&SA.

**TABLE A - 32**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**CHELTENHAM TOWNSHIP**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
	Collection System:					
1	Sewer Maintenance (a)	349,000	x	3.20%		11,168
		Operating Expense Per Unit				
	NE Treatment Plants:					
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton					
11	Volume	NA	\$/Mcf	370,800	Mcf	0
12	Capacity	NA	\$/Mcf/day	1,833	Mcf/day	0
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton					
13	Volume	1.3408	\$/Mcf	370,800	Mcf	497,169
14	Capacity	42.2161	\$/Mcf/day	1,833	Mcf/day	77,382
15	Suspended Solids	181.3292	\$/1,000 lbs	3,057	1,000 lbs	554,323
16	BOD	184.8592	\$/1,000 lbs	2,651	1,000 lbs	490,062
17	Customer Costs					33,700
18	Total					1,663,804
19	Total - Rounded					1,664,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Cheltenham.

**TABLE A - 33**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**DELCORA**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	0	x	3.20%		0
SW Treatment Plants: Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby						
2	Volume	1.1217	\$/Mcf	1,404,000	Mcf	1,574,867
3	Capacity	58.8214	\$/Mcf/day	13,392	Mcf/day	787,736
4	Suspended Solids	192.5844	\$/1,000 lbs	12,528	1,000 lbs	2,412,697
5	BOD	168.6050	\$/1,000 lbs	11,214	1,000 lbs	1,890,736
6	Customer Costs					<u>43,000</u>
7	Total					6,709,036
8	Total - Rounded					6,709,000
Mcf - Thousand cubic feet lbs - pounds						

(a) Based on investment in sewers serving DELCORA.

**TABLE A - 34**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**LOWER MERION TOWNSHIP**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2)   Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	1,808,000	x	3.20%		57,856
		Operating Expense Per Unit				
Neill Drive Pump Station						
Retail and Lower Merion						
2	Volume	0.5025	\$/Mcf	13,500	Mcf	6,784
3	Capacity	64.5946	\$/Mcf/day	115	Mcf/day	7,428
SW Treatment Plants:						
Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby						
4	Volume	1.1217	\$/Mcf	345,900	Mcf	387,996
5	Capacity	58.8214	\$/Mcf/day	2,788	Mcf/day	163,994
6	Suspended Solids	192.5844	\$/1,000 lbs	3,563	1,000 lbs	686,178
7	BOD	168.6050	\$/1,000 lbs	2,997	1,000 lbs	505,309
8	Customer Costs					<u>53,900</u>
9	Total					1,869,445
10	Total - Rounded					1,869,000
	Mcf - Thousand cubic feet					
	lbs - pounds					

(a) Based on investment in sewers serving Lower Merion.

**TABLE A - 35**

**OPERATING EXPENSE  
ALLOCATED TO  
LOWER MORELAND TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	635,000	x	3.20%		20,320
		Operating Expense Per Unit				
NE Treatment Plants:						
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton						
2	Volume	0.0602	\$/Mcf	68,200	Mcf	4,106
3	Capacity	41.7515	\$/Mcf/day	795	Mcf/day	33,192
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton						
4	Volume	1.3408	\$/Mcf	68,200	Mcf	91,443
5	Capacity	42.2161	\$/Mcf/day	795	Mcf/day	33,562
6	Suspended Solids	181.3292	\$/1,000 lbs	625	1,000 lbs	113,331
7	BOD	184.8592	\$/1,000 lbs	490	1,000 lbs	90,581
8	Customer Costs					20,700
9	Total					407,235
10	Total - Rounded					407,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Lower Moreland.

**TABLE A - 36**

**OPERATING EXPENSE  
ALLOCATED TO  
LOWER SOUTHAMPTON TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	1,490,000	x	3.20%		47,680
		Operating Expense Per Unit				
NE Treatment Plants:						
Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton						
2	Volume	0.0602	\$/Mcf	331,500	Mcf	19,956
3	Capacity	41.7515	\$/Mcf/day	1,394	Mcf/day	58,202
Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton						
4	Volume	1.3408	\$/Mcf	331,500	Mcf	444,475
5	Capacity	42.2161	\$/Mcf/day	1,394	Mcf/day	58,849
6	Suspended Solids	181.3292	\$/1,000 lbs	3,888	1,000 lbs	705,008
7	BOD	184.8592	\$/1,000 lbs	2,559	1,000 lbs	473,055
8	Customer Costs					16,200
9	Total					1,823,425
10	Total - Rounded					1,823,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Lower Southampton.

