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MISSOURI PUBLIC SERVICE COMMISSION

UTILITY SERVICES DIVISION

DIRECT TESTIMONY

OF

DAVID MURRAY

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216 *et al*

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Jefferson City, Missouri
June 2007

****Denotes Highly Confidential Information****

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STAFF-17

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DIRECT TESTIMONY

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DAVID MURRAY

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216, *et al.*

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 Utility Regulatory Auditor IV for the Missouri Public Service Commission (Commission). I accepted the position of a Public Utility Financial Analyst in June 2000 and my position was reclassified in August 2003 to an Auditor III. I briefly served as Interim Manager of the Financial Analysis Department in April 2006 and accepted the position of Auditor IV, effective July 1, 2006.

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 earned a Masters in Business Administration from Lincoln University in December 2003.

Q. Have you recently received any professional designations that enhance your credibility as a rate-of-return witness?

A. Yes. I have been awarded the professional designation Certified Rate of Return Analyst (CRRA) by the Society of Utility and Regulatory Financial Analysts (SURFA). This designation is awarded based upon experience and successful completion of a written examination, which I completed during my recent attendance at a SURFA conference in April 2007.

Q. Are you pursuing any other designations?

A. I am a Level II candidate in the Chartered Financial Analyst (CFA) Program. I passed the Level I examination of the CFA Program and I am currently a Level II candidate. In order to receive the CFA designation, I must pass the examinations for the next two levels of the program and also have four years of relevant professional work experience.

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

A. Yes. Please see Attachment A for a list of these cases.

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. Have you attended any schools, conferences and/or seminars specific to utility finance and utility regulation?

A. Yes. I attended the SURFA conference in April 2007, the Annual Eastern Utility Rate School in October 2000, the Fundamentals of Utility Finance seminar in January 2001, the National Association of Regulatory Utility Commissioners' Annual Regulatory Studies Program in August 2001 and occasional Financial Research Institute Utility Symposiums since June 2000.

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 to 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 No. WR-2007-0216" consisting of 20 schedules which are attached to this Direct testimony (see Schedule 1 for a list of these schedules).

EXECUTIVE SUMMARY

Q. Please provide an executive summary of your testimony.

A. I am recommending that the Commission authorize an overall rate of return (ROR) of 6.27 percent to 6.55 percent for MAWC. My rate–of-return recommendation is based on a recommended return on common equity of 8.60 percent to 9.60 percent applied to American Water's June 30, 2006, common equity ratio of 28.18 percent. My recommendation is driven by my comparable company analysis using the discounted cash flow (DCF) model. I continue to believe that the DCF model is the most reliable model available for estimating a utility company's cost of common equity.

My embedded cost of long-term debt recommendation of 5.25 percent is based on the cost of long-term debt outstanding at American Water (non-consolidated), American Water Capital Corporation (AWCC) and MAWC as of June 30, 2006. This embedded cost of long-term debt does not include any debt held at American Water's other subsidiaries, which is consistent with the Commission's decision in the MGE rate case, Case No. GR-2004-0209,

which was upheld by the Western District Missouri Court of Appeals. See *MGE v. Public Service Commission of the State of Missouri*, 186 S.W.3d 376 (Mo. App., W.D. 2005). Additionally, it should be noted that American Water has only one debt issuance that is not from AWCC. Therefore, all but this one debt issuance is already contemplated in AWCC's embedded cost of long-term debt calculation so they were excluded from the American Water embedded cost of long-term debt calculation in order avoid double counting of these debt issuances. I also eliminated the $56,000,000 of debt that MAWC received from AWCC since this is also already reflected in AWCC's embedded cost of long-term debt. I relied on MAWC's response to Staff Data Request No. 0091 to make these adjustments.

My embedded cost of preferred stock recommendation of 5.90 percent is based on the cost of preferred stock outstanding at American Water and MAWC as of June 30, 2006. I believe this is also consistent with the Commission's decision in Case No. GR-2004-0209, referred to above.

My cost of short-term debt recommendation of 4.40 percent is based on American Water's average cost of short-term debt for the twelve-months ended June 30, 2006, which according to MAWC's response to Staff Data Request No. 0092 is based on the pooled average costs of short-term debt provided through AWCC.

My capital structure recommendation is based on American Water's consolidated capital structure as of June 30, 2006. Schedule 8 presents American Water's capital structure and associated capital ratios. The resulting capital structure consists of 28.18 percent common stock equity, 19.18 percent preferred stock, 46.36 percent long-term debt and 6.28 percent short-term debt.

Q. It appears that most of the other Staff witnesses' testimony in this case is based on financial information as of the update period, December 31, 2006. Why did you use information based on the test year, June 30, 2006?

A. At the time I was writing my Direct testimony for this case, MAWC had still been unable to provide American Water financial statements and embedded cost of debt information as of the update period. As soon as I receive this information, I will evaluate the updated financial information and determine if my testimony should be updated.

LEGAL PRINCIPLES

Q. Please explain the main legal principles which form the basis for the assessment of the justness and reasonableness of rate-of-return recommendations.

A. The *Bluefield Water Works and Improvement Company* (1923) (*Bluefield*) and the *Hope Natural Gas Company* (1944) (*Hope*) cases have been cited as the two most influential cases for the legal framework to determine a fair and reasonable rate of return.

