Exhibit No.: 21
Issues: Rate of Return/Capital Structure
Witness: David Murray
Sponsoring Party: MoPSC Staff
Type of Exhibit: Direct Testimony
Case Nos.: WR-2003-0500 and WC-2004-0168
Date Testimony Prepared: October 3, 2003

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY SERVICES DIVISION

DIRECT TESTIMONY

OF

DAVID MURRAY

MISSOURI-AMERICAN WATER COMPANY

CASE NOS. WR-2003-0500 AND WC-2004-0168

Jefferson City, Missouri
October 2003

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Q. Please state your name.

A. My name is David Murray.

Q. Please state your business address.

A. My business address is P.O. Box 360, Jefferson City, Missouri, 65102.

Q. What is your present occupation?

A. I am employed as a Financial Analyst for the Missouri Public Service Commission (Commission). I accepted this position in June 2000.

Q. Were you employed before you joined the Commission's Staff (Staff)?

A. Yes, I was employed by the Missouri Department of Insurance in a regulatory position.

Q. What is your educational background?

A. In May 1995, I earned a Bachelor of Science degree in Business Administration with an emphasis in Finance and Banking, and Real Estate from the University of Missouri-Columbia. I should complete a Masters in Business Administration from Lincoln University by December 2003.

Q. Have you filed testimony in other cases before this Commission?

A. Yes. I filed testimony in the following cases:

- TR-2001-344 Northeast Missouri Rural Telephone Company
- TC-2001-402 Ozark Telephone Company
- TT-2001-328 Oregon Farmers Mutual Telephone Company
- TC-2002-1076 BPS Telephone Company
- GR-2001-292 Southern Union Company d/b/a Missouri Gas Energy
- ER-2001-672 UtiliCorp United, Inc. d/b/a Missouri Public Service
- ER-2002-424 The Empire District Electric Company
- GM-2003-0238 Southern Union Company d/b/a Missouri Gas Energy

Q. Have you made recommendations in any other cases before this Commission?

A. Yes, I have made recommendations on finance, merger and acquisition cases before this Commission.

Q. What is the purpose of your testimony in this case?

A. My testimony is presented to recommend to the Commission a fair and reasonable rate of return on the Missouri jurisdictional water utility rate base for Missouri-American Water Company (Company, MAWC or Missouri-American).

Q. Have you prepared any schedules in connection with your analysis of the cost of capital for MAWC?

A. Yes. I am sponsoring a study entitled "An Analysis of the Cost of Capital for Missouri-American Water Company, Case Nos. WR-2003-0500 and WC-2004-0168" consisting of 24 schedules which are attached to this direct testimony (see Schedule 1).

Q. What do you conclude is the cost of capital for MAWC?

A. The cost of capital for MAWC is in the range of 6.66 to 6.98 percent.

Economic and Legal Rationale for Regulation

Q. Why are the prices charged to customers by utilities such as MAWC regulated?

A. A primary purpose of price regulation is to restrain the exercise of monopoly power. Monopoly power represents the ability to charge excessive or unduly discriminatory prices. Monopoly power may arise from the presence of economies of scale and/or from the granting of a monopoly franchise.

For services that operate efficiently and have the ability to achieve economies of scale, a monopoly is the most efficient form of market organization. Utility companies can supply service at lower costs if the duplication of facilities by competitors is avoided. This allows the use of larger and more efficient equipment and results in lower per unit costs. For instance, it may cost more to have two or more competing companies maintaining water utility distribution systems and providing competing residential services to one household. This situation could result in price wars and lead to unsatisfactory and perhaps irregular service. For these reasons, exclusive rights may be granted to a single utility to provide service to a given territory. This also creates a more stable environment for operating the utility company. Utility regulation acts as a substitute for the economic control of market competition and allows the consumer to receive adequate utility service at a reasonable price.

Water utility providers such as MAWC provide water utility services essentially under a monopoly franchise. Therefore, it is clear that MAWC has monopoly power.

Another purpose of price regulation is to provide the utility company with an opportunity to earn a fair return on its capital, particularly on investments made as a result of a monopoly franchise.

Q. Please describe your understanding of the legal basis you must use when determining a fair and reasonable return for a public utility.

A. Several landmark decisions by the U.S. Supreme Court provide the legal framework for regulation and for what constitutes a fair and reasonable rate of return for a public utility. Listed below are some of the cases:

1. Munn v. People of Illinois (1877);
2. Bluefield Water Works and Improvement Company (1923);
3. Natural Gas Pipeline Company of America (1942); and
4. Hope Natural Gas Company (1944).

In the case of Munn v. People of Illinois, 94 U.S. 113 (1877), the Court found that:

> . . . when private property is "affected with a public interest, it ceases to be *juris privati* only" . . . . Property does become clothed with a public interest when used in a manner to make it of public consequence, and affect the community at large. When, therefore, one devotes his property to a use in which the public has an interest, he, in effect, grants to the public an interest in that use, and must submit to be controlled by the public for the common good, to the extent of the interest he has thus created. Id at 126.

The Munn decision is important because it states the basis for regulation of both utility and non-utility industries.

In the case of Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia, 262 U.S. 679 (1923), the Supreme Court ruled that a fair return would be:

1. A return "generally being made at the same time" in that "general part of the country";

2. A return achieved by other companies with "corresponding risks and uncertainties"; and

3. A return "sufficient to assure confidence in the financial soundness of the utility".

The Court specifically stated:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally. Id. at 692-3.

In Federal Power Commission et al. v. Natural Gas Pipeline Company of America et al., 315 U.S. 575 (1942), the Court decided that:

> The Constitution does not bind rate-making bodies to the service of any single formula or combination of formulas . . . . If the Commission's order, as applied to the facts before it and viewed in its entirety, produces no arbitrary result, our inquiry is at an end. Id. at 586.

The U.S. Supreme Court also discussed the reasonableness of a return for a utility in the case of Federal Power Commission et al. v. Hope Natural Gas Company, 320 U.S. 591 (1944). The Court stated that:

> The rate-making process . . . , i.e., the fixing of "just and reasonable" rates, involves a balancing of the investor and the consumer interests. Thus we stated . . . that "regulation does not

> insure that the business shall produce net revenues" . . . it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock . . . . By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. Id. at 603.

The Hope case restates the concept of comparable returns to include those achieved by any other enterprises that have "corresponding risks." The Supreme Court also noted in this case that regulation does not guarantee profits to a utility company.

A more recent case heard by the Supreme Court of Pennsylvania discusses the Hope case decision as it relates to balancing the interests of the investors and the consumers. The Supreme Court of Pennsylvania stated that:

> We do not believe, however, . . . that the end result of a rate-making body's adjudication *must* be the setting of rates at a level that will, in any given case, guarantee the continued financial integrity of the utility concerned . . . . In cases where the balancing of consumer interests against the interests of investors causes rates to be set at a "just and reasonable" level which is insufficient to ensure the continued financial integrity of the utility, it may simply be said that the utility has encountered one of the risks that imperil any business enterprise, namely the risk of financial failure. Pennsylvania Electric Company, et al. v. Pennsylvania Public Utility Commission, 502 A.2d 130, 133-34 (1985), cert. denied, 476 U.S. 1137 (1986).

I included the Pennsylvania Electric Company case in my testimony to illustrate a point, which is simply this: captive ratepayers of public utilities should not be forced to bear the brunt of management decisions that result in unnecessarily higher costs. It should be noted that I do not believe that utility companies should be casually subjected to risk of financial failure in a rate case proceeding. However, in the case of inefficient management, I do not believe it would always be appropriate for a regulatory agency to provide sufficient funds for management to continue operations, no matter what the costs are to the ratepayers.

Through these and other court decisions, it has generally been recognized that public utilities can operate more efficiently when they operate as monopolies. It has also been recognized that regulation is required to offset the lack of competition and maintain prices at a reasonable level. It is the regulatory agency's duty to determine a fair rate of return and the appropriate revenue requirement for the utility, while maintaining reasonable prices for the public consumer.

The courts today still believe that a fair return on common equity should be similar to the return for a business with similar risks, but not as high as a highly profitable or speculative venture requires. The authorized return should provide a fair and reasonable return to the investors of the company, while ensuring that excessive earnings do not result from the utility's monopolistic powers. However, this fair and reasonable rate does not necessarily guarantee revenues or the continued financial integrity of the utility.

It should be noted that the courts have determined that a reasonable return may vary over time as economic and business conditions change. Therefore, the past, present and projected economic and business conditions must be analyzed in order to calculate a fair and reasonable rate of return.

Historical Economic Conditions

Q. Please discuss the relevant historical economic conditions in which MAWC has operated.

A. One of the most commonly accepted indicators of economic conditions is the discount rate set by the Federal Reserve Board (the Federal Reserve). The Federal Reserve tries to achieve its monetary policy objectives by controlling the discount rate (the interest rate charged by the Federal Reserve for loans of reserves to depository institutions) and the Federal (Fed) Funds Rate (the overnight lending rate between banks). However, recently the Fed Funds Rate has become the primary means for the Federal Reserve to achieve its monetary policy and the discount rate has become more of a symbolic interest rate. At the end of 1982, the U.S. economy was in the early stages of an economic expansion, following the longest post-World War II recession. This economic expansion began when the Federal Reserve reduced the discount rate seven times in the second half of 1982 in an attempt to stimulate the economy. This reduction in the discount rate led to a reduction in the prime interest rate (the rate charged by banks on short-term loans to borrowers with high credit ratings) from 16.50 percent in June 1982, to 11.50 percent in December 1982. The economic expansion continued for approximately eight years until July 1990, when the economy entered into a recession.

In December 1990, the Federal Reserve responded to the slumping economy by lowering the discount rate to 6.50 percent (see Schedules 2-1 and 2-2). Over the next year-and-a-half, the Federal Reserve lowered the discount rate another six times to a low of 3.00 percent, which had the effect of lowering the prime interest rate to 6.00 percent (see Schedules 3-1 and 3-2).

In 1993, perhaps the most important factor for the U.S. economy was the passage of the North American Free Trade Agreement (NAFTA). NAFTA created a free trade zone consisting of the United States, Canada and Mexico. The rate of economic growth for the fourth quarter of 1993 was one the Federal Reserve believed could not be sustained without experiencing higher inflation. In the first quarter of 1994, the Federal Reserve took steps to try to restrict the economy by increasing interest rates. As a result, on March 24, 1994, the prime interest rate increased to 6.25 percent. On April 18, 1994, the Federal Reserve announced its intention to raise its targeted interest rates, which resulted in the prime interest rate being increased to 6.75 percent. The Federal Reserve took action on May 17, 1994, by raising the discount rate to 3.50 percent. The Federal Reserve took three additional restrictive monetary actions with the last occurring on February 1, 1995. These actions raised the discount rate to 5.25 percent, and in turn banks raised the prime interest rate to 9.00 percent.

The Federal Reserve then reversed its policy in late 1995 by lowering its target for the Fed Funds Rate by 0.25 percentage points on two different occasions. This had the effect of lowering the prime interest rate to 8.50 percent. On January 31, 1996, the Federal Reserve lowered the discount rate to a rate of 5 percent.

The actions of the Federal Reserve from 1996 through 2000 were primarily focused on keeping the level of inflation under control, and it was successful. The inflation rate, as measured by the *Consumer Price Index - All Urban Consumers* (CPI), was at a high of 3.70 percent in March 2000. The increase in CPI stood at 2.10 percent for the period ending June 30, 2003 (see Schedules 4-1 and 4-2). Although inflation has not been a problem recently, the unemployment rate has shown some signs that the job market has loosened, meaning unemployment has increased. While not as high as the January 1993 level of 7.3 percent, the unemployment rate had risen to 6.2 percent as of July 31, 2003 (see Schedule 6), from a low of 3.8 percent in April 2000.

The combination of low inflation and low unemployment had led to a prosperous economy, until recently, as evidenced by the real gross domestic product (GDP) of the United States. Over the period of 1993 through the end of 2000, real GDP had increased every quarter. However, GDP data for the first three quarters of 2001 indicate there was a contraction in the economy during these three quarters. This contraction of GDP for more than two quarters in a row meets the textbook definition of a recession. According to the National Bureau of Economic Research, the recession began in March of 2001 and ended eight months later. Since the recession ended, GDP has been low for the most part from quarter-to-quarter, except for the first and third quarters of 2002. The stock market, as measured by the Dow Jones Composite Index, has increased by 4.48 percent between August 7, 1997 and July 31, 2003, while the Dow Jones Industrial Index has increased by 12.77 percent over that same time frame. The stock market has decreased 30.69 percent as measured by The Value Line Geometric Averages Composite Index from August 7, 1997 through July 31, 2003. The Value Line Geometric Averages Composite Index currently consists of an equally weighted geometric average of 1678 companies as compared to the Dow Jones Composite Index, which consists of a price-weighted arithmetic average of only 65 companies.

After raising the Fed Funds Rate six times in 1999 and 2000 to hold down inflation in a rapidly growing economy, Federal Reserve policy-makers began expressing concern about a slowdown in December 2000. On January 3, 2001, the Federal Open Market Committee lowered the Fed Funds Rate by 50 basis points to 6 percent. In a related action, the Board of Governors approved a decrease in the discount rate to 5.75 percent. These actions were taken in light of further weakening of sales and production, and in the context of lower consumer confidence, tight conditions in some segments of financial markets, slowing of real GDP and high energy prices sapping household and business purchasing power. On January 31, 2001, the Federal Reserve again lowered the Fed Funds Rate by 50 basis points to 5.5 percent in an attempt to provide lower rates for many business and consumer loans. At the same time, the discount rate was also lowered by 50 basis points to 5 percent (see Schedule 2-1). In cutting its benchmark rate by a full point in the first month of 2001, the Federal Reserve had taken its most aggressive action to boost the economy since December 1991. The Federal Reserve justified its actions by citing eroding consumer and business confidence and rising energy costs.

The Federal Reserve cut the Fed Funds Rate a total of eleven times in 2001 with the last rate cut occurring on December 11, 2001, when it lowered the Fed Funds Rate to 1.75 percent. The Federal Reserve again left the Fed Funds Rate unchanged at its March 19, 2002 meeting stating that "the economy is expanding at a significant pace." [Source: MSNBC, "Fed Holds Interest Rate Steady," March 19, 2002, http://www.msnbc.com/news/725818?0dm=C2BHB]

The Federal Reserve announced on May 7, 2002 that, "it would wait for stronger final demand before raising interest rates." The Federal Reserve also noted that inflationary pressures remained subdued, in part because of excellent productivity gains. Therefore, as of May 7, 2002, the Fed Funds Rate remained at 1.75 percent with the discount rate remaining at 1.25 percent. However, on November 6, 2002, the Federal Reserve lowered the Fed Funds Rate to 1.25% and kept it at this level until June 25, 2003, when it decided to lower the rate to 1.00%, a quarter of a percentage point less than some analysts had expected.

On August 12, 2003, the Federal Reserve kept its interest rate target at a 45-year low of 1%, while making an unprecedented prediction that it will stay near that level for some time to come. The Fed also went on to say that the risks to growth in the next few quarters are balanced, but the risk of "undesirably low" price inflation outweighed the risk of inflation rising. The Fed indicated that the risk of falling inflation would be its "predominant concern." However, although the Fed has made a commitment to keeping the Fed Funds Rate at its current level for some time to come, longer-term interest rates have jumped over a full percentage point between mid-June 2003 and early August 2003 (*Wall Street Journal,* p. A2, August 13, 2003).

In light of the above interest rate activity, it is important to reflect on the results of the major stock market indexes in the past year. Based on opening and closing quotes from *Wall Street City* from August 14, 2002 through August 13, 2003, the Dow Jones Industrial Average rose 6.04 percent, the S&P 500 rose 7.00 percent and the NASDAQ rose 26.40 percent.

These economic changes have resulted in cost of capital changes for utilities and are closely reflected in the yields on public utility bonds and yields of Thirty-Year U.S. Treasury Bonds (see Schedule 5-1 and 5-2). Schedule 5-3 shows how closely the Mergent's "Public Utility Bond Yields" have followed the yields of Thirty-Year U.S. Treasury Bonds during the period from 1988 to the present. The average spread for this period between these two composite indices has been 139 basis points, with the spread ranging from a low of 80 basis points to a high of 250 basis points (see Schedule 5-4).

These spread parameters can be utilized with numerous published forecasts of Thirty-Year U.S. Treasury Bond yields to estimate future long-term debt costs for utility companies.