**TABLE A - 37**

**OPERATING EXPENSE  
ALLOCATED TO  
SPRINGFIELD (EXCL. WYNDMOOR) TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
	Collection System:					
1	Sewer Maintenance (a)	768,000	x	3.20%		24,576
		Operating Expense Per Unit				
	Central Schuylkill Pump Station Retail and Springfield (excluding Wyndmoor)					
2	Volume	0.2670	\$/Mcf	136,200	Mcf	36,365
3	Capacity	47.5351	\$/Mcf/day	407	Mcf/day	19,347
	SW Treatment Plants: Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby					
4	Volume	1.1217	\$/Mcf	136,200	Mcf	152,776
5	Capacity	58.8214	\$/Mcf/day	407	Mcf/day	23,940
6	Suspended Solids	192.5844	\$/1,000 lbs	1,971	1,000 lbs	379,584
7	BOD	168.6050	\$/1,000 lbs	1,868	1,000 lbs	314,954
8	Customer Costs					27,200
9	Total					978,742
10	Total - Rounded					979,000
	Mcf - Thousand cubic feet lbs - pounds					

(a) Based on investment in sewers serving Springfield (excluding Wyndmoor).

**TABLE A - 38**

**OPERATING EXPENSE  
ALLOCATED TO  
SPRINGFIELD (WYNDMOOR) TOWNSHIP  
Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	331,000	x	3.20%		10,592
SE Treatment Plants:						
Retail, Springfield (Wyndmoor)						
2	Volume	1.6150	\$/Mcf	21,900	Mcf	35,369
3	Capacity	116.5191	\$/Mcf/day	167	Mcf/day	19,459
4	Suspended Solids	243.2549	\$/1,000 lbs	120	1,000 lbs	29,191
5	BOD	113.1787	\$/1,000 lbs	91	1,000 lbs	10,299
6	Customer Costs					7,700
7	Total					112,610
8	Total - Rounded					113,000

Mcf - Thousand cubic feet  
lbs - pounds

(a) Based on investment in sewers serving Springfield (Wyndmoor).

**TABLE A - 39**  
**OPERATING EXPENSE**  
**ALLOCATED TO**  
**UPPER DARBY TOWNSHIP**  
**Test Year 2009**

Line No.	Cost Component	(1) Allocated Investment \$		(2) Test Yr. No. of Units		(3) Allocated Operating Expense \$
Collection System:						
1	Sewer Maintenance (a)	723,000	x	3.20%		23,136
SW Treatment Plants: Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby						
2	Volume	1.1217	\$/Mcf	588,600	Mcf	660,233
3	Capacity	58.8214	\$/Mcf/day	3,094	Mcf/day	181,993
4	Suspended Solids	192.5844	\$/1,000 lbs	5,672	1,000 lbs	1,092,339
5	BOD	168.6050	\$/1,000 lbs	4,773	1,000 lbs	804,752
6	Customer Costs					<u>13,800</u>
7	Total					2,776,253
8	Total - Rounded					2,776,000
Mcf - Thousand cubic feet lbs - pounds						

(a) Based on investment in sewers serving Upper Darby.

**TABLE A - 40**

**SUMMARY OF ALLOCATED COST OF SERVICE  
FOR CONTRACT CUSTOMERS  
Test Year 2009**

Customer	(1)	(2)	(3)	(4)	(5)	(6)
	Allocated Investment	Allocated Depreciable Investment	O&M Expense	Depreciation Expense	Return on Investment	Allocated Cost of Service
	\$	\$	\$	\$	\$	\$
Abington	4,707,000	4,691,000	673,000	115,000	353,000	1,141,000
Bensalem	8,558,000	8,530,000	1,255,000	(a)	(a)	1,255,000
Bucks County	27,936,000	27,836,000	6,118,000	0	0	6,118,000
Cheltenham	10,562,000	10,523,000	1,664,000	261,000	792,000	2,717,000
DELCORA	30,328,000	30,194,000	6,709,000	(a)	(a)	6,709,000
Lower Merion	11,254,000	11,212,000	1,869,000	(a)	(a)	1,869,000
Lower Moreland	2,232,000	2,226,000	407,000	52,000	167,000	627,000
Lower Southampton	8,354,000	8,328,000	1,823,000	(a)	(a)	1,823,000
Springfield (less Wyndmoor)	2,457,000	2,451,000	979,000	58,000	184,000	1,221,000
Springfield (Wyndmoor)	1,030,000	1,029,000	113,000	24,000	77,000	214,000
Upper Darby	<u>10,839,000</u>	<u>10,794,000</u>	<u>2,776,000</u>	<u>(a)</u>	<u>(a)</u>	<u>2,776,000</u>
Total	118,257,000	117,814,000	24,386,000	510,000	1,573,000	26,470,000

(a) It is assumed that Bensalem, DELCORA, Lower Merion, Lower Southampton, and Upper Darby contribute their entire allocated plant investment, and therefore, are not allocated any depreciation expense or return on investment.

TABLE A - 41

**TEST YEAR INVESTMENT IN THE WASTEWATER SYSTEM  
SUMMARY OF ALLOCATIONS TO  
FUNCTIONAL COST COMPONENTS  
Test Year 2009**

Line No.	Cost Component	(1)	(2)	(3)
		Total Direct Investment	Investment Allocated to Contract Service	Investment Allocated to Retail Service
		\$	\$	\$
Collection System:				
1	Sewers-Capacity	1,000,622,000	9,018,000	991,604,000
2	Pumping Stations Capacity	<u>29,222,000</u>	<u>252,000</u>	<u>28,970,000</u>
3	Total Collection System	1,029,844,000	9,270,000	1,020,574,000
Water Pollution Control Plants				
Northeast Plant				
Retail, Abington, Bensalem, Bucks Cty. W&SA, Cheltenham, Lower Moreland, & Lower Southampton				
4	Volume	56,746,000	15,688,000	41,058,000
5	Capacity	38,219,000	9,099,000	29,120,000
6	Suspended Solids	73,507,000	12,616,000	60,891,000
7	BOD	<u>82,819,000</u>	<u>19,306,000</u>	<u>63,513,000</u>
8	Total Northeast Plant	251,291,000	56,709,000	194,582,000
Southwest Plant				
Retail, DELCORA, Lower Merion, Springfield (excluding Wyndmoor), & Upper Darby				
9	Volume	44,764,000	19,112,000	25,652,000
10	Capacity	31,933,000	5,193,000	26,740,000
11	Suspended Solids	45,951,000	12,973,000	32,978,000
12	BOD	<u>34,917,000</u>	<u>14,301,000</u>	<u>20,616,000</u>
13	Total Southwest Plant	157,565,000	51,579,000	105,986,000
Southeast Plant				
Retail & Springfield (Wyndmoor)				
14	Volume	34,991,000	318,000	34,673,000
15	Capacity	37,991,000	212,000	37,779,000
16	Suspended Solids	28,959,000	90,000	28,869,000
17	BOD	<u>28,688,000</u>	<u>79,000</u>	<u>28,609,000</u>
18	Total Southeast Plant	130,629,000	699,000	129,930,000
19	Total Allocated Treatment Plants	539,485,000	108,987,000	430,498,000
20	<b>Total Allocated System Investment</b>	<b>1,569,329,000</b>	<b>118,257,000</b>	<b>1,451,072,000</b>

TABLE A - 42

**OPERATION AND MAINTENANCE EXPENSE ALLOCATED  
TO RETAIL SERVICE CUSTOMERS  
Test Year 2009**

Line No.	Cost Component	(1) Net Operation and Maintenance Expense \$1,000	(2) Less Operation and Maintenance Expense Allocated to Contract Service \$1,000	(3) Operation and Maintenance Expense Allocated to Retail Service \$1,000	(4) Less Retail Operation & Maintenance Expense Deductions: Other Operating Revenue \$1,000	(5) Net Operation and Maintenance Expense To Be Allocated To Retail Service \$1,000
	<b>COLLECTION SYSTEM</b>					
	Sewer Maintenance					
1	All Customers - Capacity	32,481	254	32,227	1,783	30,444
	Inlet Cleaning					
2	Retail - Storm Capacity	14,573	0	14,573	806	13,767
	Neill Drive Pumping Station					
	Retail and Lower Merion					
3	Total Volume	35	7	28	2	26
4	Total Capacity	24	7	17	1	16
	Central Schuylkill Pumping Station					
	Retail and Springfield (excl. Wyndmoor)					
5	Total Volume	725	36	689	38	651
6	Total Capacity	1,051	19	1,032	57	975
	All Other Pumping Stations					
	Retail					
7	Total Volume	1,785	0	1,785	99	1,686
8	Total Capacity	14,364	0	14,364	795	13,569
9	Total Collection Systems	65,038	323	64,715	3,581	61,134
	<b>WATER POLLUTION CONTROL PLANTS</b>					
	Northeast Plant:					
	Retail and Cheltenham					
10	Volume	0	0	0	0	0
11	Capacity	0	0	0	0	0
	Retail, Abington, Bensalem, Bucks County W&SA, Lower Moreland, and Lower Southampton					
12	Volume	391	101	290	16	274
13	Capacity	1,640	483	1,157	64	1,093
	Retail, Abington, Bensalem, Bucks County W&SA, Cheltenham, Lower Moreland, and Lower Southampton					
14	Volume	11,776	2,758	9,018	499	8,519
15	Capacity	2,241	566	1,675	93	1,582
16	Suspended Solids	20,970	4,182	16,788	930	15,858
17	BOD	14,512	3,521	10,991	608	10,383
	Southwest Plant:					
	Retail					
18	Volume	69	0	69	4	65
19	Capacity	321	0	321	18	303
	Retail, DELCORA, Lower Merion, Springfield (Excluding Wyndmoor), and Upper Darby					
20	Volume	10,399	2,786	7,613	421	7,192
21	Capacity	3,296	1,163	2,133	118	2,015
22	Suspended Solids	16,382	4,586	11,796	653	11,143
23	BOD	10,525	3,528	6,997	387	6,610
	Southeast Plant:					
	Retail and Springfield (Wyndmoor)					
24	Volume	7,093	35	7,058	391	6,667
25	Capacity	3,093	19	3,074	170	2,904
26	Suspended Solids	9,548	29	9,519	527	8,992
27	BOD	2,962	10	2,952	163	2,789
28	Total Water Pollution Control Plants	115,218	23,767	91,451	5,062	86,389
	<b>CUSTOMER COSTS</b>					
	All Customers					
29	Equivalent Bills	30,621	228	30,393	1,682	28,711
	Equivalent Meters					
30	Industrial Waste Unit	2,389	68	2,321	128	2,193
31	Other	5,517	0	5,517	305	5,212
32	Excess Strength Wastewater - Direct	1,177	0	1,177	65	1,112
33	Total Customer Costs	39,704	296	39,408	2,180	37,228
34	<b>Total Operation and Maintenance Expense</b>	<b>219,960</b>	<b>24,386</b>	<b>195,574</b>	<b>10,823</b>	<b>184,751</b>