Economic Projections

Q. What are the inflationary expectations for the remainder of 2003 through 2005?

A. The latest inflation rate, as measured by the *Consumer Price Index-All Urban Consumers* (CPI), was 2.1 percent for the 12-months ended July 31, 2003. *The Value Line Investment Survey: Selection & Opinion*, issued May 30, 2003, predicts inflation to be 1.7 percent for 2003, 1.9 percent for 2004 and 2.1 percent for 2005. The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2003-2013*, issued January 2003, states that inflation is expected to be 2.3 percent for 2003, 2.2 percent for 2004 and 2.4 percent for 2005 (see Schedule 6).

Q. What are interest rate forecasts for 2003, 2004 and 2005?

A. Short-term interest rates, those measured by Three-Month U.S. Treasury Bills, are expected to be 1.2 percent in 2003, 1.9 percent in 2004 and 2.6 percent in 2005 according to Value Line's predictions. Value Line expects long-term interest rates, those measured by the Thirty-Year U.S. Treasury Bond, to average 4.7 percent in 2003, 5.1 percent in 2004 and 6.2 percent in 2005.

The current rate for 3-month T-Bills for the period ending July 31, 2003 is 0.92 percent as noted on the Federal Reserve website, http://www.federalreserve.gov/releases/H15/data/m as of August 20, 2003. The rate for

30-year T-Bonds as of August 20, 2003 was 5.27 percent, as quoted on CBSMarketWatch at: http://cbs.marketwatch.com/tools/marketsummary/default.asp?siteid=mktw.

Q. What are the growth expectations for real Gross Domestic Product (GDP) in the future?

A. GDP is a benchmark utilized by the Commerce Department to measure economic growth within the United States' borders. Real GDP is measured by the actual Gross Domestic Product, adjusted for inflation. The Bureau of Economic Analysis reported real GDP growth at 3.1 percent for the quarter ending June 30, 2003. Value Line states that real GDP is expected to increase by 2.0 percent in 2003, 2.9 percent in 2004 and 3.3 percent in 2005. The Congressional Budget Office, _The Budget and Economic Outlook: Fiscal Years 2003-2013_, issued January 2003, states that real GDP is expected to increase by 2.5 percent in 2003, 3.6 percent in 2004 and 3.4 percent in 2005 (see Schedule 6).

Q. Please summarize the expectations of the economic conditions for the next few years.

A. In summary, when combining the previously mentioned sources, inflation is expected to be in the range of 1.7 to 2.4 percent, increase in real GDP in the range of 2.0 to 3.6 percent and long-term interest rates are expected to range from 4.7 to 6.2 percent.

The Value Line Investment Survey: Selection & Opinion, August 15, 2003, states that:

> **The economic picture is starting to brighten.** The improvement is now taking place along several fronts. For example, factory orders are rising; nonmanufacturing activity is picking up strongly; auto sales are moving along at a healthy clip; home buying is still

> quite strong; and income levels are up. Taken together, the firming in business activity suggests that U.S. gross domestic product, which rose at a subdued 2.4% rate in the second quarter, may now start to increase at a somewhat stronger pace.
>
> **The coming progress, though, is likely to take place in increments, rather than all at once.** The main obstacle in the way of a materially stronger business expansion in the months ahead is the absence to date of a meaningful recovery in the job market. Indeed, employment levels have fallen steadily since February. Another problem is the recent runup in long-term interest rates. Although rates remain relatively low, even the moderate increase that we have seen so far will make home buying a less affordable objective for many. In all, we now expect economic growth to average 3%, or perhaps a little more, during the second half.
>
> **Such incremental progress will probably carry over to the earnings side**. Here, too, the second quarter was better, albeit selectively so, with some gains even coming in the tech area, where improvement had been elusive earlier. Thus far, though, more of the progress has come from cost cutting than revenue growth. The somewhat better final-half economy that we see ahead could help redress that imbalance, although we sense that several quarters of moderately accelerated economic growth will be needed to produce a broader-based improvement in corporate earnings.
>
> **The international situation is full of uncertainty, although here, as well, progress is being made,** most notably in working toward a durable peace in Iraq, now that a regime change has been effected. Other hot spots remain, however, particularly across the rest of the Middle East.
>
> **Investors are acting as though the glass is more than half full.** In fact, many market participants remain very bullish, and profit taking is still selective, following the strong price advances of the past several months. With expectations for the economy and earnings so high, equities would seem to be especially vulnerable to negative surprises.

S&P states the following in the August 6, 2003 issue of *The Outlook*:

> Stocks have done well for the last few months. The S&P 500 gained some 25% from its March 2003 low through the end of July. And though we believe stocks will finish the year fairly

> strong, there is likely to be some choppiness in the market for a while. We advise removing a modest 5% from equity positions.
>
> …Our last allocation change was a recommended reduction in bonds from 15% to 10% of investment portfolios. That came immediately after the Federal Reserve lowered its target for the federal funds rate to 1%. On June 25, the date of the Fed's action, the 10-year Treasury note yielded 3.3%. Then bonds plunged in price. At the end of July, the 10-year T-note yielded 4.4%.
>
> The higher bond yields provided increased competition for investor's cash. They also imply a lower fair value for stocks, based on the "Fed model," which compares the yield of the 10-year Treasury to the earnings yield (estimated earnings divided by price) of the index. The higher the Treasury yield rises, the less room stocks have to advance.
>
> We advise switching 5% from stocks into bonds because fixed-income prices could rise a bit after their huge decline. We still see a likely buying opportunity in stocks later this year.

<u>Business Operations of American Water and MAWC</u>

Q. Please describe American Water's (American Water Works Company, Inc., American Water Works or AWK) business operations.

A. American Water's 2002 Annual Report provides a good description of its business operations:

> The primary mission of American Water is to provide high quality, reliable water and wastewater service at an affordable price to our customers while causing minimal impact on the environment in which we operate.
>
> The bulk of the company's activities are centered in locally managed utility subsidiaries that are regulated by the state in which each operates. These water systems—and in some cases wastewater systems—are supported by the resources of American Water, but are essentially independently operated local enterprises that are an integral part of the communities they serve.
>
> …In 2003, American Water became part of RWE AG, one of the world's largest utility groups and the third largest provider of water

> and wastewater services in the world. With the support of RWE and its water subsidiary Thames Water, American Water is well positioned to meet the demand of investments that increase water system reach and capacity, preserve precious water supplies, and deliver water of unquestioned quality to individuals and business that rely on us.
>
> We consider our customers' reliance on us to be a sacred trust, and discharging our duties with diligence, skill and integrity is our highest priority.

American Water's total operating revenues were $1,715,173,000 for the 12 months ended December 31, 2002 versus $1,438,887,000 for the 12 months ended December 31, 2001. These 2002 revenues resulted in an overall net income applicable to common stock of $146,918,000 for an earnings per share of $1.46 as compared to the 2001 net income applicable to common stock of $160,899,000 for an earnings per share of $1.62. These revenues and net incomes were generated from total property, plant and equipment of $6,491,604,000 at December 31, 2002 and $5,621,974,000 for December 31, 2001. These figures were taken from American Water's 2002 Annual Report to Shareholders.

Q. Please describe the business operations of MAWC.

A. MAWC has been providing drinking water to the residents of Missouri since the late 1880s. Missouri-American currently serves over 1.3 million people in more than 100 communities throughout the state. It has nine operations that serve the cities of Brunswick, Jefferson City, Joplin, Mexico, Platte County, St. Charles, St. Joseph, St. Louis County and Warrensburg (http://www.mawc.com/awpr/moaw/media/pdf3254.pdf).

Q. Please describe the credit ratings of MAWC and American Water.

A. As indicated in MAWC's response to Staff Data Information Request No. 3808, "Neither the long-term debt of American Water Works Company, Inc. nor Missouri-American Water Company is rated by any credit rating agencies."

Q. Are any of the companies affiliated with MAWC and American Water rated by the credit rating agencies? If so, please describe these credit ratings.

A. Yes, in response to Staff Data Information Request No. 3814, Missouri-American indicated that American Water Capital Corporation (AWCC), a wholly owned subsidiary of American Water created for the special purpose of serving as the primary funding vehicle for American Water and its subsidiaries, was rated by the credit rating agencies. Missouri-American also indicated that Thames Water PLC, a wholly owned water subsidiary of RWE and parent company to American Water, was rated by the credit rating agencies. Currently, Standard & Poor's Corporation assigns a long-term corporate credit rating of A with a negative outlook on AWCC, which was raised from A- on July 15, 2003, after Standard & Poor's Corporation's review of the company's relationship with its parent, RWE AG. However, Standard & Poor's still rates RWE (A+) one notch higher than AWCC (A). Standard & Poor's believes that on a stand-alone basis, AWCC could be rated at the upper end of the BBB rating category.

On July 15, 2003, Standard & Poor's affirmed it's A+ long-term corporate credit rating on Thames Water PLC. Standard & Poor's also cited support from its parent, RWE, when assigning this credit rating. Standard & Poor's indicates that the stand-alone credit quality of Thames is A. The ratings for AWCC and Thames Water PLC are considered to be "somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rated categories.

However the obligor's capacity to meet its financial commitment on the obligation is still strong" (Standard & Poor's, Corporate Ratings Criteria, 2001).

Q. Please provide some historical financial information for American Water.

A. Schedules 7 and 8 present historical capital structures and selected financial ratios from 1998 through 2002 for American Water. American Water's consolidated common equity ratio has ranged from a high of 37.16 percent to a low of 30.55 percent from 1998 through 2002. As of December 31, 2002, the capital structure used for purposes of calculating the rate of return to be applied to MAWC's rate base has a common equity ratio of 31.85 percent (Schedule 9).

American Water's return on beginning common equity (ROE) has been relatively consistent from 1998 through 2002 with a low of 8.40 percent in 2002 and a high of 10.90 percent in 1998. American Water's market-to-book ratio has ranged from 1.26 times, for year-end 1999, to 2.53 times, for year-end 2002. American Water's pretax interest coverage ratio has ranged from 2.18 times, for year-end 2002, to 2.40 times, for year-ends 1998 and 2001.

Determination of the Cost of Capital

Q. Please describe the approach for determining a utility company's cost of capital.

A. The total dollars of capital for the utility company are determined as of a specific point in time. This total dollar amount is then apportioned into each specific capital component, i.e. common equity, long-term debt, preferred stock and short-term debt. A weighted cost for each capital component is determined by multiplying each capital component ratio by the appropriate embedded cost or by the estimated cost of common equity component. The individual weighted costs are summed to arrive at a total weighted cost of capital. This total weighted average cost of capital (WACC) is synonymous with the fair rate of return for the utility company.

Q. Why is a total WACC synonymous with a fair rate of return?

A. From a financial viewpoint, a company employs different forms of capital to support or fund the assets of the company. Each different form of capital has a cost and these costs are weighted proportionately to fund each dollar invested in the assets.

Assuming that the various forms of capital are within a reasonable balance and are costed correctly, the resulting total weighted cost of capital, when applied to rate base, will provide the funds necessary to service the various forms of capital. Thus, the total WACC corresponds to a fair rate of return for the utility company.

Capital Structure and Embedded Costs

Q. What capital structure did you use for MAWC?

A. I have used American Water's capital structure on a consolidated basis as of December 31, 2002. Schedule 9 presents American Water's capital structure and associated capital ratios. The resulting capital structure consists of 31.85 percent common stock equity, 0.62 percent preferred stock, 63.92 percent long-term debt and 3.61 percent short-term debt.

The amount of long-term debt outstanding on December 31, 2002 includes current maturities due within one year and was reduced by $46,664,336 for the net balance associated with the unamortized premiums, discounts and expenses as reported in MAWC's response to Staff Data Information Request No. 3802 and 3816.

The amount of preferred stock outstanding on December 31, 2002, was reduced by $184,501 for the net balance associated with the unamortized issuance expense as reported in MAWC's response to Staff Data Information Request No. 3802 and 3816.

As of December 31, 2002 American Water had $394,712,000 of short-term debt outstanding with $190,330,000 of Construction Work In Progress (CWIP) outstanding. Therefore, I included a short-term debt balance of $204,382,000 in the capital structure, which is the difference between the amount of short-term debt outstanding and the CWIP outstanding. The difference between actual short-term debt outstanding and CWIP was used for the short-term debt balance because it is assumed that CWIP will eventually be funded by long-term debt and therefore, this portion of rate base should not be considered as funded by short-term debt.

Q. Why didn't you use MAWC's capital structure?

A. Because the creation of AWCC had caused a change to the way in which American Water's subsidiaries received its debt financing, Staff began to contemplate using American Water's capital structure. In order to obtain additional information, Staff conducted a transcribed interview of MAWC and American Water personnel on September 10, 2003. Staff's objective was to obtain additional information in order to make an informed decision on whether to utilize MAWC's capital structure or American Water's capital structure for purposes of determining the rate of return to apply to MAWC's rate base. After obtaining information from the interview, Staff finds that it is appropriate to use American Water's capital structure on a consolidated basis.

Mr. Joseph Hartnett, Jr. provided the following explanation of AWCC during the interviews on September 10, 2003:

> American Water Capital Corp. was created for the purpose of aggregating all of the financing needs of American Water and its utility subsidiaries in order to obtain the lowest cost of capital possible. So American Water Capital Corp. serves as a conduit to enable its participants to access the capital markets both short-term and long-term. In doing so, it also aggregates all of the cash receipts and disbursement functions for its participants. For example, Missouri American's customer receipts come into a Missouri American lock box. Missouri American's disbursements for payroll, payables, wire transfers, etcetera, would be made by American Water Capital Corp. and whatever the net receipt for disbursements for the day was, they would in turn look to American Water Capital Corp. to either provide financing or enable Missouri American to repay financing for that day.

As confirmed by Mr. Hartnett during the interview, this is a consolidation of the subsidiaries' financing needs in order to achieve the lowest cost debt possible.

MAWC is a subsidiary of American Water. If MAWC were a subsidiary that issued all of its own debt, then I may have used MAWC's capital structure, but since American Water recently formed AWCC, MAWC is now receiving part of its debt funds from AWCC, which are guaranteed by American Water, as stated in American Water's 2002 Annual Report.

Q. How did you ensure that your estimated cost of common equity for MAWC reflects the increased risk of American Water on a stand-alone basis?

A. If you use a comparable group of companies that have the same credit rating as the subject company, then the cost of common equity will contemplate the risks associated with this credit rating through the price investors are willing to pay for the stock. However, if you use a comparable group of companies, that has an average credit rating that is different from the subject company, which I did in this case, then you could make an adjustment to the calculated cost of common equity by determining the spread between the average credit rating of the comparables and the subject company. The specifics of this procedure are explained later in my testimony.

Q. What was the embedded cost of long-term debt for American Water on December 31, 2002?

A. The embedded cost of long-term debt for American Water was 6.10 percent on December 31, 2002. I arrived at this figure by adding the total annual cost on American Water's debt and divided this by the total carrying value for American Water's debt. MAWC provided this information in response to Staff Data Information Request No. 3802 and 3816.

Q. What was the embedded cost of preferred stock for American Water on December 31, 2002?

A. The embedded cost of preferred stock for American Water was 7.70 percent on December 31, 2002. I arrived at this figure by adding the total annual cost on American Water's preferred stock and divided this by the total carrying value for American Water's preferred stock. MAWC provided this information in response to Staff Data Information Request Nos. 3802 and 3816.

Q. What was American Water's average cost of short-term debt on December 31, 2002?

A. American Water's average cost of short-term debt was 2.08 percent on December 31, 2002. I arrived at this figure by adopting American Water's calculated cost of short-term debt in MAWC's response to Staff Data Information Request No. 3803.

Cost of Equity

Q. How do you propose to analyze those factors by which the cost of equity for Missouri-American may be determined?

A. I have selected the discounted cash flow (DCF) model as the primary tool to determine the cost of equity for the comparables. However, I also used the risk premium model and the capital asset pricing model to check the reasonableness of the DCF results.

The DCF Model

Q. Please describe the DCF model.

A. The DCF model is a market-oriented approach for deriving the cost of equity. The return on equity calculated from the DCF model is inherently capable of attracting capital. This results from the theory that security prices adjust continually over time, so that an equilibrium price exists and the stock is neither undervalued nor overvalued. It can also be stated that stock prices continually fluctuate to reflect the required and expected return for the investor.