**TABLE A - 43**  
**UNIT COSTS OF RETAIL WASTEWATER SERVICE**  
**Test Year 2009**

Line No.	Description	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		Collection System					Water Pollution Control Plants					Customer Costs			
		Total	Pumping Station		Sanitary Sewers	Storm Costs	Volume	Capacity	Suspended Solids	BOD	Meter Costs	Billing		Retail	Industrial Waste Unit
			Volume	Capacity	Capacity							Sanitary	Stormwater	Customers	Direct Excess Wastewater
1	Total Units of Service														
2	Units	\$	Mcf	Mcf/day	Mcf/day	Meters	Mcf	Mcf/day	1,000 lbs.	1,000 lbs.	Eq. Meters	Eq. Bills	Eq. Bills	Eq. Meters	\$
3	Quantity		17,892,700	102,419	311,632	563,234	17,892,700	102,419	193,047	127,109	563,234	5,713,045	5,713,045	563,234	
4	Operation and Maintenance Expense														
5	Total Expense - \$	184,751,000	2,363,000	14,560,000	9,133,000	35,078,000	22,717,000	7,897,000	35,993,000	19,782,000	5,212,000	15,831,000	12,880,000	2,193,000	1,112,000
6	Unit Expense - \$/unit		0.1321	142.1601	29.3076	62.2793	1.2696	77.1048	186.4468	155.6302	9.2537	2.7710	2.2545	3.8936	0
7	Capital Costs														
8	Total Plant Investment - \$	1,451,072,000		28,970,000	297,481,200	694,122,800	101,383,000	93,639,000	122,738,000	112,738,000					
9	Unit Plant Investment - \$/unit			282.8577	954.5913	1,232.3880	5.6662	914.2737	635.7934	886.9396					
10	Depreciable Plant Investment - \$	1,447,893,000		28,970,000	296,936,400	692,851,600	101,063,000	93,368,000	122,332,000	112,372,000					
11	Unit Depreciable Plant Investment - \$/unit			282.8577	952.8431	1,230.1310	5.6483	911.6277	633.6902	884.0601					
12	Depreciation Expense - \$	31,249,000		725,000	5,939,000	13,857,000	2,527,000	2,334,000	3,058,000	2,809,000					
13	Unit Depreciation Expense - \$/unit			7.0714	19.0569	24.6026	0.1412	22.7907	15.8423	22.1015					
14	Unit Return on Investment														
15	Total Return - \$	74,415,000		1,485,000	15,256,000	35,597,000	5,199,000	4,802,000	6,294,000	5,782,000					
16	Inside City - \$/Unit (a)			14.5058	48.9543	63.2006	0.2906	46.8867	32.6054	45.4850					
17	Total Unit Capital Costs														
18	(Line 10 + Line 12) - \$/unit			21.5772	68.0112	87.8032	0.4318	69.6774	48.4477	67.5865					
19	Total Unit Costs of Service														
20	Inside City (Line 4 + Line 13) - \$/unit		0.1321	163.7373	97.3188	150.0825	1.7014	146.7822	234.8945	223.2167	9.2537	2.7710	2.2545	3.8936	0.0000

Mcf - Thousand cubic feet  
lbs - pounds  
(a) Retail rate of return = 5.1283 %.

**TABLE A - 44**

**ALLOCATED INFILTRATION/INFLOW COSTS  
INSIDE CITY RETAIL SERVICE  
Test Year 2009**

Line No.	Customer Class	(1)	(2)	(3)	(4)	(5)
		Allocated Infiltration/Inflow COS				
		Volume	Equivalent Meters	Operation & Maintenance	Capital Cost	Total
		Mcf		\$	\$	\$
	Retail Service					
1	General Service excluding Senior Citizens	5,498,000	497,000	43,312,000	25,849,000	69,161,000
2	Senior Citizens	94,000	16,000	962,000	574,000	1,536,000
3	Surcharge	0	0	0	0	0
4	Housing Authority	211,000	9,000	1,385,000	827,000	2,212,000
5	"N" Charities	254,000	7,000	1,564,000	933,000	2,497,000
6	"6 Cent" Charities	249,000	19,000	1,863,000	1,112,000	2,974,000
7	Municipal	508,000	14,000	3,123,000	1,864,000	4,986,000
8	Total Retail	6,814,000	562,000	52,209,000	31,159,000	83,366,000

**TABLE A - 45**

**WASTEWATER RETAIL COST OF SERVICE  
Test Year 2009**

Line No.	Customer Class	(1) Operating Expense \$	(2) Capital Cost \$	(3) Total \$
<b>Retail Service</b>				
1	General Service excluding Senior Citizens	149,372,000	87,273,000	236,645,000
2	Senior Citizens	3,910,000	2,323,000	6,233,000
3	Surcharge	3,935,000	1,083,000	5,018,000
4	Housing Authority	4,078,000	2,315,000	6,393,000
5	"N" Charities	4,106,000	2,390,000	6,496,000
6	"6 Cent" Charities	5,452,000	3,578,000	9,030,000
7	Municipal	8,212,000	4,759,000	12,971,000
8	<b>Total Retail (a)</b>	<b>179,065,000</b>	<b>103,721,000</b>	<b>282,786,000</b>

(a) Excludes costs associated with water treatment plant sludge of \$7,629,000.

TABLE A - 46

INSIDE CITY RETAIL SERVICE UNIT COSTS OF SERVICE FOR RATE DESIGN  
Test Year 2009

Line No.	Cost Component	(1) Units	(2) Unadjusted Unit Cost \$/Unit	(3) COS Deficit Recovery Factor	(4) Billing Units Conversion Factor	(5) Total Adjustment Factor	(6) Adjusted Unit Cost \$/Unit
	Collection System						
	Pumping Station						
1	Volume	Mcf	0.1321	1.0208	0.95	0.9698	0.1281
2	Capacity	Mcf/day	163.7373	1.0208	0.95	0.9698	158.7924
3	Sanitary Sewers - Capacity	Mcf/day	97.3188	1.0208	0.95	0.9698	94.3798
4	Storm Costs Related to Equivalent Meters	Eq. Meters	150.0825	1.0208	1.00	1.0208	153.2042
	WPC Plants						
5	Volume	Mcf	1.7014	1.0208	0.95	0.9698	1.6500
6	Capacity	Mcf/day	146.7822	1.0208	0.95	0.9698	142.3494
7	Suspended Solids	1,000 lbs	234.8945	1.0208	0.95	0.9698	227.8007
8	BOD	1,000 lbs	223.2167	1.0208	0.95	0.9698	216.4756
	Customer Costs						
9	Meter Costs	Eq. Meters	9.2537	1.0208	1.00	1.0208	9.4462
	Billing Costs						
10	Sanitary	Eq. Bills	2.7710	1.0208	1.00	1.0208	2.8286
11	Stormwater	Eq. Bills	2.2545	1.0208	1.00	1.0208	2.3014
12	Industrial Waste Unit - Retail	Eq. Meters	3.8936	1.0208	1.00	1.0208	3.9746
13	Infiltration/Inflow - Customer Related	Eq. Meters	44.4038	1.0208	1.00	1.0208	45.3274
14	Infiltration/Inflow - Volume Related	Volume	8.5645	1.0208	0.95	0.9698	8.3059

**TABLE A - 47**

**DEVELOPMENT OF COST OF SERVICE MONTHLY SERVICE CHARGE  
FOR CUSTOMERS WITH 5/8-INCH METERS  
Test Year 2009**

Line No.	Cost Component	(1) Units	(2) Unit Cost \$/Unit	(3) Number of Units	(4) Total Cost
	Collection System				
1	Storm Water Costs (a)	Eq. Meter	7.4821	1.0	7.4821
	Customer Costs				
2	Meter Costs	Eq. Meter	0.7872	1.0	0.7872
	Billing Costs				
3	Sanitary	Eq. Bills	2.8286	1.0	2.8286
4	Stormwater	Eq. Bills	2.3014	1.0	2.3014
5	Industrial Waste Unit	Eq. Meter	0.3312	1.0	0.3312
6	Infiltration/Inflow Costs - Storm Water Costs (a)	Eq. Meter	2.2137	1.0	<u>2.2137</u>
7	Total Service Charge				15.9442
8	Total Service Charge - Rounded				15.90

(a) Parcel-based unit cost.