The continuous growth form of the DCF model was used in this analysis. This model relies upon the fact that a company's common stock price is dependent upon the expected cash dividends and upon cash flows received through capital gains or losses that result from stock price changes. The interest rate that discounts the sum of the future expected cash flows to the current market price of the common stock is the calculated cost of equity. This can be expressed algebraically as:

$$\text{Present Price} = \frac{\text{Expected Dividends}}{\text{Discounted by k}} + \frac{\text{Expected Price in 1 year}}{\text{Discounted by k}} \qquad (1)$$

where k equals the cost of equity. Since the expected price of a stock in one year is equal to the present price multiplied by one plus the growth rate, equation (1) can be restated as:

$$\text{Present Price} = \frac{\text{Expected Dividends}}{(1+k)} + \frac{\text{Present Price }(1+g)}{(1+k)} \qquad (2)$$

where g equals the growth rate and k equals the cost of equity. Letting the present price equal P_0 and expected dividends equal D_1, the equation appears as:

$$P_0 = \frac{D_1}{(1+k)} + \frac{P_0(1+g)}{(1+k)} \qquad (3)$$

The cost of equity equation may also be algebraically represented as:

$$k = \frac{D_1}{P_0} + g \qquad (4)$$

Thus, the cost of common stock equity, k, is equal to the expected dividend yield (D_1/P_0) plus the expected growth in dividends (g) continuously summed into the future. The growth in dividends and implied growth in earnings will be reflected in the current price. Therefore, this model also recognizes the potential of capital gains or losses associated with owning a share of common stock.

The discounted cash flow method is a continuous stock valuation model. The DCF theory is based on the following assumptions:

1. Market equilibrium;
2. Perpetual life of the company;
3. Constant payout ratio;

4. Payout of less than 100% earnings;
5. Constant price/earnings ratio;
6. Constant growth in cash dividends;
7. Stability in interest rates over time;
8. Stability in required rates of return over time; and
9. Stability in earned returns over time.

Flowing from these, it is further assumed that an investor's growth horizon is unlimited and that earnings, book values and market prices grow hand-in-hand. Although the entire list of the above assumptions is rarely met, the DCF model is a reasonable working model describing an actual investor's expectations and resulting behaviors.

Q. Can you directly analyze the cost of equity for Missouri-American?

A. No. In order to arrive at a company-specific DCF result, the company must have common stock that is market-traded and it must pay dividends. MAWC's stock is not publicly traded. All of MAWC's stock is owned by its parent, American Water. American Water's stock is no longer publicly traded either. If it were, the same approach could be used in this case as was used in the last cases, Case Nos. WR-2000-281 and SR-2000-282, in which the estimated dividend yield and estimated growth of American Water was analyzed using the DCF model. American Water is no longer publicly traded because it was acquired by RWE AG on January 10, 2003. RWE AG is publicly traded on European exchanges, but because RWE is one of Germany's and Europe's largest fully vertically integrated electric utilities, with significant operations in gas and water, as well as noncore industrial businesses, I chose not to analyze the cost of common equity for RWE AG as a proxy for

Missouri-American. Consequently, I chose to analyze the cost of common equity of publicly traded, United States water utilities for comparability purposes.

Q. How did you determine which companies you would include to represent the comparable water utility companies?

A. Schedule 12 presents a list of market-traded water utility companies monitored by Edward Jones & Company. The criteria that I used to select the comparable companies is as follows:

1. Stock publicly traded & followed by Edward Jones & Company: This criterion was the starting point for selection of comparable companies;
2. Value Line, Standard & Poor's and I/B/E/S 5-year earnings growth projections available: This criterion eliminated four companies;
3. Greater than 80% of revenues from water operations: This criterion eliminated one additional company;
4. Information printed in Value Line: This criterion eliminated two additional companies; and
5. Ten years of Data Available: This criterion did not eliminate any additional companies.

This final group of four publicly traded water utility companies serves as a proxy group for determining a reasonable cost of common equity recommendation for MAWC. The Comparables are listed on Schedule 13.

Q. Please explain how you determined the range of growth used in the DCF formula for the comparable companies (Comparables).

A. I reviewed the Comparables' actual dividends per share (DPS), earnings per share (EPS) and book values per share (BVPS) as well as projected growth rates for the Comparables. Schedule 14-1 lists annual compound growth rates calculated for DPS, EPS and BVPS for the periods of 1992 through 2002. Schedule 14-2 lists the annual compound growth rates for DPS, EPS, and BVPS for the periods of 1997 through 2002. Schedule 14-3 presents the averages of the growth rates determined in Schedules 14-1 and 14-2. Schedule 15 presents the average historical growth rates and the projected growth rates for the Comparables. The projected growth rates were obtained from three outside sources: I/B/E/S Inc.'s Institutional Brokers Estimate System, July 17, 2003; Standard & Poor's Corporation's Earnings Guide, July 2003; and The Value Line Investment Survey: Ratings and Reports, May 2, 2003. The average of the historical and projected growth rates produces an average growth rate of 4.89 percent. Considering all of this information, I chose a reasonable growth rate range of 4.39 percent to 5.39 percent (see Schedule 15). This range of growth (g) is the range that I used in the DCF model to calculate a cost of common equity for the Comparables.

Q. Please explain how you determined the yield term of the DCF formula for the Comparables.

A. The expected yield term (D_1/P_0) of the DCF model is calculated by dividing the amount of common dividends per share expected to be paid over the next twelve months (D_1) by the current market price per share of the firm's common stock (P_0). Even though a strict technical application of the model requires the use of a current spot market price, I have chosen to use a monthly high/low average market price for each of the Comparables. This averaging technique is an attempt to minimize the effects on the dividend yield, which can occur due to daily volatility in the stock market. Schedule 16 presents the average monthly high / low stock price for the period of March 1, 2003 through June 30, 2003 for each Comparable. Column 1 of Schedule 17 indicates the expected dividend for each Comparable over the next 12 months, as projected by The Value Line Investment Survey: Ratings & Reports, May 2, 2003. However, because of the lack of projected dividend information for Middlesex Water Company, I estimated its dividend for the next 12 months by multiplying the 2002 dividend times Middlesex's average historical 5-year and 10-year dividend growth rate. Column 3 of Schedule 17 shows the projected dividend yield for each of the Comparables. The dividend yield for each Comparable was averaged to calculate the projected dividend yield for the Comparables of 3.54 percent.

Q. Please summarize the results of your expected dividend yield and growth rate analysis for the DCF return on equity for the Comparables.

A. The summarized DCF cost of equity estimate for the Comparables is presented as follows:

Yield (D_1/P_0)	+	Growth Rate (g)	=	Cost of Equity (k)
3.54%	+	4.39%	=	7.93%
3.54%	+	5.39%	=	8.93%

Reasonableness of DCF Returns for the Comparable Companies

Q. What analysis was performed to determine the reasonableness of your DCF model derived return on common equity for the comparable company group?

A. I performed a risk premium and capital asset pricing model (CAPM) cost-of-equity analysis for the Comparables.

Q. Please describe the capital asset pricing model.

A. The CAPM describes the relationship between a security's investment risk and its market rate of return. This relationship identifies the rate of return that investors expect a security to earn so that its market return is comparable with the market returns earned by other securities that have similar risk. The general form of the CAPM is as follows:

$$k = R_f + \beta\,(R_m - R_f)$$

where:

k = the expected return on equity for a specific security;
R_f = the risk-free rate;
β = beta; and
$R_m - R_f$ = the market risk premium.

The first term of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level of return that can be achieved without accepting any risk. In reality, there is no such risk-free asset, but it is generally represented by U.S. Treasury securities. For purposes of this analysis, the risk-free rate was represented by the average yield on the 30-Year U.S. Treasury Bond of 4.93 percent for the month of July 2003, as quoted on Yahoo!Finance's Investopedia web site.

The second term of the CAPM is beta (β). Beta is an indicator of a security's investment risk. It represents the relative movement and relative risk between a particular security and the market as a whole (where beta for the market equals 1.00). Securities with betas greater than 1.00 exhibit greater volatility than do securities with betas less than 1.00. This causes a higher beta security to be less desirable and therefore requires a higher return in order to attract investor capital away from a lower beta security. Schedule 18 contains the appropriate betas for the Comparables.

The final term of the CAPM is the market risk premium ($R_m - R_f$). The market risk premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk-free investment. For purposes of this analysis, I looked at two time periods for risk premium estimates. The first risk premium used was based on the long-term period of 1926 to 2002, which was 6.40 percent. The second risk premium used was based on the short-term, recent period of 1993 to 2002, which was determined to be -0.34 percent. These risk premiums were taken from Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2003 Yearbook.

Schedule 18 presents the CAPM analysis with regard to the Comparables. The CAPM analysis produces an estimated cost of common equity of 8.66 percent for the Comparables when using the long-term risk premium period. Using the short-term risk premium period, produces an estimated cost of common equity of 4.73 percent. Although the long-term risk premium CAPM results fall within the range of my DCF analysis, the CAPM has not historically been relied upon by the Financial Analysis Department in determining the cost of equity for a utility company. It is strictly used as a test of reasonableness to provide some comfort with the results of the DCF, and in this case the long-term risk premium CAPM supports the DCF results. Although the short-term risk premium CAPM results are extremely low, it is interesting to observe that the stock market returns over the last ten years have actually been less than the returns on long-term government bonds over the last ten years.

The CAPM results appear to be coming in lower than in the past because interest rates are at forty-year lows and because the market returns have decreased significantly in the past few years. This would lend support to a lower recommended cost of common equity.

Q. Please describe the risk premium model.

A. The risk premium concept implies that the required return on equity is found by adding an explicit premium for risk to a current interest rate. Schedules 19-1 through 19-4 show the average risk premium above the yield on the Thirty-Year U.S. Treasury Bond for each of the Comparables' actual returns on common equity. Although the expected returns on equity are usually used by the Financial Analysis Department for the risk premium analysis, this information was not available for Middlesex Water Company for the period of the analysis so I relied on all of the companies' actual returns on common equity for the sake of consistency. The use of actual returns on equity to perform the risk premium analysis is a commonly accepted practice when estimating the cost of common equity. This analysis shows that, on average, the actual returns on equity as reported by <u>The Value Line Investment Survey: Ratings & Reports</u> ranges from 340 basis points to 546 basis points higher than the average yields on the Thirty-Year U.S. Treasury Bonds for the period of January 1993 through December 2002 (see Schedule 20). The risk premium is then added to the current yield on the Thirty-Year U.S. Treasury Bond. Column 3 of Schedule 20 shows that the risk premium cost of equity estimate for each of the Comparables ranged from 8.33 percent to 10.39 percent, with an average of 9.23 percent.

Q. Please summarize your cost of equity analysis to this point.

A. I have performed a DCF, CAPM and risk premium cost-of-equity analysis on a group of four comparable companies. The results are summarized below.

	DCF	**CAPM**	**Risk Premium**
Comparable Companies	7.93% - 8.93%	8.66%; 4.73%	9.23%

Q. Do you have any adjustments that you need to make to your DCF recommended cost of common equity?

A. Yes. As illustrated in column 5 of Schedule 17, the average cost of equity based on the projected dividend yield added to the average of historical and projected growth is 8.43 percent. However, I made an upward adjustment of 33 basis points in order to take into consideration the fact that in a report issued by Standard & Poor's on July 15, 2003, Standard & Poor's indicated that it believed that on a stand-alone basis, American Water could be rated at the upper end of the BBB rating category, which would be BBB+. Considering that the average credit rating of the comparable companies is A+ (Schedule 21), it is appropriate to make an adjustment to the estimated cost of common equity for the proxy group to reflect the riskier position of American Water. In order to do this, I calculated the average spread of the bond rates for BBB-rated and A-rated public utilities for the past eight years, as published in the Mergent Bond Record, September 2001 and June 2003. This calculation showed a spread of 33 basis points between A-rated bonds and BBB-rated bonds for the past eight years. Because the number of credit rating notches between an A+ and BBB+ credit rating is the same as the number of credit rating notches between an A and BBB credit rating, I chose to use the full 33 basis point spread as an upwards adjustment to the DCF recommended cost of common equity for Missouri-American.

Q. Based on the analysis you performed, what is your recommended return on common equity in this proceeding?

A. I am recommending a return on common equity in the range of 8.26 percent to 9.26 percent, based on the results of the adjusted DCF analysis.

Q. Did you perform an analysis on Missouri-American's resulting pretax interest coverage ratios?

A. Yes. A pro forma pretax interest coverage calculation was completed for MAWC (see Schedule 22). It reveals that the return-on-equity range of 8.26 to 9.26 percent would yield a pretax interest coverage ratio in the range of 2.06 to 2.19 times. This interest coverage range is within Standard & Poor's Utility Financial Targets of 1.80 to 2.80 times for a "BBB" rating for a company with a business position of 3, on a scale of 1 to 10 with 1 being the least risky and 10 being the most risky. A business position of 3 is the average business position for the Comparables.

Additionally, the low end of the return-on-equity range allows enough earnings power for MAWC to meet the net earnings requirement of two times the amount of the annual interest pursuant to provisions of the indentures that MAWC provided in response to Staff Data Information Request 3806. Thus, the pro forma pretax interest coverage test shows that there will be enough earnings potential for MAWC to meet its capital costs, based upon the above-referenced return-on-equity range for MAWC.

Rate of Return for Missouri-American

Q. Please explain how the returns developed for each capital component are used in the ratemaking approach you have adopted to be applied to Missouri-American's Missouri water utility operations.

A. The cost-of-service ratemaking method was adopted in this case. This approach develops the public utility's revenue requirement. The cost of service (revenue requirement) is based on the following components: prudent operation costs, rate base and a return allowed on the rate base (see Schedule 23).

It is my responsibility to calculate and recommend a rate of return that should be authorized on the Missouri jurisdictional water utility rate base for MAWC. Under the cost-of-service ratemaking approach, a weighted average cost of capital in the range of 6.66 to 6.98 percent was developed for MAWC's Missouri water utility operations (see Schedule 24). This rate was calculated by applying an embedded cost of long-term debt of 6.10 percent, an embedded cost of preferred stock of 7.70 percent, an embedded cost of short-term debt of 2.08 percent and a return-on-common-equity range of 8.26 to 9.26 percent to a capital structure consisting of 3.61 percent short-term debt, 63.92 percent long-term debt, 0.62 percent preferred stock and 31.85 percent common equity. Therefore, I am recommending that MAWC's Missouri water utility operations be allowed to earn a return on its original cost rate base in the range of 6.66 to 6.98 percent.

Through my analysis, I believe that I have developed a fair and reasonable return and when applied to MAWC's Missouri jurisdictional water utility rate base, will allow MAWC the opportunity to earn the revenue requirement developed in this rate case.

Q. Does this conclude your prepared direct testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the General Rate Increase for Water and Sewer Service Provided by Missouri-American Water Company.	)))	Case No. WR-2003-0500

Staff of the Missouri Public Service Commission,	)	
	)	Case No. WC-2004-0168
Complainant,	)	
	)	
v.	)	
	)	
Missouri-American Water Company,	)	
	)	
Respondent.	)	

AFFIDAVIT OF DAVID MURRAY

STATE OF MISSOURI	)	
	)	ss.
COUNTY OF COLE	)	

David Murray, being of lawful age, on his oath states: that he has participated in the preparation of the foregoing Direct Testimony in question and answer form, consisting of 35 pages to be presented in the above case; that the answers in the foregoing Direct Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of him knowledge and belief.

David Murray

David Murray

Subscribed and sworn to before me this 1st day of October 2003.