**TABLE A - 48**

**DEVELOPMENT OF COST OF SERVICE VOLUME CHARGE PER MCF  
OF NORMAL STRENGTH SANITARY WASTEWATERS  
Test Year 2009**

Line No.	Cost Component	(1) Units	(2) Adjusted Unit Cost \$/Unit	(3) Number of Units	(4) Total Cost
	Collection System				
	Pumping Stations				
1	Volume	Mcf	0.1281	1.0000	0.1281
2	Capacity	Mcf/day/mo.	13.2327	(a) 0.0493	0.6524
				(b)	
3	Sanitary Sewers: Capacity	Mcf/day/mo.	7.8650	0.1316	1.0350
	Water Pollution Control Plants				
4	Volume	Mcf	1.6500	1.0000	1.6500
				(a)	
5	Capacity	Mcf/day/mo.	11.8625	0.0493	0.5848
				(c)	
6	Suspended Solids	1,000 lbs	227.8007	0.0147	3.3487
				(d)	
7	BOD	1,000 lbs	216.4756	0.0143	<u>3.0956</u>
8	Total Cost per Mcf				10.4946
9	Infiltration/Inflow Cost	Mcf	8.3059	1.0000	8.3059
10	Total Cost + Infiltration/Inflow per Mcf				18.8005
11	Total Cost per Mcf - Rounded				18.80
	Mcf - Thousand cubic feet				
	Mcf/day - Thousand cubic feet/day				
	lbs - pounds				
	(a) (1.0 Mcf * 1 month/30.4 days) * 1.5				
	(b) (1.0 Mcf * 1 month/30.4 days) * 4.0				
	(c) 1.0 Mcf @ 235 mg/l				
	(d) 1.0 Mcf @ 230 mg/l				

**TABLE A - 49**

**SUMMARY OF TEST YEAR CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS  
Test Year 2009**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.4517	7,421	184.9134	185.9625
2	Bensalem	85,000	1.4517	7,421	184.9134	185.9625
3	Bucks County (b)	66,000	1.4517	7,421	184.9134	185.9625
4	Cheltenham	1,098,000	1.3892	3,731	184.9134	185.9625
5	Lower Moreland	261,000	1.4517	7,421	184.9134	185.9625
6	Lower Southampton	64,000	1.4517	7,421	184.9134	185.9625
7	DELCORA	0	1.1217	5,115	192.5844	168.6050
8	Lower Merion (c)(d)	112,000	1.1582	5,198	196.2802	169.5196
9	Springfield (less Wyndmoor)	293,000	1.4296	9,408	196.2802	169.5196
10	Upper Darby	37,000	1.1582	5,198	196.2802	169.5196
11	Springfield (Wyndmoor)	<u>120,000</u>	1.6842	10,067	256.0578	114.4362
12	Total	2,634,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5251 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$66.02 per Mcf/day (\$5,704 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE A - 49A**

**SUMMARY OF PROJECTED FY 2010 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.4843	7,348	185.5215	188.3766
2	Bensalem	85,000	1.4843	7,348	185.5215	188.3766
3	Bucks County (b)	66,000	1.4843	7,348	185.5215	188.3766
4	Cheltenham	1,098,000	1.4200	3,686	185.5215	188.3766
5	Lower Moreland	261,000	1.4843	7,348	185.5215	188.3766
6	Lower Southampton	64,000	1.4843	7,348	185.5215	188.3766
7	DELCORA	0	1.1311	5,099	193.5689	171.3330
8	Lower Merion (c)(d)	112,000	1.1679	5,182	197.2836	172.2624
9	Springfield (less Wyndmoor)	294,000	1.4478	9,428	197.2836	172.2624
10	Upper Darby	37,000	1.1679	5,182	197.2836	172.2624
11	Springfield (Wyndmoor)	<u>120,000</u>	1.7096	10,028	256.9935	115.9064
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

(a) Annual Cost.

(b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.

(c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5551 per Mcf is applicable for costs related to the Neill Drive Pump Station.