D SUZIE MANKIN
Notary Public - Notary Seal
STATE OF MISSOURI
COLE COUNTY
MY COMMISSION EXP. JUNE 21,2004

D Suzie Mankin

AN ANALYSIS OF THE COST OF CAPITAL

FOR

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2003-0500
AND
WC-2004-0168

SCHEDULES

BY

DAVID MURRAY

UTILITY SERVICES DIVISION

MISSOURI PUBLIC SERVICE COMMISSION

OCTOBER 2003

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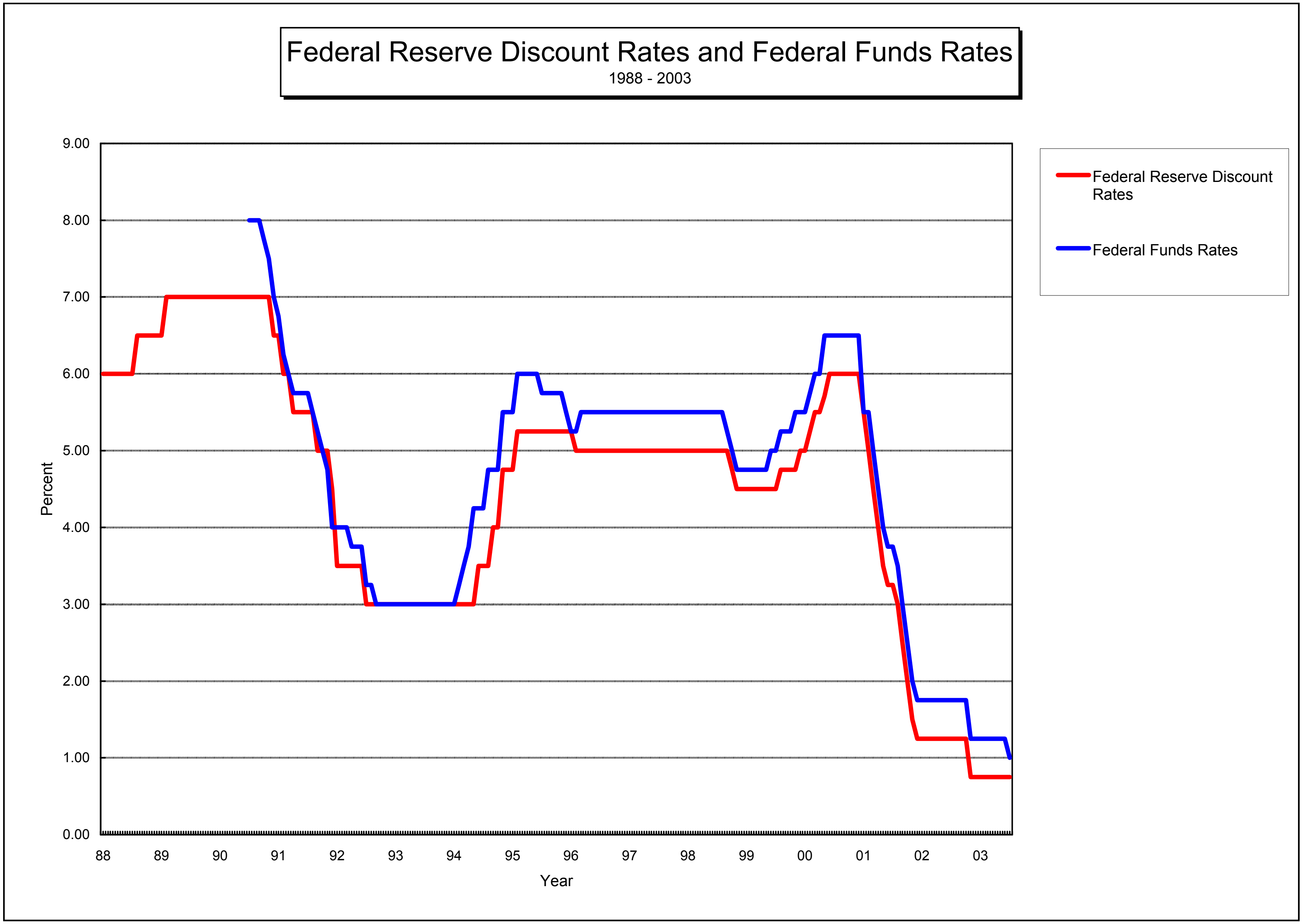
MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Federal Reserve Discount Rate and Federal Funds Rate Changes

Date	Discount Rate	Federal Reserve Rate
05/20/85	7.50%	
03/07/86	7.00%	
04/21/86	6.50%	
07/11/86	6.00%	
08/21/86	5.50%	
09/04/87	6.00%	
08/09/88	6.50%	
02/24/89	7.00%	
07/13/90		8.00% *
10/29/90		7.75%
11/13/90		7.50%
12/07/90		7.25%
12/18/90		7.00%
12/19/90	6.50%	
01/09/91		6.75%
02/01/91	6.00%	6.25%
03/08/91		6.00%
04/30/91	5.50%	5.75%
08/06/91		5.50%
09/13/91	5.00%	5.25%
10/31/91		5.00%
11/06/91	4.50%	4.75%
12/06/91		4.50%
12/20/91	3.50%	4.00%
04/09/92		3.75%
07/02/92	3.00%	3.25%
09/04/92		3.00%
01/01/93		
12/31/93	No Changes	No Changes
02/04/94		3.25%
03/22/94		3.50%
04/18/94		3.75%
05/17/94	3.50%	4.25%
08/16/94	4.00%	4.75%
11/15/94	4.75%	5.50%
02/01/95	5.25%	6.00%
07/06/95		5.75%
12/19/95		5.50%
01/31/96	5.00%	5.25%
03/25/97		5.50%
12/12/97	5.00%	
01/09/98	5.00%	
03/06/98	5.00%	
09/29/98		5.25%
10/15/98	4.75%	5.00%
11/17/98	4.50%	4.75%
06/30/99	4.50%	5.00%
08/24/99	4.75%	5.25%
11/16/99	5.00%	5.50%
02/02/00	5.25%	5.75%
03/21/00	5.50%	6.00%
05/16/00	5.50%	6.50%
05/19/00	6.00%	
01/03/01	5.75%	6.00%
01/04/01	5.50%	
01/31/01	5.00%	5.50%
03/20/01	4.50%	5.00%
04/18/01	4.00%	4.50%
05/15/01	3.50%	4.00%
06/27/01	3.25%	3.75%
08/21/01	3.00%	3.50%
09/17/01	2.50%	3.00%
10/02/01	2.00%	2.50%
11/06/01	1.50%	2.00%
12/11/01	1.25%	1.75%
01/11/02	1.25%	
02/01/02	1.25%	
11/06/02	0.75%	1.25%
06/25/03		1.00%

* Began tracking the Federal Funds Rate.

Sources: Federal Reserve Bank of New York: http://www.ny.frb.org/pihome/statistics/dlyrates/fedrate.html
Historical Changes of the Fed Fund and Discount Rate - Statistics - Federal Reserve Bank of New York


Federal Reserve Discount Rates and Federal Funds Rates
1988 - 2003
Percent
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
88
89
90
91
92
93
94
95
96
97
98
99
00
01
02
03
Year
Federal Reserve Discount Rates
Federal Funds Rates

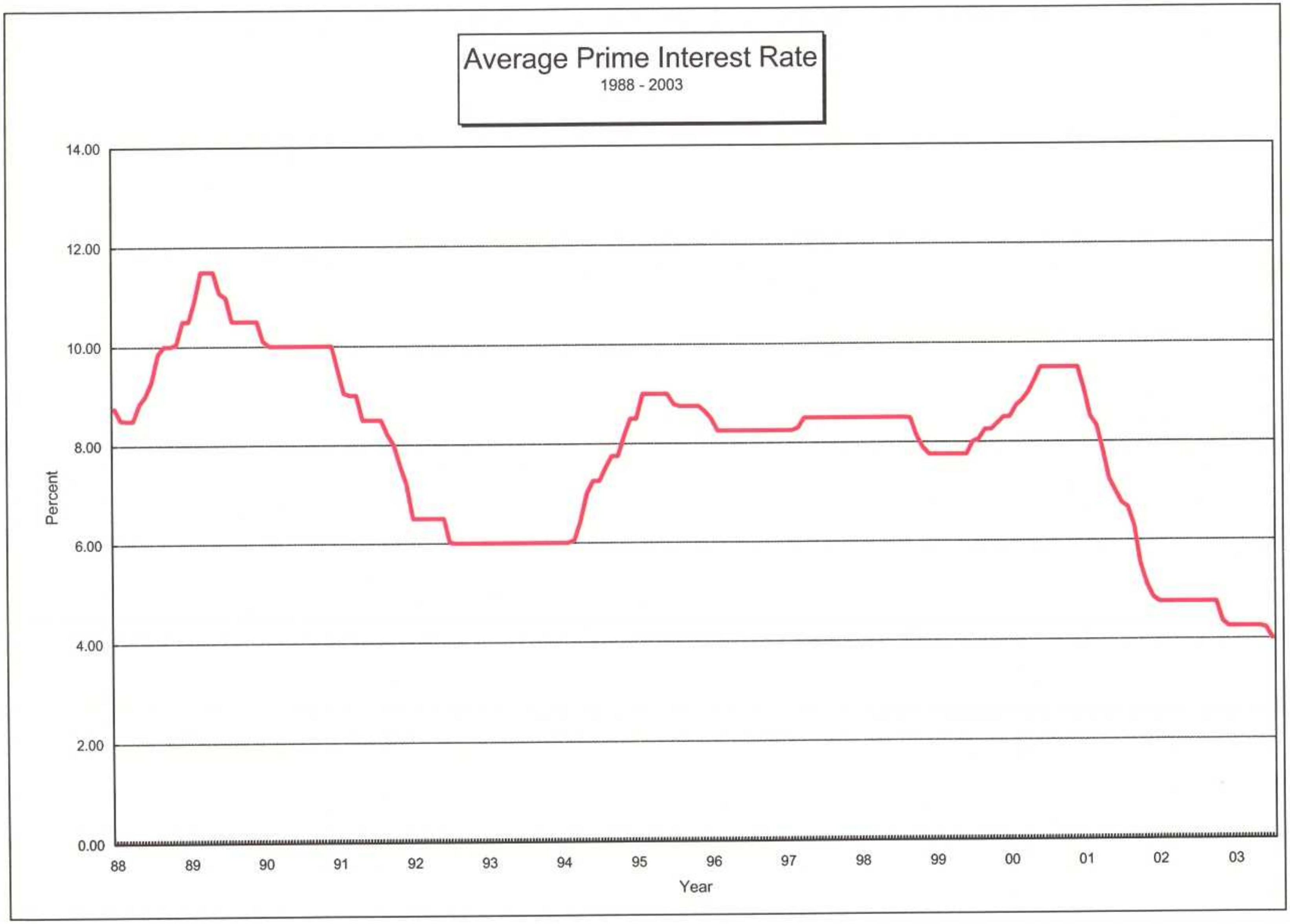
Schedule 2-2

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Average Prime Interest Rates

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1988	8.75	Jan 1992	6.50	Jan 1996	8.50	Jan 2000	8.50
Feb	8.51	Feb	6.50	Feb	8.25	Feb	8.73
Mar	8.50	Mar	6.50	Mar	8.25	Mar	8.83
Apr	8.50	Apr	6.50	Apr	8.25	Apr	9.00
May	8.84	May	6.50	May	8.25	May	9.24
Jun	9.00	Jun	6.50	Jun	8.25	Jun	9.50
Jul	9.29	Jul	6.02	Jul	8.25	Jul	9.50
Aug	9.84	Aug	6.00	Aug	8.25	Aug	9.50
Sep	10.00	Sep	6.00	Sep	8.25	Sep	9.50
Oct	10.00	Oct	6.00	Oct	8.25	Oct	9.50
Nov	10.05	Nov	6.00	Nov	8.25	Nov	9.50
Dec	10.50	Dec	6.00	Dec	8.25	Dec	9.50
Jan 1989	10.50	Jan 1993	6.00	Jan 1997	8.26	Jan 2001	9.05
Feb	10.93	Feb	6.00	Feb	8.25	Feb	8.50
Mar	11.50	Mar	6.00	Mar	8.30	Mar	8.32
Apr	11.50	Apr	6.00	Apr	8.50	Apr	7.80
May	11.50	May	6.00	May	8.50	May	7.24
Jun	11.07	Jun	6.00	Jun	8.50	Jun	6.98
Jul	10.98	Jul	6.00	Jul	8.50	Jul	6.75
Aug	10.50	Aug	6.00	Aug	8.50	Aug	6.67
Sep	10.50	Sep	6.00	Sep	8.50	Sep	6.28
Oct	10.50	Oct	6.00	Oct	8.50	Oct	5.53
Nov	10.50	Nov	6.00	Nov	8.50	Nov	5.10
Dec	10.50	Dec	6.00	Dec	8.50	Dec	4.84
Jan 1990	10.11	Jan 1994	6.00	Jan 1998	8.50	Jan 2002	4.75
Feb	10.00	Feb	6.00	Feb	8.50	Feb	4.75
Mar	10.00	Mar	6.06	Mar	8.50	Mar	4.75
Apr	10.00	Apr	6.45	Apr	8.50	Apr	4.75
May	10.00	May	6.99	May	8.50	May	4.75
Jun	10.00	Jun	7.25	Jun	8.50	Jun	4.75
Jul	10.00	Jul	7.25	Jul	8.50	Jul	4.75
Aug	10.00	Aug	7.51	Aug	8.50	Aug	4.75
Sep	10.00	Sep	7.75	Sep	8.49	Sep	4.75
Oct	10.00	Oct	7.75	Oct	8.12	Oct	4.75
Nov	10.00	Nov	8.15	Nov	7.89	Nov	4.35
Dec	10.00	Dec	8.50	Dec	7.75	Dec	4.25
Jan 1991	9.52	Jan 1995	8.50	Jan 1999	7.75	Jan 2003	4.25
Feb	9.05	Feb	9.00	Feb	7.75	Feb	4.25
Mar	9.00	Mar	9.00	Mar	7.75	Mar	4.25
Apr	9.00	Apr	9.00	Apr	7.75	Apr	4.25
May	8.50	May	9.00	May	7.75	May	4.25
Jun	8.50	Jun	9.00	Jun	7.75	Jun	4.22
Jul	8.50	Jul	8.80	Jul	8.00		
Aug	8.50	Aug	8.75	Aug	8.06		
Sep	8.20	Sep	8.75	Sep	8.25		
Oct	8.00	Oct	8.75	Oct	8.25		
Nov	7.58	Nov	8.75	Nov	8.37		
Dec	7.21	Dec	8.65	Dec	8.50		