(d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$67.67 per Mcf/day (\$5,847 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE A - 49B**

**SUMMARY OF PROJECTED FY 2011 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.5893	7,638	194.1554	201.1572
2	Bensalem	85,000	1.5893	7,638	194.1554	201.1572
3	Bucks County (b)	66,000	1.5893	7,638	194.1554	201.1572
4	Cheltenham	1,098,000	1.5173	3,816	194.1554	201.1572
5	Lower Moreland	261,000	1.5893	7,638	194.1554	201.1572
6	Lower Southampton	64,000	1.5893	7,638	194.1554	201.1572
7	DELCORA	0	1.1980	5,333	203.1720	185.0571
8	Lower Merion (c)(d)	112,000	1.2369	5,422	207.0710	186.0610
9	Springfield (less Wyndmoor)	294,000	1.5259	9,852	207.0710	186.0610
10	Upper Darby	37,000	1.2369	5,422	207.0710	186.0610
11	Springfield (Wyndmoor)	<u>120,000</u>	1.8250	10,489	269.4468	123.6152
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5551 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$71.82 per Mcf/day (\$6,205 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE A - 49C**

**SUMMARY OF PROJECTED FY 2012 CHARGES  
FOR WHOLESALE CONTRACT CUSTOMERS**

Line No.	Customer	(1)	(2)	(3)	(4)	(5)
		Annual Lump Sum	Volume	Capacity (a)	Unit Costs	
		\$	\$/Mcf	\$/cfs	Suspended Solids \$/1,000 lbs	BOD \$/1,000 lbs
1	Abington	498,000	1.7154	8,007	204.1477	217.9484
2	Bensalem	85,000	1.7154	8,007	204.1477	217.9484
3	Bucks County (b)	66,000	1.7154	8,007	204.1477	217.9484
4	Cheltenham	1,098,000	1.6314	3,983	204.1477	217.9484
5	Lower Moreland	261,000	1.7154	8,007	204.1477	217.9484
6	Lower Southampton	64,000	1.7154	8,007	204.1477	217.9484
7	DELCORA	0	1.2821	5,635	214.6076	203.8065
8	Lower Merion (c)(d)	112,000	1.3238	5,731	218.7260	204.9121
9	Springfield (less Wyndmoor)	294,000	1.6213	10,354	218.7260	204.9121
10	Upper Darby	37,000	1.3238	5,731	218.7260	204.9121
11	Springfield (Wyndmoor)	<u>120,000</u>	1.9723	11,103	284.3272	133.7348
12	Total	2,635,000				

Mcf - Thousand cubic feet  
cfs - cubic feet per second  
lbs - pounds

- (a) Annual Cost.
- (b) Charges for recovery of costs associated with odor control of Bucks County W&SA wastewater are in addition to the charges shown herein.
- (c) For flow through City Line Avenue and Presidential Drive connection, an additional cost of \$0.5702 per Mcf is applicable for costs related to the Neill Drive Pump Station.
- (d) For contract capacity at the City Line Avenue and Presidential Drive connection, an additional charge of \$73.75 per Mcf/day (\$6,372 per cfs) is applicable to costs related to Neill Drive Pump Station.

**TABLE A - 50**

**PROPOSED WASTEWATER RATES  
FOR GENERAL SERVICE**

**SERVICE CHARGE**

<u>Meter Size</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>
<u>Inches</u>	<u>Monthly</u>	<u>Monthly</u>	<u>Monthly</u>	<u>Monthly</u>
	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>
	\$	\$	\$	\$
5/8	16.78	17.35	17.94	18.48
3/4	78.59	84.47	88.78	92.15
1	127.94	137.74	144.81	150.25
1-1/4	191.92	206.84	217.47	225.59
1-1/2	250.48	270.12	284.03	294.59
2	398.51	429.94	452.11	468.88
3	742.81	801.79	843.17	874.37
4	1,241.62	1,339.88	1,409.01	1,461.20
6	2,477.84	2,674.40	2,812.43	2,916.51
8	3,958.06	4,272.62	4,493.18	4,659.36
10	5,693.08	6,145.24	6,462.44	6,701.50
12	10,600.18	11,445.83	12,037.04	12,481.52

**QUANTITY CHARGE**

<u>Monthly Water Usage</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>
	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>	<u>Charge</u>
	<u>per Mcf</u>	<u>per Mcf</u>	<u>per Mcf</u>	<u>per Mcf</u>
	\$	\$	\$	\$
All Billable Water Usage	19.78	20.76	21.83	22.93
Groundwater Charge	8.32	8.66	8.98	9.27

**SURCHARGE RATES**

BOD (\$/lb in excess of 250 mg/l)	0.292	0.304	0.322	0.344
SS (\$/lb in excess of 350 mg/l)	0.308	0.313	0.328	0.344