Sources: Federal Reserve, http://www.stls.frb.org/fred/data/irates/mprim



Schedule 3-2

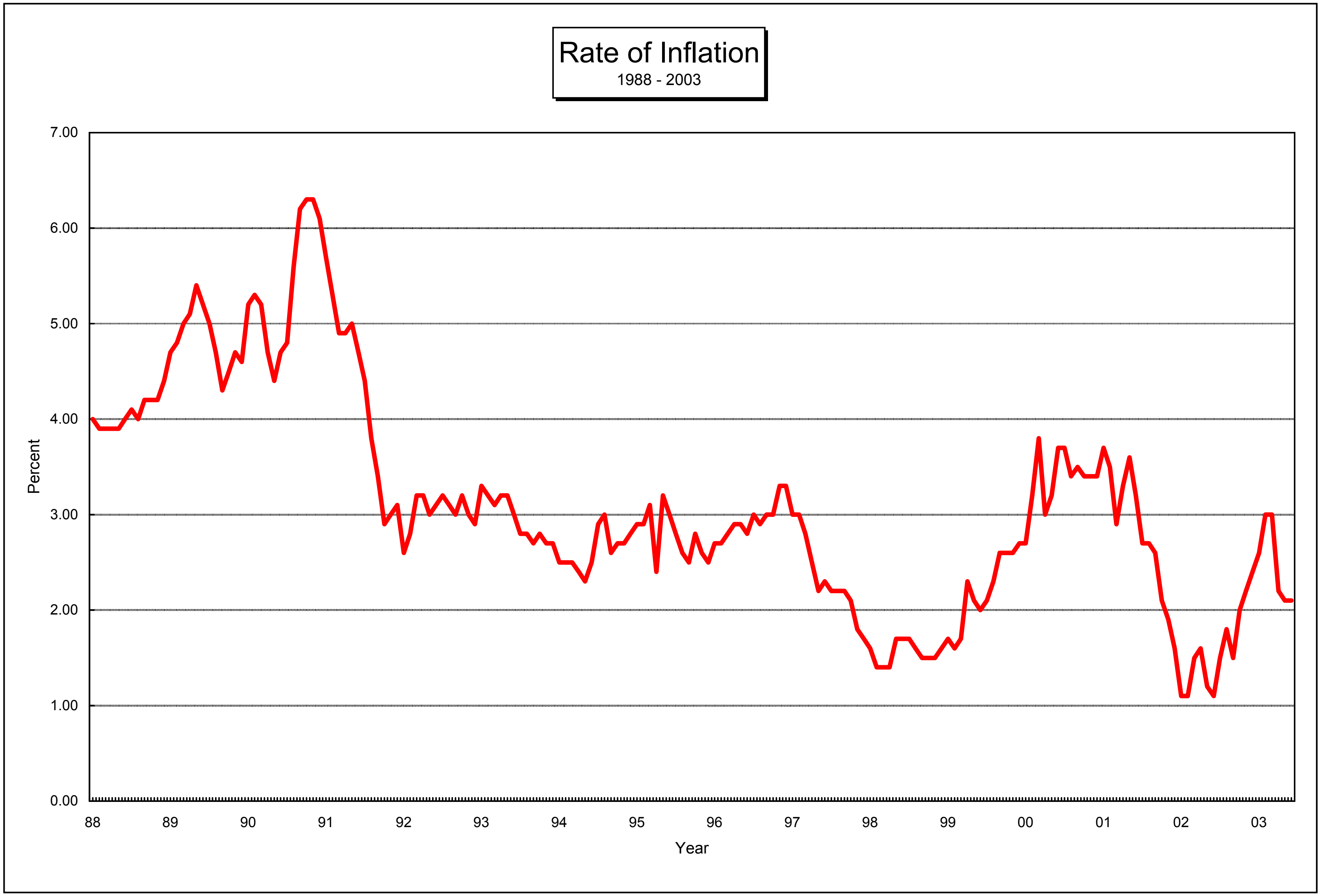
Schedule 3-2

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Rate of Inflation

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1988	4.00	Jan 1992	2.60	Jan 1996	2.70	Jan 2000	2.70
Feb	3.90	Feb	2.80	Feb	2.70	Feb	3.20
Mar	3.90	Mar	3.20	Mar	2.80	Mar	3.70
Apr	3.90	Apr	3.20	Apr	2.90	Apr	3.00
May	3.90	May	3.00	May	2.90	May	3.20
Jun	4.00	Jun	3.10	Jun	2.80	Jun	3.70
Jul	4.10	Jul	3.20	Jul	3.00	Jul	3.70
Aug	4.00	Aug	3.10	Aug	2.90	Aug	3.40
Sep	4.20	Sep	3.00	Sep	3.00	Sep	3.50
Oct	4.20	Oct	3.20	Oct	3.00	Oct	3.40
Nov	4.20	Nov	3.00	Nov	3.30	Nov	3.40
Dec	4.40	Dec	2.90	Dec	3.30	Dec	3.40
Jan 1989	4.70	Jan 1993	3.30	Jan 1997	3.00	Jan 2001	3.70
Feb	4.80	Feb	3.20	Feb	3.00	Feb	3.50
Mar	5.00	Mar	3.10	Mar	2.80	Mar	2.90
Apr	5.10	Apr	3.20	Apr	2.50	Apr	3.30
May	5.40	May	3.20	May	2.20	May	3.60
Jun	5.20	Jun	3.00	Jun	2.30	Jun	3.20
Jul	5.00	Jul	2.80	Jul	2.20	Jul	2.70
Aug	4.70	Aug	2.80	Aug	2.20	Aug	2.70
Sep	4.30	Sep	2.70	Sep	2.20	Sep	2.60
Oct	4.50	Oct	2.80	Oct	2.10	Oct	2.10
Nov	4.70	Nov	2.70	Nov	1.80	Nov	1.90
Dec	4.60	Dec	2.70	Dec	1.70	Dec	1.60
Jan 1990	5.20	Jan 1994	2.50	Jan 1998	1.60	Jan 2002	1.10
Feb	5.30	Feb	2.50	Feb	1.40	Feb	1.10
Mar	5.20	Mar	2.50	Mar	1.40	Mar	1.50
Apr	4.70	Apr	2.40	Apr	1.40	Apr	1.60
May	4.40	May	2.30	May	1.70	May	1.20
Jun	4.70	Jun	2.50	Jun	1.70	Jun	1.10
Jul	4.80	Jul	2.90	Jul	1.70	Jul	1.50
Aug	5.60	Aug	3.00	Aug	1.60	Aug	1.80
Sep	6.20	Sep	2.60	Sep	1.50	Sep	1.50
Oct	6.30	Oct	2.70	Oct	1.50	Oct	2.00
Nov	6.30	Nov	2.70	Nov	1.50	Nov	2.20
Dec	6.10	Dec	2.80	Dec	1.60	Dec	2.40
Jan 1991	5.70	Jan 1995	2.90	Jan 1999	1.70	Jan 2003	2.60
Feb	5.30	Feb	2.90	Feb	1.60	Feb	3.00
Mar	4.90	Mar	3.10	Mar	1.70	Mar	3.00
Apr	4.90	Apr	2.40	Apr	2.30	Apr	2.20
May	5.00	May	3.20	May	2.10	May	2.10
Jun	4.70	Jun	3.00	Jun	2.00	Jun	2.10
Jul	4.40	Jul	2.80	Jul	2.10		
Aug	3.80	Aug	2.60	Aug	2.30		
Sep	3.40	Sep	2.50	Sep	2.60		
Oct	2.90	Oct	2.80	Oct	2.60		
Nov	3.00	Nov	2.60	Nov	2.60		
Dec	3.10	Dec	2.50	Dec	2.70		

Source: U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, Change for 12-Month Period, Bureau of Labor Statistics, ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt



Rate of Inflation
1988 - 2003
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Percent
88
89
90
91
92
93
94
95
96
97
98
99
00
01
02
03
Year

Schedule 4-2

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Average Yields on Mergent's Public Utility Bonds

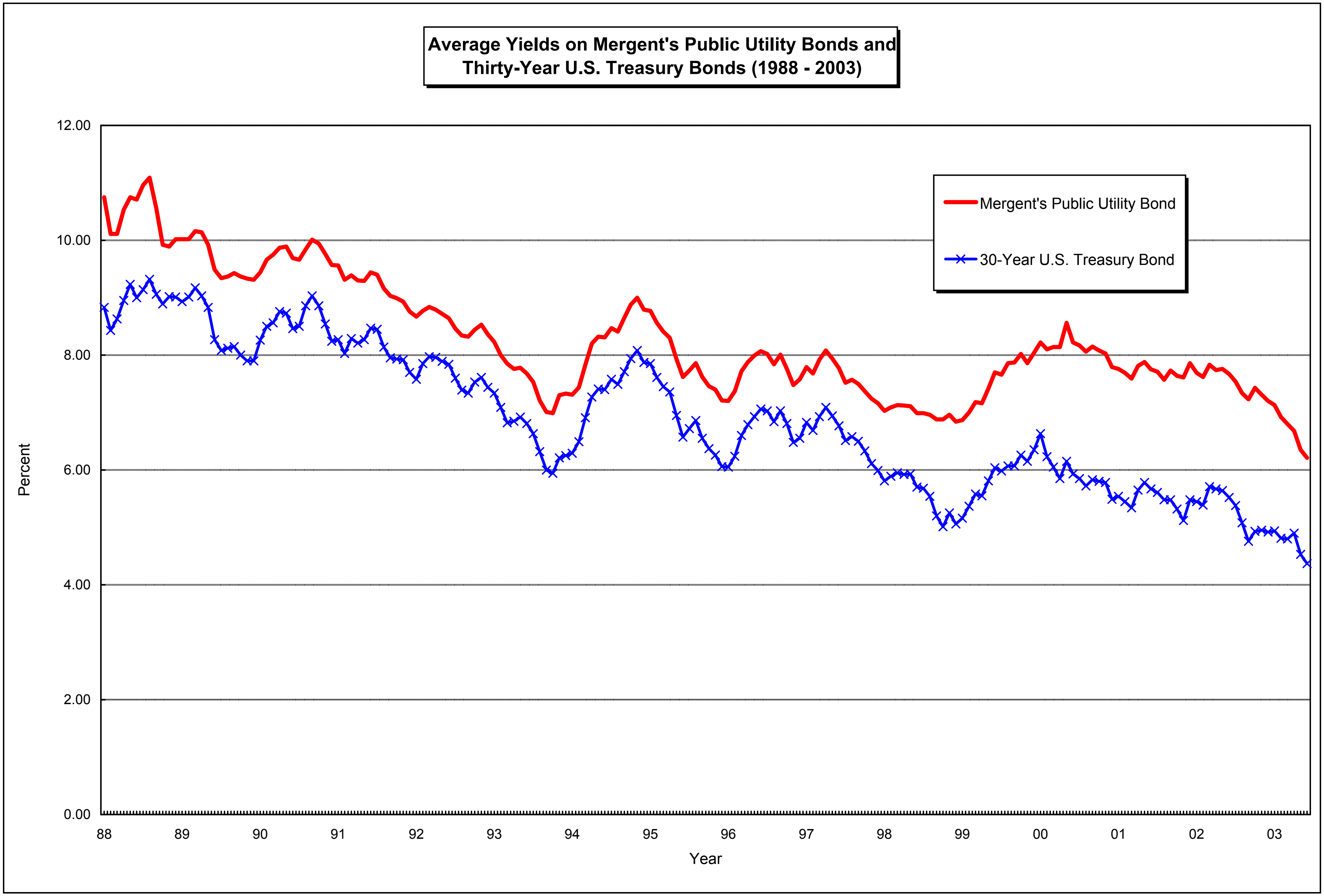
Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1988	10.75	Jan 1992	8.67	Jan 1996	7.20	Jan 2000	8.22
Feb	10.11	Feb	8.77	Feb	7.37	Feb	8.10
Mar	10.11	Mar	8.84	Mar	7.72	Mar	8.14
Apr	10.53	Apr	8.79	Apr	7.88	Apr	8.14
May	10.75	May	8.72	May	7.99	May	8.55
Jun	10.71	Jun	8.64	Jun	8.07	Jun	8.22
Jul	10.96	Jul	8.46	Jul	8.02	Jul	8.17
Aug	11.09	Aug	8.34	Aug	7.84	Aug	8.05
Sep	10.56	Sep	8.32	Sep	8.01	Sep	8.16
Oct	9.92	Oct	8.44	Oct	7.76	Oct	8.08
Nov	9.89	Nov	8.53	Nov	7.48	Nov	8.03
Dec	10.02	Dec	8.36	Dec	7.58	Dec	7.79
Jan 1989	10.02	Jan 1993	8.23	Jan 1997	7.79	Jan 2001	7.76
Feb	10.02	Feb	8.00	Feb	7.68	Feb	7.69
Mar	10.16	Mar	7.85	Mar	7.92	Mar	7.59
Apr	10.14	Apr	7.76	Apr	8.08	Apr	7.81
May	9.92	May	7.78	May	7.94	May	7.88
Jun	9.49	Jun	7.68	Jun	7.77	Jun	7.75
Jul	9.34	Jul	7.53	Jul	7.52	Jul	7.71
Aug	9.37	Aug	7.21	Aug	7.57	Aug	7.57
Sep	9.43	Sep	7.01	Sep	7.50	Sep	7.73
Oct	9.37	Oct	6.99	Oct	7.37	Oct	7.64
Nov	9.33	Nov	7.30	Nov	7.24	Nov	7.61
Dec	9.31	Dec	7.33	Dec	7.16	Dec	7.86
Jan 1990	9.44	Jan 1994	7.31	Jan 1998	7.03	Jan 2002	7.69
Feb	9.66	Feb	7.44	Feb	7.09	Feb	7.62
Mar	9.75	Mar	7.83	Mar	7.13	Mar	7.83
Apr	9.87	Apr	8.20	Apr	7.12	Apr	7.74
May	9.89	May	8.32	May	7.11	May	7.76
Jun	9.69	Jun	8.31	Jun	6.99	Jun	7.67
Jul	9.66	Jul	8.47	Jul	6.99	Jul	7.54
Aug	9.84	Aug	8.41	Aug	6.96	Aug	7.34
Sep	10.01	Sep	8.65	Sep	6.88	Sep	7.23
Oct	9.94	Oct	8.88	Oct	6.88	Oct	7.43
Nov	9.76	Nov	9.00	Nov	6.96	Nov	7.31
Dec	9.57	Dec	8.79	Dec	6.84	Dec	7.20
Jan 1991	9.56	Jan 1995	8.77	Jan 1999	6.87	Jan 2003	7.13
Feb	9.31	Feb	8.56	Feb	7.00	Feb	6.92
Mar	9.39	Mar	8.41	Mar	7.18	Mar	6.80
Apr	9.30	Apr	8.30	Apr	7.16	Apr	6.68
May	9.29	May	7.93	May	7.42	May	6.35
Jun	9.44	Jun	7.62	Jun	7.70	Jun	6.21
Jul	9.40	Jul	7.73	Jul	7.66		
Aug	9.16	Aug	7.86	Aug	7.86		
Sep	9.03	Sep	7.62	Sep	7.87		
Oct	8.99	Oct	7.46	Oct	8.02		
Nov	8.93	Nov	7.40	Nov	7.86		
Dec	8.76	Dec	7.21	Dec	8.04		

Source: Mergent Bond Record

Average Yields on Thirty-Year U.S. Treasury Bonds

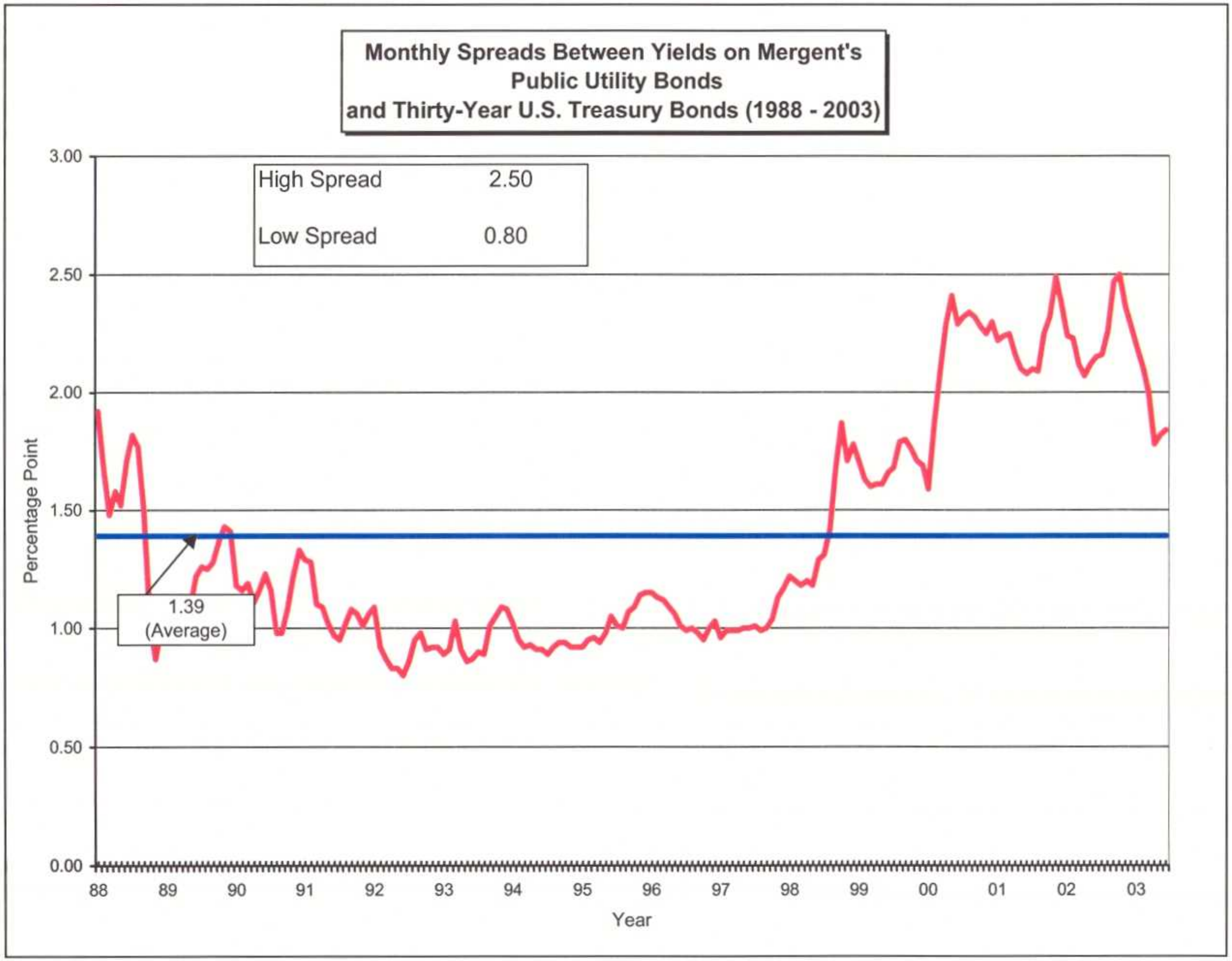
Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1988	8.83	Jan 1992	7.58	Jan 1996	6.05	Jan 2000	6.63
Feb	8.43	Feb	7.85	Feb	6.24	Feb	6.23
Mar	8.63	Mar	7.97	Mar	6.60	Mar	6.05
Apr	8.95	Apr	7.96	Apr	6.79	Apr	5.85
May	9.23	May	7.89	May	6.93	May	6.15
Jun	9.00	Jun	7.84	Jun	7.06	Jun	5.93
Jul	9.14	Jul	7.60	Jul	7.03	Jul	5.85
Aug	9.32	Aug	7.39	Aug	6.84	Aug	5.72
Sep	9.06	Sep	7.34	Sep	7.03	Sep	5.83
Oct	8.89	Oct	7.53	Oct	6.81	Oct	5.80
Nov	9.02	Nov	7.61	Nov	6.48	Nov	5.78
Dec	9.01	Dec	7.44	Dec	6.55	Dec	5.49
Jan 1989	8.93	Jan 1993	7.34	Jan 1997	6.83	Jan 2001	5.54
Feb	9.01	Feb	7.09	Feb	6.69	Feb	5.45
Mar	9.17	Mar	6.82	Mar	6.93	Mar	5.34
Apr	9.03	Apr	6.85	Apr	7.09	Apr	5.65
May	8.83	May	6.92	May	6.94	May	5.78
Jun	8.27	Jun	6.81	Jun	6.77	Jun	5.67
Jul	8.08	Jul	6.63	Jul	6.51	Jul	5.61
Aug	8.12	Aug	6.32	Aug	6.58	Aug	5.48
Sep	8.15	Sep	6.00	Sep	6.50	Sep	5.48
Oct	8.00	Oct	5.94	Oct	6.33	Oct	5.32
Nov	7.90	Nov	6.21	Nov	6.11	Nov	5.12
Dec	7.90	Dec	6.25	Dec	5.99	Dec	5.48
Jan 1990	8.26	Jan 1994	6.29	Jan 1998	5.81	Jan 2002	5.45
Feb	8.50	Feb	6.49	Feb	5.89	Feb	5.39
Mar	8.56	Mar	6.91	Mar	5.95	Mar	5.71
Apr	8.76	Apr	7.27	Apr	5.92	Apr	5.67
May	8.73	May	7.41	May	5.93	May	5.64
Jun	8.46	Jun	7.40	Jun	5.70	Jun	5.52
Jul	8.50	Jul	7.58	Jul	5.68	Jul	5.38
Aug	8.86	Aug	7.49	Aug	5.54	Aug	5.08
Sep	9.03	Sep	7.71	Sep	5.20	Sep	4.76
Oct	8.86	Oct	7.94	Oct	5.01	Oct	4.93
Nov	8.54	Nov	8.08	Nov	5.25	Nov	4.95
Dec	8.24	Dec	7.87	Dec	5.06	Dec	4.92
Jan 1991	8.27	Jan 1995	7.85	Jan 1999	5.16	Jan 2003	4.94
Feb	8.03	Feb	7.61	Feb	5.37	Feb	4.81
Mar	8.29	Mar	7.45	Mar	5.58	Mar	4.80
Apr	8.21	Apr	7.36	Apr	5.55	Apr	4.90
May	8.27	May	6.95	May	5.81	May	4.53
Jun	8.47	Jun	6.57	Jun	6.04	Jun	4.37
Jul	8.45	Jul	6.72	Jul	5.98	Jul	4.93
Aug	8.14	Aug	6.86	Aug	6.07		
Sep	7.95	Sep	6.55	Sep	6.07		
Oct	7.93	Oct	6.37	Oct	6.26		
Nov	7.92	Nov	6.26	Nov	6.15		
Dec	7.70	Dec	6.06	Dec	6.35		

Source: Federal Reserve, http://www.stls.frb.org/fred/data/irates/gs30



Schedule 5-3

Schedule 5-3



Monthly Spreads Between Yields on Mergent's
Public Utility Bonds
and Thirty-Year U.S. Treasury Bonds (1988 - 2003)
High Spread 2.50
Low Spread 0.80
1.39
(Average)
Percentage Point
3.00
2.50
2.00
1.50
1.00
0.50
0.00
88
89
90
91
92
93
94
95
96
97
98
99
00
01
02
03
Year

Schedule 5-4

Economic Estimates and Projections, 2003-2005

	Inflation Rate			Real GDP			Unemployment			3-Mo. T-Bill Rate			30-Yr. T-Bond Rate		
Source	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
Value Line *Investment Survey* (5/30/03)	1.70%	1.90%	2.10%	2.00%	2.90%	3.30%	6.10%	6.00%	5.70%	1.20%	1.90%	2.60%	4.70%	5.10%	6.20%
The Congressional Budget Office *The Budget and Economic Outlook* (01/03)	2.30%	2.20%	2.40%	2.50%	3.60%	3.40%	5.90%	5.70%	5.40%	1.40%	3.50%	4.80%	N.A.	N.A.	N.A.
Current rate	2.10%			3.10%			6.20%			0.92%			5.27%		

Notes: N.A. = Not Available.

Sources of Current Rates:

The Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, 12-Month Period Ending July 31, 2003
Federal Reserve website, http://www.stis.frb.org/fred/data/irates.html, for the 12-month period ending July 31, 2003
U.S. Department of Commerce, Bureau of Economic Analysis, for the 12-month period ending July 31, 2003
The Bureau of Labor Statistics, Economy at a Glance - Unemployment Rate, July 2003
http://cbs.marketwatch.com/tools/marketsummary/default.asp?siteid=mktw on August 20, 2003

Other Sources:

The Congressional Budget Office, The Budget and Economic Outlook: Fiscal Years 2003-2013, January 2003 as published on http://www.cbo.gov/showdoc.cfm?index=3277&sequence=13

Schedule 6

Historical Consolidated Capital Structures for American Water

(Dollars in thousands)

Capital Components	1998	1999	2000	2001	2002
Common Equity	$1,239,174.0	$1,634,798.0	$1,669,677.0	$1,758,018.0	$1,801,921.0
Preferred Stock	97,089.0	93,811.0	52,693.0	49,415.0	33,858.0
Long-Term Debt	2,159,332.0 *	2,431,452.0 *	2,432,560.0 *	2,716,106.0 *	3,668,589.0 *
Short-Term Debt	88,590.0	239,864.0	412,179.0	414,083.0	394,712.0
Total	$3,584,185.0	$4,399,925.0	$4,567,109.0	$4,937,622.0	$5,899,080.0

Capital Structure	1998	1999	2000	2001	2002
Common Equity	34.57%	37.16%	36.56%	35.60%	30.55%
Preferred Stock	2.71%	2.13%	1.15%	1.00%	0.57%
Long-Term Debt	60.25% *	55.26% *	53.26% *	55.01% *	62.19% *
Short-Term Debt	2.47%	5.45%	9.02%	8.39%	6.69%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Note: *Includes current maturities on long-term debt.

Source: American Water's Annual Reports 1998 - 2002.

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Selected Financial Ratios for American Water

Financial Ratios	1998	1999	2000	2001	2002
Return on Beginning Common Equity	10.90%	9.10%	9.60%	9.60%	8.40%
Earnings Per Common Share	1.54	1.40	1.61	1.61	1.46
Cash Dividends Per Common Share	0.82	0.86	0.90	0.94	0.98
Common Dividend Payout Ratio	53.00%	61.00%	56.00%	58.00%	67.12%
Year-End Market Price Per Common Share	$33.75	$21.25	$29.38	$41.75	$45.48
Year-End Book Value Per Common Share	$15.46	$16.82	$16.92	$17.58	$18.00
Year-End Market-to-Book Ratio	2.18	1.26	1.74	2.38	2.53
Pretax Interest Coverage Ratio	2.40 x	2.30 x	2.30 x	2.40 x	2.18 x
Senior Debt Rating	N.A.	N.A.	N.A.	N.A.	N.A.

Notes:

Because the financial data was not directly provided in American Water's 2002 Annual Report
the following formulas were used to calculate ratios for that year.

Return on Beginning Common Equity = Net Income Available for Common Stock / Beginning Common Shareholders' Equity.

Common Dividend Payout Ratio = Common Dividends Paid / Net Income Available for Common Stock.

Year-End Market-to-Book Ratio = Year-End Market Price Per Common Share / Year-End Book Value Per Common Share.

Pretax Interest Coverage Ratio = Earnings Before Taxes + Total Interest Expense / Total Interest Expense.

Sources: American Water's 1998 - 2002 Annual Reports
Standard & Poor's Stock Guide, January 2003

Schedule 8

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2003-0500

Capital Structure as of December 31, 2002
for American Water

Capital Component	Amount in Dollars	Percentage of Capital
Common Stock Equity	$1,801,921,000	31.85%
Preferred Stock	34,917,399	0.62%
Long-Term Debt	3,616,021,335	63.92%
Short-Term Debt	204,382,000	3.61%
Total Capitalization	**$5,657,241,734**	**100.00%**

Water Utility Financial Ratio Benchmarks
Total Debt / Total Capital - Including Preferred Stock

Standard & Poor's RatingsDirect July 7, 2000	Lower Quartile **A**	Median **A**	Upper Quartile **A**
	53%	56%	61%

Note: See Schedule 10 for the amount of Long-Term Debt at 12/31/02.
See Schedule 11 for the amount of Preferred Stock outstanding at 12/31/02.

For purposes of this analysis, the amount of Short-term Debt outstanding at December 31, 2002 was set at $204,382,000. This results from the fact that the amount of Construction Work in Progress was $190,330,000 as indicated American Water's 2002 Annual Report. This amount was deducted from the short-term debt balance of $394,712,000 indicated in American Water's 2002 Annual Report.

Source: Missouri-American Water Company's response to Staff's Data Information Request Nos. 3801 and 38

Embedded Cost of Long-Term Debt as of December 31, 2002
for American Water and Subsidiary Companies

Total Annual Cost:	$220,433,910	
Total Carrying Value:	$3,616,021,335	
Embedded Cost = Total Annual Cost/Total Carrying Value		6.10%

Sources: Missouri-American Water Company's response to Staff's Data Information Requests Nos. 3802 and 3816.

Embedded Cost of Preferred Stock as of December 31, 2002 for American Water and Subsidiary Companies

Total Annual Cost:	$2,687,868	
Total Carrying Value:	$34,917,399	
Embedded Cost = Total Annual Cost/Total Carrying Value		7.70%

Sources: Missouri-American Water Company's response to Staff's Data Information Requests Nos. 3802 and 3816.

Criteria for Selecting Comparable Water Utility Companies

Water Utility Companies	(1) Stock Publicly Traded & Followed By E. Jones & Company	(2) Value Line, S&P and I/B/E/S 5-Year Earnings Growth Projections Available	(3) >80% of Revenues from Water Operations	(4) Information Printed in Value Line	(5) 10-Years of Data Available	(6) Comparable Company
American States Water Company	Yes	Yes	Yes	Yes	Yes	Yes
Artesian Resources Corporation	Yes	Yes	Yes	No		
BIW Ltd.	Yes	No				
California Water Service Group	Yes	Yes	Yes	Yes	Yes	Yes
Connecticut Water Service, Inc.	Yes	No				
Middlesex Water Company	Yes	Yes	Yes	Yes	Yes	Yes
Pennichuck Corporation	Yes	No				
Philadelphia Suburan Corporation	Yes	Yes	Yes	Yes	Yes	Yes
SJW Corporation	Yes	No				
Southwest Water Company	Yes	Yes	No			
York Water Company	Yes	Yes	Yes	No		

Sources: Column 1 = Edward Jones & Co.'s Quarterly Financial & Common Stock Information - Water Utility Industry, March 31, 2003

Column 2 = The Value Line Investment Survey, May 2, 2003, Standard & Poor's Corporation's Earnings Guide, July 2003 and I/B/E/S Inc.'s Institutional Brokers Estimate System (Utility Sector Five-Year Growth Rate-Company Data by Industry), May 15, 2003

Column 3 = C.A. Turner Utility Reports, June 2003

Columns 4 and 5 = The Value Line Investment Survey, May 2, 2003

Four Comparable Water Utility Companies

Number	Ticker Symbol	Company Name
1	AWR	American States Water Company
2	CWT	California Water Services Group
3	MSEX	Middlesex Water Company
4	PSC	Philadelphia Suburban Corporation

Ten-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Comparable Water Utility Companies

	Dividends Per Share		Earnings Per Share		Book Value Per Share	
Company Name	1992	2002	1992	2002	1992	2002
American States Water Company	$0.77	$0.87	$1.15	$1.34	$8.85	$14.05
California Water Services Group	$0.93	$1.12	$1.09	$1.25	$10.51	$13.12
Middlesex Water Company	$0.65	$0.85	$0.80	$0.97	$6.86	$9.85
Philadelphia Suburban Corporation	$0.33	$0.54	$0.39	$0.90	$3.48	$7.26

------------------- Annual Compound Growth Rates -------------------

	DPS	EPS	BVPS	
Company Name	1992 - 2002	1992 - 2002	1992 - 2002	Average
American States Water Company	1.23%	1.54%	4.73%	2.50%
California Water Services Group	1.88%	1.38%	2.24%	1.83%
Middlesex Water Company	2.72%	1.95%	3.68%	2.78%
Philadelphia Suburban Corporation	5.05%	8.72%	7.63%	7.13%
Average	**2.72%**	**3.40%**	**4.57%**	
Standard Deviation	1.45%	3.08%	1.97%	

Source: The Value Line Investment Survey: Ratings & Reports, May 2, 2003.

Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Comparable Water Utility Companies

	Dividends Per Share		Earnings Per Share		Book Value Per Share	
Company Name	1997	2002	1997	2002	1997	2002
American States Water Company	$0.83	$0.87	$1.04	$1.34	$11.24	$14.05
California Water Services Group	$1.06	$1.12	$1.83	$1.25	$13.00	$13.12
Middlesex Water Company	$0.75	$0.85	$0.89	$0.97	$8.00	$9.85
Philadelphia Suburban Corporation	$0.40	$0.54	$0.57	$0.90	$4.73	$7.26

------------------ Annual Compound Growth Rates ------------------

	DPS	EPS	BVPS	
Company Name	1997 - 2002	1997 - 2002	1997 - 2002	Average
American States Water Company	0.95%	5.20%	4.56%	3.57%
California Water Services Group	1.11%	-7.34%	0.18%	-2.02%
Middlesex Water Company	2.53%	1.74%	4.25%	2.84%
Philadelphia Suburban Corporation	6.19%	9.57%	8.95%	8.23%
Average	**2.69%**	**2.29%**	**4.49%**	
Standard Deviation	2.11%	6.21%	3.10%	

Source: The Value Line Investment Survey: Ratings & Reports, May 2, 2003.

Average of Ten and Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Comparable Water Utility Companies

Company Name	10-Year Average DPS, EPS & BVPS	5-Year Average DPS, EPS & BVPS	Average of 5-Year & 10-Year Averages
American States Water Company	2.50%	3.57%	3.03%
California Water Services Group	1.83%	-2.02%	-0.09%
Middlesex Water Company	2.78%	2.84%	2.81%
Philadelphia Suburban Corporation	7.13%	8.23%	7.68%
Average	**3.56%**	**3.16%**	**3.36%**

Historical & Projected Growth Rates for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)
Company Name	**Historical Growth Rate (DPS, EPS, & BVPS)**	**Projected 5-Year Growth I/B/E/S (median)**	**Projected 5-Year EPS Growth (S&P)**	**Projected 3-5 Year EPS Growth (Value Line)**	**Average Projected Growth**	**Average Historical & Projected Growth**
American States Water Company	3.03%	3.00%	3.00%	6.00%	4.00%	**3.52%**
California Water Services Group	-0.09%	3.00%	3.00%	9.00%	5.00%	**2.45%**
Middlesex Water Company	2.81%	7.00%	7.00%	7.00%	7.00%	**4.91%**
Philadelphia Suburban Corporation	7.68%	10.00%	9.00%	10.00%	9.67%	**8.67%**
Average	**3.36%**	**5.75%**	**5.50%**	**8.00%**	**6.42%**	**4.89%**
				Proposed Range of Growth		**4.39% - 5.39%**

Notes : Column 5 = [(Sum of Columns 2 through 4) / 3]
Column 6 = [(Sum of Columns 1 and 5) / 2]

Sources: Column 1 = Average Historical DPS, EPS, & BVPS Growth Rates from Schedule 14-3.
Column 2 = I/B/E/S Inc.'s Institutional Brokers Estimate System (Utility Sector Five-Year Growth Rate-Company Data by Industry), July 17, 2003
Column 3 = Standard & Poor's Corporation's Earnings Guide, July 2003.
Column 4 = The Value Line Investment Survey: Ratings and Reports, May 2, 2003.

Schedule 15

Average High/Low Stock Price for March 2003 through June 2003 for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	March 2003		April 2003		May 2003		June 2003		
Company Name	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	Average High/Low Stock Price
American States Water Company	$24.600	$22.600	$26.070	$23.450	$26.860	$24.800	$28.950	$25.700	**$25.379**
California Water Services Group	$26.350	$24.650	$27.590	$25.100	$28.850	$26.100	$31.400	$26.510	**$27.069**
Middlesex Water Company	$23.360	$21.710	$22.690	$21.760	$23.500	$21.880	$24.650	$22.740	**$22.786**
Philadelphia Suburban Corporation	$22.290	$20.440	$23.160	$21.520	$23.840	$22.150	$24.810	$23.000	**$22.651**

Notes: Column 9 = [(Sum of Columns 1 through 8) / 8]

Sources: S&P Stock Guides: July 2003, June 2003, May 2003, April 2003

Schedule 16

Discounted Cash Flow (DCF) Cost-of-Common-Equity Estimates for the Four Comparable Water Utility Companies

	(1)		(2)	(3)	(4)	(5)
Company Name	Expected Dividend		Average High/Low Stock Price	Projected Dividend Yield	Average Growth Rate	Cost of Common Equity
American States Water Company	$0.89		$25.379	3.51%	3.52%	7.03%
California Water Services Group	$1.15		$27.069	4.23%	2.45%	6.68%
Middlesex Water Company	$0.87	*	$22.786	3.83%	4.91%	8.74%
Philadelphia Suburban Corporation	$0.59		$22.651	2.58%	8.67%	11.25%
				3.54%	**4.89%**	**8.43%**

Proposed Dividend Yield	**3.54%**
Proposed Range of Growth	**4.39 - 5.39%**
Estimated Cost of Equity	**7.93 - 8.93%**

Notes: Column 3 = [Column 1 / Column 2]
Column 5 = [Column 3 + Column 4]

Sources: Column 1 = The Value Line Investment Survey: Ratings and Reports, May 02, 2003
Average of 2003 estimated DPS and 2004 estimated DPS
*Except for Middlesex, which was calculated by taking the 2002 dividend times the average historical 5-year and 10-year dividend growth rate.
Column 2 = Schedule 16.
Column 4 = Schedule 15.