Mcf - Thousand cubic feet  
mg/l - milligrams per liter

TABLE A - 51

COMPARISON OF TYPICAL COMBINED WATER AND WASTEWATER BILLS  
UNDER EXISTING AND PROPOSED ALTERNATIVE RATES

(1) Meter Size	(2) Monthly Use Mcf	(3) Existing Rates \$	(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
			FY 2009		FY 2010		FY 2011		FY 2012		FY 2009		FY 2010		FY 2011		FY 2012	
			Proposed Rates	% Proposed of Existing	Proposed Rates	% Proposed of Existing	Proposed Rates	% Proposed of FY 2009	Proposed Rates	% Proposed of FY 2010	Proposed Rates	% Proposed of FY 2011	Proposed Rates	% Proposed of FY 2012	Proposed Rates	% Proposed of FY 2011		
Inches			\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%		
5/8	0.0	21.69	22.00	1.4	22.91	4.1	23.93	4.5	24.92	4.1								
5/8	0.3	33.55	35.37	5.4	37.34	5.6	39.52	5.8	41.76	5.7								
5/8	0.5	41.45	44.28	6.8	46.96	6.1	49.91	6.3	52.99	6.2								
5/8	<b>0.7</b>	<b>49.35</b>	<b>53.19</b>	<b>7.8</b>	<b>56.57</b>	<b>6.4</b>	<b>60.30</b>	<b>6.6</b>	<b>64.21</b>	<b>6.5</b>								
5/8	0.8	53.31	57.64	8.1	61.38	6.5	65.49	6.7	69.82	6.6								
5/8	1.7	88.87	97.74	10.0	104.66	7.1	112.25	7.3	120.34	7.2								
5/8	2.7	125.22	138.93	10.9	149.04	7.3	160.14	7.4	172.03	7.4								
5/8	3.3	146.22	162.78	11.3	174.72	7.3	187.84	7.5	201.91	7.5								
1	1.7	215.07	211.69	(1.6)	228.01	7.7	242.25	6.2	255.41	5.4								
1	5.0	331.90	344.30	3.7	370.81	7.7	396.31	6.9	421.62	6.4								
1	8.0	436.87	463.55	6.1	499.18	7.7	534.79	7.1	570.99	6.8								
1	17.0	751.78	821.30	9.2	884.29	7.7	950.23	7.5	1,019.10	7.2								
2	7.0	706.91	704.70	(0.3)	759.56	7.8	807.51	6.3	852.06	5.5								
2	16.0	1,021.82	1,062.45	4.0	1,144.67	7.7	1,222.95	6.8	1,300.17	6.3								
2	33.0	1,616.65	1,738.20	7.5	1,872.10	7.7	2,007.67	7.2	2,146.60	6.9								
2	100.0	3,960.98	4,401.45	11.1	4,739.03	7.7	5,100.39	7.6	5,482.53	7.5								
4	30.0	2,467.17	2,498.54	1.3	2,692.41	7.8	2,867.19	6.5	3,033.10	5.8								
4	170.0	7,232.07	7,952.24	10.0	8,558.41	7.6	9,195.89	7.4	9,857.40	7.2								
4	330.0	12,524.87	14,057.84	12.2	15,120.01	7.6	16,275.89	7.6	17,489.40	7.5								
4	500.0	18,148.47	20,545.04	13.2	22,091.71	7.5	23,798.39	7.7	25,598.40	7.6								
6	150.0	7,968.81	8,476.47	6.4	9,127.10	7.7	9,771.91	7.1	10,419.69	6.6								
6	500.0	19,546.81	21,832.47	11.7	23,480.60	7.5	25,259.41	7.6	27,114.69	7.3								
6	1,000.0	36,086.81	40,912.47	13.4	43,985.60	7.5	47,384.41	7.7	50,964.69	7.6								
6	1,500.0	52,626.81	59,992.47	14.0	64,490.60	7.5	69,509.41	7.8	74,814.69	7.6								
8	750.0	29,488.78	32,911.98	11.6	35,394.26	7.5	38,069.26	7.6	40,852.98	7.3								
8	1,500.0	54,298.78	61,531.98	13.3	66,151.76	7.5	71,256.76	7.7	76,627.98	7.5								
8	2,000.0	70,838.78	80,611.98	13.8	86,656.76	7.5	93,381.76	7.8	100,477.98	7.6								
8	3,000.0	100,058.78	114,361.98	14.3	122,816.76	7.4	132,271.76	7.7	142,277.98	7.6								
10	600.0	26,492.50	28,997.59	9.5	31,194.58	7.6	33,485.01	7.3	35,829.12	7.0								
10	1,700.0	62,880.50	70,973.59	12.9	76,305.58	7.5	82,160.01	7.7	88,299.12	7.5								
10	3,300.0	110,790.50	126,296.59	14.0	135,616.58	7.4	145,992.01	7.7	156,949.12	7.5								
10	6,000.0	189,684.50	217,421.59	14.6	233,248.58	7.3	250,995.01	7.6	269,809.12	7.5								

Mcf - Thousand cubic feet