Schedule 17

Capital Asset Pricing Model (CAPM) Cost-of-Common-Equity Estimates for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)
Company Name	**Risk-Free Rate**	**Company's Beta**	**Market Risk Premium (1926-2002)**	**Market Risk Premium (1993-2002)**	**Cost of Common Equity (1926-2002)**	**Cost of Common Equity (1993-2002)**
American States Water Company	4.93%	0.60	6.40%	-0.34%	8.77%	4.73%
California Water Services Group	4.93%	0.60	6.40%	-0.34%	8.77%	4.73%
Middlesex Water Company	4.93%	0.55	6.40%	-0.34%	8.45%	4.74%
Philadelphia Suburban Corporation	4.93%	0.70	6.40%	-0.34%	9.41%	4.69%
Average		**0.58**			**8.66%**	**4.73%**

Notes:

Column 5 = [Column 1 + (Column 2 * Column 3)] .

Column 6 = [Column 1 + (Column 2 * Column 4)] .

Sources:

Column 1 = The appropriate yield is equal to the average 30-Year U.S. Treasury Bond yield for July 2003 which was obtained from Yahoo Finance at http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole as reported by The Value Line Investment Survey: Ratings & Reports, May 2, 2003.

Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk-free investment. The approriate Market Risk Premium for the period 1926-2002 was determined to be 6.40% as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2003 Yearbook.

Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk-free investment. The approriate Market Risk Premium for the period 1993-2002 was determined to be -0.34% as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2003 Yearbook.

Schedule 18

MISSOURI-AMERICAN WATER
COMPANY
CASE NO. WR-2003-0500

Average Risk Premium Above the Yields of 30-Year U.S. Treasury Bonds for American States Water Company's Actual Returns on Common Equity

Mo/Year	American States' Actual ROE	30-Year U.S. Treasury Bond Yields	American States' Risk Premium
Jan 1993	10.20%	7.34%	2.86%
Feb	10.20%	7.09%	3.11%
Mar	10.20%	6.82%	3.38%
Apr	10.20%	6.85%	3.35%
May	10.20%	6.92%	3.28%
Jun	10.20%	6.81%	3.39%
Jul	10.20%	6.63%	3.57%
Aug	10.20%	6.32%	3.88%
Sep	10.20%	6.00%	4.20%
Oct	10.20%	5.94%	4.26%
Nov	10.20%	6.21%	3.99%
Dec	10.20%	6.25%	3.95%
Jan 1994	9.50%	6.29%	3.21%
Feb	9.50%	6.49%	3.01%
Mar	9.50%	6.91%	2.59%
Apr	9.50%	7.27%	2.23%
May	9.50%	7.41%	2.09%
Jun	9.50%	7.40%	2.10%
Jul	9.50%	7.58%	1.92%
Aug	9.50%	7.49%	2.01%
Sep	9.50%	7.71%	1.79%
Oct	9.50%	7.94%	1.56%
Nov	9.50%	8.08%	1.42%
Dec	9.50%	7.87%	1.63%
Jan 1995	10.00%	7.85%	2.15%
Feb	10.00%	7.61%	2.39%
Mar	10.00%	7.45%	2.55%
Apr	10.00%	7.36%	2.64%
May	10.00%	6.95%	3.05%
Jun	10.00%	6.57%	3.43%
Jul	10.00%	6.72%	3.28%
Aug	10.00%	6.86%	3.14%
Sep	10.00%	6.55%	3.45%
Oct	10.00%	6.37%	3.63%
Nov	10.00%	6.26%	3.74%
Dec	10.00%	6.06%	3.94%
Jan 1996	9.00%	6.05%	2.95%
Feb	9.00%	6.24%	2.76%
Mar	9.00%	6.60%	2.40%
Apr	9.00%	6.79%	2.21%
May	9.00%	6.93%	2.07%
Jun	9.00%	7.06%	1.94%
Jul	9.00%	7.03%	1.97%
Aug	9.00%	6.84%	2.16%
Sep	9.00%	7.03%	1.97%
Oct	9.00%	6.81%	2.19%
Nov	9.00%	6.48%	2.52%
Dec	9.00%	6.55%	2.45%
Jan 1997	9.20%	6.83%	2.37%
Feb	9.20%	6.69%	2.51%
Mar	9.20%	6.93%	2.27%
Apr	9.20%	7.09%	2.11%
May	9.20%	6.94%	2.26%
Jun	9.20%	6.77%	2.43%
Jul	9.20%	6.51%	2.69%
Aug	9.20%	6.58%	2.62%
Sep	9.20%	6.50%	2.70%
Oct	9.20%	6.33%	2.87%
Nov	9.20%	6.11%	3.09%
Dec	9.20%	5.99%	3.21%

Mo/Year	American States' Actual ROE	30-Year U.S. Treasury Bond Yields	American Stat Risk Premium
Jan 1998	9.40%	5.81%	3.59%
Feb	9.40%	5.89%	3.51%
Mar	9.40%	5.95%	3.45%
Apr	9.40%	5.92%	3.48%
May	9.40%	5.93%	3.47%
Jun	9.40%	5.70%	3.70%
Jul	9.40%	5.68%	3.72%
Aug	9.40%	5.54%	3.86%
Sep	9.40%	5.20%	4.20%
Oct	9.40%	5.01%	4.39%
Nov	9.40%	5.25%	4.15%
Dec	9.40%	5.06%	4.34%
Jan 1999	10.10%	5.16%	4.94%
Feb	10.10%	5.37%	4.73%
Mar	10.10%	5.58%	4.52%
Apr	10.10%	5.55%	4.55%
May	10.10%	5.81%	4.29%
June	10.10%	6.04%	4.06%
July	10.10%	5.98%	4.12%
Aug	10.10%	6.07%	4.03%
Sept	10.10%	6.07%	4.03%
Oct	10.10%	6.26%	3.84%
Nov	10.10%	6.15%	3.95%
Dec	10.10%	6.35%	3.75%
Jan 2000	9.30%	6.63%	2.67%
Feb	9.30%	6.23%	3.07%
March	9.30%	6.05%	3.25%
Apr	9.30%	5.85%	3.45%
May	9.30%	6.15%	3.15%
June	9.30%	5.93%	3.37%
July	9.30%	5.85%	3.45%
Aug	9.30%	5.72%	3.58%
Sept	9.30%	5.83%	3.47%
Oct	9.30%	5.80%	3.50%
Nov	9.30%	5.78%	3.52%
Dec	9.30%	5.49%	3.81%
Jan 2001	10.10%	5.54%	4.56%
Feb	10.10%	5.45%	4.65%
March	10.10%	5.34%	4.76%
Apr	10.10%	5.65%	4.45%
May	10.10%	5.78%	4.32%
June	10.10%	5.67%	4.43%
July	10.10%	5.61%	4.49%
Aug	10.10%	5.48%	4.62%
Sept	10.10%	5.48%	4.62%
Oct	10.10%	5.32%	4.78%
Nov	10.10%	5.12%	4.98%
Dec	10.10%	5.48%	4.62%
Jan 2002	9.50%	5.45%	4.05%
Feb	9.50%	5.40%	4.10%
Mar	9.50%	5.71%	3.79%
Apr	9.50%	5.67%	3.83%
May	9.50%	5.64%	3.86%
June	9.50%	5.52%	3.98%
July	9.50%	5.38%	4.12%
Aug	9.50%	5.08%	4.42%
Sept	9.50%	4.76%	4.74%
Oct	9.50%	4.93%	4.57%
Nov	9.50%	4.95%	4.55%
Dec	9.50%	4.92%	4.58%

Summary Information (January 1993 - December 2002)

Average Risk Premium:	3.40%
High Risk Premium:	4.98%
Low Risk Premium:	1.42%

Sources: The Value Line Investment Survey: Ratings & Reports.
St. Louis Federal Reserve Website: http://www.stls.frb.org/fred/data/irates/gs30
Yahoo Finance at:
http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

MISSOURI-AMERICAN WATER
COMPANY
CASE NO. WR-2003-0500

Average Risk Premium Above the Yields of 30-Year U.S. Treasury Bonds for California Water Service Group's Actual Returns on Common Equity

Mo/Year	California Water's Actual ROE	30-Year U.S. Treasury Bond Yields	California Water's Risk Premium
Jan 1993	12.40%	7.34%	5.06%
Feb	12.40%	7.09%	5.31%
Mar	12.40%	6.82%	5.58%
Apr	12.40%	6.85%	5.55%
May	12.40%	6.92%	5.48%
Jun	12.40%	6.81%	5.59%
Jul	12.40%	6.63%	5.77%
Aug	12.40%	6.32%	6.08%
Sep	12.40%	6.00%	6.40%
Oct	12.40%	5.94%	6.46%
Nov	12.40%	6.21%	6.19%
Dec	12.40%	6.25%	6.15%
Jan 1994	9.90%	6.29%	3.61%
Feb	9.90%	6.49%	3.41%
Mar	9.90%	6.91%	2.99%
Apr	9.90%	7.27%	2.63%
May	9.90%	7.41%	2.49%
Jun	9.90%	7.40%	2.50%
Jul	9.90%	7.58%	2.32%
Aug	9.90%	7.49%	2.41%
Sep	9.90%	7.71%	2.19%
Oct	9.90%	7.94%	1.96%
Nov	9.90%	8.08%	1.82%
Dec	9.90%	7.87%	2.03%
Jan 1995	9.90%	7.85%	2.05%
Feb	9.90%	7.61%	2.29%
Mar	9.90%	7.45%	2.45%
Apr	9.90%	7.36%	2.54%
May	9.90%	6.95%	2.95%
Jun	9.90%	6.57%	3.33%
Jul	9.90%	6.72%	3.18%
Aug	9.90%	6.86%	3.04%
Sep	9.90%	6.55%	3.35%
Oct	9.90%	6.37%	3.53%
Nov	9.90%	6.26%	3.64%
Dec	9.90%	6.06%	3.84%
Jan 1996	12.30%	6.05%	6.25%
Feb	12.30%	6.24%	6.06%
Mar	12.30%	6.60%	5.70%
Apr	12.30%	6.79%	5.51%
May	12.30%	6.93%	5.37%
Jun	12.30%	7.06%	5.24%
Jul	12.30%	7.03%	5.27%
Aug	12.30%	6.84%	5.46%
Sep	12.30%	7.03%	5.27%
Oct	12.30%	6.81%	5.49%
Nov	12.30%	6.48%	5.82%
Dec	12.30%	6.55%	5.75%
Jan 1997	14.10%	6.83%	7.27%
Feb	14.10%	6.69%	7.41%
Mar	14.10%	6.93%	7.17%
Apr	14.10%	7.09%	7.01%
May	14.10%	6.94%	7.16%
Jun	14.10%	6.77%	7.33%
Jul	14.10%	6.51%	7.59%
Aug	14.10%	6.58%	7.52%
Sep	14.10%	6.50%	7.60%
Oct	14.10%	6.33%	7.77%
Nov	14.10%	6.11%	7.99%
Dec	14.10%	5.99%	8.11%

Mo/Year	California Water's Actual ROE	30-Year U.S. Treasury Bond Yields	California Wat Risk Premium
Jan 1998	10.80%	5.81%	4.99%
Feb	10.80%	5.89%	4.91%
Mar	10.80%	5.95%	4.85%
Apr	10.80%	5.92%	4.88%
May	10.80%	5.93%	4.87%
Jun	10.80%	5.70%	5.10%
Jul	10.80%	5.68%	5.12%
Aug	10.80%	5.54%	5.26%
Sep	10.80%	5.20%	5.60%
Oct	10.80%	5.01%	5.79%
Nov	10.80%	5.25%	5.55%
Dec	10.80%	5.06%	5.74%
Jan 1999	11.40%	5.16%	6.24%
Feb	11.40%	5.37%	6.03%
Mar	11.40%	5.58%	5.82%
Apr	11.40%	5.55%	5.85%
May	11.40%	5.81%	5.59%
June	11.40%	6.04%	5.36%
July	11.40%	5.98%	5.42%
Aug	11.40%	6.07%	5.33%
Sept	11.40%	6.07%	5.33%
Oct	11.40%	6.26%	5.14%
Nov	11.40%	6.15%	5.25%
Dec	11.40%	6.35%	5.05%
Jan 2000	10.10%	6.63%	3.47%
Feb	10.10%	6.23%	3.87%
March	10.10%	6.05%	4.05%
Apr	10.10%	5.85%	4.25%
May	10.10%	6.15%	3.95%
June	10.10%	5.93%	4.17%
July	10.10%	5.85%	4.25%
Aug	10.10%	5.72%	4.38%
Sept	10.10%	5.83%	4.27%
Oct	10.10%	5.80%	4.30%
Nov	10.10%	5.78%	4.32%
Dec	10.10%	5.49%	4.61%
Jan 2001	7.20%	5.54%	1.66%
Feb	7.20%	5.45%	1.75%
March	7.20%	5.34%	1.86%
Apr	7.20%	5.65%	1.55%
May	7.20%	5.78%	1.42%
June	7.20%	5.67%	1.53%
July	7.20%	5.61%	1.59%
Aug	7.20%	5.48%	1.72%
Sept	7.20%	5.48%	1.72%
Oct	7.20%	5.32%	1.88%
Nov	7.20%	5.12%	2.08%
Dec	7.20%	5.48%	1.72%
Jan 2002	9.50%	5.45%	4.05%
Feb	9.50%	5.40%	4.10%
Mar	9.50%	5.71%	3.79%
Apr	9.50%	5.67%	3.83%
May	9.50%	5.64%	3.86%
June	9.50%	5.52%	3.98%
July	9.50%	5.38%	4.12%
Aug	9.50%	5.08%	4.42%
Sept	9.50%	4.76%	4.74%
Oct	9.50%	4.93%	4.57%
Nov	9.50%	4.95%	4.55%
Dec	9.50%	4.92%	4.58%

Summary Information (January 1993 - December 2002)

Average Risk Premium:	4.53%
High Risk Premium:	8.11%
Low Risk Premium:	1.42%

Sources: The Value Line Investment Survey: Ratings & Reports.
St. Louis Federal Reserve Website: http://www.stls.frb.org/fred/data/irates/gs30
Yahoo Finance at:
http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

MISSOURI-AMERICAN WATER
COMPANY
CASE NO. WR-2003-0500

Average Risk Premium Above the Yields of 30-Year U.S. Treasury Bonds for Middlesex Water Company's Actual Returns on Common Equity

Mo/Year	Middlesex's Actual ROE	30-Year U.S. Treasury Bond Yields	Middlesex's Risk Premium
Jan 1993	11.70%	7.34%	4.36%
Feb	11.70%	7.09%	4.61%
Mar	11.70%	6.82%	4.88%
Apr	11.70%	6.85%	4.85%
May	11.70%	6.92%	4.78%
Jun	11.70%	6.81%	4.89%
Jul	11.70%	6.63%	5.07%
Aug	11.70%	6.32%	5.38%
Sep	11.70%	6.00%	5.70%
Oct	11.70%	5.94%	5.76%
Nov	11.70%	6.21%	5.49%
Dec	11.70%	6.25%	5.45%
Jan 1994	11.50%	6.29%	5.21%
Feb	11.50%	6.49%	5.01%
Mar	11.50%	6.91%	4.59%
Apr	11.50%	7.27%	4.23%
May	11.50%	7.41%	4.09%
Jun	11.50%	7.40%	4.10%
Jul	11.50%	7.58%	3.92%
Aug	11.50%	7.49%	4.01%
Sep	11.50%	7.71%	3.79%
Oct	11.50%	7.94%	3.56%
Nov	11.50%	8.08%	3.42%
Dec	11.50%	7.87%	3.63%
Jan 1995	11.30%	7.85%	3.45%
Feb	11.30%	7.61%	3.69%
Mar	11.30%	7.45%	3.85%
Apr	11.30%	7.36%	3.94%
May	11.30%	6.95%	4.35%
Jun	11.30%	6.57%	4.73%
Jul	11.30%	6.72%	4.58%
Aug	11.30%	6.86%	4.44%
Sep	11.30%	6.55%	4.75%
Oct	11.30%	6.37%	4.93%
Nov	11.30%	6.26%	5.04%
Dec	11.30%	6.06%	5.24%
Jan 1996	10.00%	6.05%	3.95%
Feb	10.00%	6.24%	3.76%
Mar	10.00%	6.60%	3.40%
Apr	10.00%	6.79%	3.21%
May	10.00%	6.93%	3.07%
Jun	10.00%	7.06%	2.94%
Jul	10.00%	7.03%	2.97%
Aug	10.00%	6.84%	3.16%
Sep	10.00%	7.03%	2.97%
Oct	10.00%	6.81%	3.19%
Nov	10.00%	6.48%	3.52%
Dec	10.00%	6.55%	3.45%
Jan 1997	10.40%	6.83%	3.57%
Feb	10.40%	6.69%	3.71%
Mar	10.40%	6.93%	3.47%
Apr	10.40%	7.09%	3.31%
May	10.40%	6.94%	3.46%
Jun	10.40%	6.77%	3.63%
Jul	10.40%	6.51%	3.89%
Aug	10.40%	6.58%	3.82%
Sep	10.40%	6.50%	3.90%
Oct	10.40%	6.33%	4.07%
Nov	10.40%	6.11%	4.29%
Dec	10.40%	5.99%	4.41%

Mo/Year	Middlesex's Actual ROE	30-Year U.S. Treasury Bond Yields	Middlesex's Risk Premium
Jan 1998	9.10%	5.81%	3.29%
Feb	9.10%	5.89%	3.21%
Mar	9.10%	5.95%	3.15%
Apr	9.10%	5.92%	3.18%
May	9.10%	5.93%	3.17%
Jun	9.10%	5.70%	3.40%
Jul	9.10%	5.68%	3.42%
Aug	9.10%	5.54%	3.56%
Sep	9.10%	5.20%	3.90%
Oct	9.10%	5.01%	4.09%
Nov	9.10%	5.25%	3.85%
Dec	9.10%	5.06%	4.04%
Jan 1999	10.60%	5.16%	5.44%
Feb	10.60%	5.37%	5.23%
Mar	10.60%	5.58%	5.02%
Apr	10.60%	5.55%	5.05%
May	10.60%	5.81%	4.79%
June	10.60%	6.04%	4.56%
July	10.60%	5.98%	4.62%
Aug	10.60%	6.07%	4.53%
Sept	10.60%	6.07%	4.53%
Oct	10.60%	6.26%	4.34%
Nov	10.60%	6.15%	4.45%
Dec	10.60%	6.35%	4.25%
Jan 2000	7.10%	6.63%	0.47%
Feb	7.10%	6.23%	0.87%
March	7.10%	6.05%	1.05%
Apr	7.10%	5.85%	1.25%
May	7.10%	6.15%	0.95%
June	7.10%	5.93%	1.17%
July	7.10%	5.85%	1.25%
Aug	7.10%	5.72%	1.38%
Sept	7.10%	5.83%	1.27%
Oct	7.10%	5.80%	1.30%
Nov	7.10%	5.78%	1.32%
Dec	7.10%	5.49%	1.61%
Jan 2001	9.10%	5.54%	3.56%
Feb	9.10%	5.45%	3.65%
March	9.10%	5.34%	3.76%
Apr	9.10%	5.65%	3.45%
May	9.10%	5.78%	3.32%
June	9.10%	5.67%	3.43%
July	9.10%	5.61%	3.49%
Aug	9.10%	5.48%	3.62%
Sept	9.10%	5.48%	3.62%
Oct	9.10%	5.32%	3.78%
Nov	9.10%	5.12%	3.98%
Dec	9.10%	5.48%	3.62%
Jan 2002	9.60%	5.45%	4.15%
Feb	9.60%	5.40%	4.20%
Mar	9.60%	5.71%	3.89%
Apr	9.60%	5.67%	3.93%
May	9.60%	5.64%	3.96%
June	9.60%	5.52%	4.08%
July	9.60%	5.38%	4.22%
Aug	9.60%	5.08%	4.52%
Sept	9.60%	4.76%	4.84%
Oct	9.60%	4.93%	4.67%
Nov	9.60%	4.95%	4.65%
Dec	9.60%	4.92%	4.68%

Summary Information (January 1993 - December 2002)

Average Risk Premium:	3.81%
High Risk Premium:	5.76%
Low Risk Premium:	0.47%

Sources: The Value Line Investment Survey: Ratings & Reports.
St. Louis Federal Reserve Website: http://www.stls.frb.org/fred/data/irates/gs30
Yahoo Finance at:
http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

MISSOURI-AMERICAN WATER
COMPANY
CASE NO. WR-2003-0500

Average Risk Premium Above the Yields of 30-Year U.S. Treasury Bonds for Philadelphia Suburban Corporation's Actual Returns on Common Equity

Mo/Year	Philadelphia's Actual ROE	30-Year U.S. Treasury Bond Yields	Philadelphia's Risk Premium
Jan 1993	10.20%	7.34%	2.86%
Feb	10.20%	7.09%	3.11%
Mar	10.20%	6.82%	3.38%
Apr	10.20%	6.85%	3.35%
May	10.20%	6.92%	3.28%
Jun	10.20%	6.81%	3.39%
Jul	10.20%	6.63%	3.57%
Aug	10.20%	6.32%	3.88%
Sep	10.20%	6.00%	4.20%
Oct	10.20%	5.94%	4.26%
Nov	10.20%	6.21%	3.99%
Dec	10.20%	6.25%	3.95%
Jan 1994	10.30%	6.29%	4.01%
Feb	10.30%	6.49%	3.81%
Mar	10.30%	6.91%	3.39%
Apr	10.30%	7.27%	3.03%
May	10.30%	7.41%	2.89%
Jun	10.30%	7.40%	2.90%
Jul	10.30%	7.58%	2.72%
Aug	10.30%	7.49%	2.81%
Sep	10.30%	7.71%	2.59%
Oct	10.30%	7.94%	2.36%
Nov	10.30%	8.08%	2.22%
Dec	10.30%	7.87%	2.43%
Jan 1995	11.70%	7.85%	3.85%
Feb	11.70%	7.61%	4.09%
Mar	11.70%	7.45%	4.25%
Apr	11.70%	7.36%	4.34%
May	11.70%	6.95%	4.75%
Jun	11.70%	6.57%	5.13%
Jul	11.70%	6.72%	4.98%
Aug	11.70%	6.86%	4.84%
Sep	11.70%	6.55%	5.15%
Oct	11.70%	6.37%	5.33%
Nov	11.70%	6.26%	5.44%
Dec	11.70%	6.06%	5.64%
Jan 1996	11.20%	6.05%	5.15%
Feb	11.20%	6.24%	4.96%
Mar	11.20%	6.60%	4.60%
Apr	11.20%	6.79%	4.41%
May	11.20%	6.93%	4.27%
Jun	11.20%	7.06%	4.14%
Jul	11.20%	7.03%	4.17%
Aug	11.20%	6.84%	4.36%
Sep	11.20%	7.03%	4.17%
Oct	11.20%	6.81%	4.39%
Nov	11.20%	6.48%	4.72%
Dec	11.20%	6.55%	4.65%
Jan 1997	12.00%	6.83%	5.17%
Feb	12.00%	6.69%	5.31%
Mar	12.00%	6.93%	5.07%
Apr	12.00%	7.09%	4.91%
May	12.00%	6.94%	5.06%
Jun	12.00%	6.77%	5.23%
Jul	12.00%	6.51%	5.49%
Aug	12.00%	6.58%	5.42%
Sep	12.00%	6.50%	5.50%
Oct	12.00%	6.33%	5.67%
Nov	12.00%	6.11%	5.89%
Dec	12.00%	5.99%	6.01%

Mo/Year	Philadelphia's Actual ROE	30-Year U.S. Treasury Bond Yields	Philadelphia Risk Premium
Jan 1998	12.40%	5.81%	6.59%
Feb	12.40%	5.89%	6.51%
Mar	12.40%	5.95%	6.45%
Apr	12.40%	5.92%	6.48%
May	12.40%	5.93%	6.47%
Jun	12.40%	5.70%	6.70%
Jul	12.40%	5.68%	6.72%
Aug	12.40%	5.54%	6.86%
Sep	12.40%	5.20%	7.20%
Oct	12.40%	5.01%	7.39%
Nov	12.40%	5.25%	7.15%
Dec	12.40%	5.06%	7.34%
Jan 1999	12.30%	5.16%	7.14%
Feb	12.30%	5.37%	6.93%
Mar	12.30%	5.58%	6.72%
Apr	12.30%	5.55%	6.75%
May	12.30%	5.81%	6.49%
June	12.30%	6.04%	6.26%
July	12.30%	5.98%	6.32%
Aug	12.30%	6.07%	6.23%
Sept	12.30%	6.07%	6.23%
Oct	12.30%	6.26%	6.04%
Nov	12.30%	6.15%	6.15%
Dec	12.30%	6.35%	5.95%
Jan 2000	11.70%	6.63%	5.07%
Feb	11.70%	6.23%	5.47%
March	11.70%	6.05%	5.65%
Apr	11.70%	5.85%	5.85%
May	11.70%	6.15%	5.55%
June	11.70%	5.93%	5.77%
July	11.70%	5.85%	5.85%
Aug	11.70%	5.72%	5.98%
Sept	11.70%	5.83%	5.87%
Oct	11.70%	5.80%	5.90%
Nov	11.70%	5.78%	5.92%
Dec	11.70%	5.49%	6.21%
Jan 2001	12.40%	5.54%	6.86%
Feb	12.40%	5.45%	6.95%
March	12.40%	5.34%	7.06%
Apr	12.40%	5.65%	6.75%
May	12.40%	5.78%	6.62%
June	12.40%	5.67%	6.73%
July	12.40%	5.61%	6.79%
Aug	12.40%	5.48%	6.92%
Sept	12.40%	5.48%	6.92%
Oct	12.40%	5.32%	7.08%
Nov	12.40%	5.12%	7.28%
Dec	12.40%	5.48%	6.92%
Jan 2002	12.70%	5.45%	7.25%
Feb	12.70%	5.40%	7.30%
Mar	12.70%	5.71%	6.99%
Apr	12.70%	5.67%	7.03%
May	12.70%	5.64%	7.06%
June	12.70%	5.52%	7.18%
July	12.70%	5.38%	7.32%
Aug	12.70%	5.08%	7.62%
Sept	12.70%	4.76%	7.94%
Oct	12.70%	4.93%	7.77%
Nov	12.70%	4.95%	7.75%
Dec	12.70%	4.92%	7.78%

Summary Information (January 1993 - December 2002)

Average Risk Premium:	5.46%
High Risk Premium:	7.94%
Low Risk Premium:	2.22%

Sources: The Value Line Investment Survey: Ratings & Reports.
St. Louis Federal Reserve Website: http://www.stls.frb.org/fred/data/irates/gs30
Yahoo Finance at:
http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

Risk Premium Cost-of-Common-Equity Estimates for the Four Comparable Water Utility Companies (30-Year Treasury)

Company Name	(1) July 2003 30-Year U.S. Treasury Yield	(2) Equity Premium	(3) Cost of Common Equity
American States Water Company	4.93%	3.40%	8.33%
California Water Services Group	4.93%	4.53%	9.46%
Middlesex Water Company	4.93%	3.81%	8.74%
Philadelphia Suburban Corporation	4.93%	5.46%	10.39%
Average		**4.30%**	**9.23%**

NOTES:

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for July 2003, which was obtained from Yahoo Finance at http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETYX&d=1y

Column 2 = The equity premium represents the average positive difference between the Company's actual return on common equity as reported in The Value Line Investment Survey: Ratings & Report and the average yield on 30-year U.S. Treasury Bonds from January 1993 through December 2002.
See Schedules 19-1 through 19-4.

Column 3 = Column 1 + Column 2.

Selected Financial Ratios for the Four Comparable Water Utility Companies

Company Name	(1) Year 2002 Common Equity to Total Capital Ratio	(2) Year 2002 Long-Term Debt Ratio	(3) Pretax Interest Coverage Ratio (as of 12/31/02)	(4) Market-to-Book Value (as of 12/31/02)	(5) 2003 Projected Return on Common Equity	(6) Bond Rating
American States Water Company	48.00%	52.00%	2.90 x	1.88 x	9.00%	A+
California Water Services Group	44.00%	55.30%	2.90 x	2.08 x	7.50%	A+
Middlesex Water Company	46.00%	52.00%	3.37 x *	2.26 x	N.A.	A
Philadelphia Suburban Corporation	45.80%	54.20%	3.50 x	3.11 x	13.50%	A+
Average	45.95%	53.38%	3.17 x	2.33 x	10.00%	A+

Sources: The Value Line Investment Survey: Ratings and Reports, May 2, 2003 for columns (1), (2), (3), and (5).
*Middlesex's pretax interest coverage ratio was calculated manually from financial information in Middlesex Water Company's 2002 SEC 10K Filing.
C.A. Turner Utility Reports, May 2003 for column (4).
Standard & Poor's Utilities & Perspectives, September 8, 2003 for Column (6)

Schedule 21

Pro Forma Pretax Interest Coverage Ratios for Missouri-American Water Company

	8.26%	8.76%	9.26%
1. Common Equity (Schedule 9)	$1,801,921,000	$1,801,921,000	$1,801,921,000
2. Earnings Allowed (ROE * [1])	$148,838,675	$157,848,280	$166,857,885
3. Preferred Dividends	$146,000	$146,000	$146,000
4. Net Income Available ([2] + [3])	$148,984,675	$157,994,280	$167,003,885
5. Tax Multiplier (1 / { 1 - Tax Rate })	1.6231	1.6231	1.6231
6. Pretax Earnings ([4] * [5])	$241,817,025	$256,440,515	$271,064,005
7. Annual Interest Costs (American Water's 2002 Annual Report)	$227,295,000	$227,295,000	$227,295,000
8. Avail. for Coverage ([6] + [7])	$469,112,025	$483,735,515	$498,359,005
9. **Pro Forma Pretax Interest Coverage** ([8] / [7])	**2.06 x**	**2.13 x**	**2.19 x**

Water Utility Financial Medians - Pretax Interest Coverage (x)

	Based on a Business Position of 3		
Standard & Poor's RatingsDirect Research: Utility Financial Targets are Revised June 18, 1999 - Water Utilities	**AA**	**A**	**BBB**
	3.4 - 4.0	**2.8 - 3.4**	**1.8 - 2.8**

Public Utility Revenue Requirement

or

Cost of Service

The formula for the revenue requirement of a public utility may be stated as follows :

Equation 1 : **Revenue Requirement = Cost of Service**

or

Equation 2 : **R R = O + (V - D) R**

The symbols in the second equation are represented by the following factors :

R R	=	Revenue Requirement
O	=	Prudent Operating Costs, including Depreciation and Taxes
V	=	Gross Valuation of the Property Serving the Public
D	=	Accumulated Depreciation
(V - D)	=	Rate Base (Net Valuation)
(V - D) R	=	Return Amount ($$) or Earnings Allowed on Rate Base
R	=	i L + d P + k E or Overall Rate of Return (%)
i	=	Embedded Cost of Debt
L	=	Proportion of Debt in the Capital Structure
d	=	Embedded Cost of Preferred Stock
P	=	Proportion of Preferred Stock in the Capital Structure
k	=	Required Return on Common Equity (ROE)
E	=	Proportion of Common Equity in the Capital Structure

Weighted Average Cost of Capital as of December 31, 2002 for Missouri-American Water Company

Capital Component	Percentage of Capital	Embedded Cost	Weighted Cost of Capital Using Common Equity Return of:		
			8.26%	**8.76%**	**9.26%**
Common Stock Equity	31.85%	-----	2.63%	2.79%	2.95%
Preferred Stock	0.62%	7.70%	0.05%	0.05%	0.05%
Long-Term Debt	63.92%	6.10%	3.90%	3.90%	3.90%
Short-Term Debt	3.61%	2.08%	0.08%	0.08%	0.08%
Total	**100.00%**		**6.66%**	**6.82%**	**6.98%**

Notes:

See Schedule 9 for the Capital Structure Ratios.

See Schedule 10 for the Embedded Cost of Long-Term Debt.

See Schedule 11 for the Embedded Cost of Preferred Stock.