Q. Please provide the main points surrounding the *Bluefield* case.

A. In the *Bluefield* case, 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.

Q. Please provide the main points surrounding the *Hope* case.

A. In the *Hope* case, 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.

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

Q. On a technical level, has the methodology of determining rate of return changed since the *Hope* and *Bluefield* decisions were written?

A. Yes. While I believe the objective of authorizing a fair rate of return is still to allow the Company the opportunity "to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital," the discipline of rate of return analysis has evolved since the decisions were made in *Hope* and *Bluefield.* In fact, two of the

most commonly used models in making rate-of-return recommendations did not even become a part of mainstream finance until the 1960s.

Q. What are these models?

A. The DCF model and the capital asset pricing model (CAPM).

Q. When was the DCF model introduced as a tool to estimate the required return on common equity?

A. The DCF model was introduced by Myron J. Gordon for cost-of–common-equity determinations in 1962.[1] This model, as used in utility ratemaking, is referred to as the dividend growth, Gordon growth and/or dividend discount model, in most college finance textbooks. The use of this model for stock valuation purposes had been introduced before this time.

Q. When was the CAPM introduced?

A. Much of the basis for this model was provided in 1964 by William F. Sharpe who received the Nobel Prize in 1990 for much of his work in producing this model.[2]

Q. Have either of these models been used and accepted in the past to determine a fair authorized rate of return on common equity in Missouri?

A. Yes.

Q. Do you have any further comments on the use of cost of capital models to determine a fair rate of return?

A. Yes. See Schedule A.

[1] Frank K. Reilly and Keith C. Brown, *Investment Analysis and Portfolio Management*, Fifth Edition, The Dryden Press, 1997, p. 438.
[2] Zvie Bodie, Alex Kane and Alan J. Marcus, *Essentials of Investments*, Richard D. Irwin, Inc. 1992, p. 11.

HISTORICAL ECONOMIC CONDITIONS

Q. Please discuss the main points of the current capital and economic environment that the Commission should consider in determining a reasonable authorized return on common equity (ROE) for MAWC.

A. The Federal Reserve (Fed) steadily raised the Fed Funds rate by 25 basis points at every Federal Open Market Committee (FOMC) meeting from June 30, 2004, until June 29, 2006, consisting of seventeen consecutive rate hikes. However, the FOMC has held rates steady at 5.25 percent since then. Up until June 30, 2004, the Fed had kept the Fed Funds Rate at a 46-year low of 1.00 percent for a full year. According to a recent article in the *Wall Street Journal (WSJ),*[3] during its meeting on March 21, 2007, the Fed dropped its "bias to raise interest rates, giving itself flexibility to cut interest rates in coming months if economic growth decelerates further."

Q. What has happened to long-term interest rates during the period that the Fed increased interest rates from 1.00 percent to 5.25 percent and its subsequent decisions not to raise the Fed Funds Rate since June 29, 2006?

A. Long-term interest rates had started to respond to the Fed's monetary policy tightening starting in July 2005. Thirty-year Treasury bond yields were recently as high as 5.20 percent in June 2006, but as of March 2007 the average Thirty-year Treasury bond yield had decreased to 4.72 percent. Thirty-year Treasury bond yields have consistently been in the mid to high 4 percent range since September 2006. While this is not as low as interest rates had been for much of 2005, it has been consistent with the lower interest rate environment that investors have become accustomed to in recent years (see Schedules 5-2 and 5-3).

[3] Greg Ip, "Fed Opens the Door to Future Rate Cuts: Tightening Bias Is Gone As Central Bank Moves Toward More Neutral Tone," *The Wall Street Journal*, March 22, 2007, p. A2.

Q. How have utility bond yields responded to the tightening of U.S. monetary policy?

A. A review of Schedules 5-1 and 5-3 shows that since average utility bond yields fell to 5.39 percent during June 2005, which was the lowest average yield in the past 25 years, average utility bond yields had increased to 6.39 percent in May and June of 2006, but have since declined to below 6.00 percent from November 2006 through recent months. The average public utility bond yield for March 2007 was 5.87 percent according to the April 2007 *Mergent Bond Record.*

Q. Please discuss the results of the major stock market indices over the past year.

A. In light of the interest rate activity described above, it is important to reflect on recent results of the major stock market indices. According to the April 13, 2007, issue of *The Value Line Investment Survey: Selection & Opinion*, for the first quarter of 2006 the Dow Jones Industrial Average (DJIA) decreased 0.9 percent, the Standard & Poor's (S&P) 500 increased 0.2 percent, the NASDAQ Composite Index (NASDAQ) increased 0.3 percent and the Dow Jones Utility Average (DJUA) increased 9.5 percent. According to the same publication, for the twelve months ended March 31, 2007, the DJIA increased 11.2 percent, the S&P 500 increased 9.7 percent, the NASDAQ increased 3.5 percent and the DJUA increased 28.6 percent.

Q. What can one infer about the capital markets for the utility industry from the results indicated above?

A. The utility industry is not having much trouble attracting capital at reasonable costs. This is probably due to a combination of factors, such as continued low interest rates, which affects the cost of equity to utilities because utility stocks are considered close substitutes to fixed-income investments, increased speculation about mergers and acquisitions

with the repeal of PUHCA and the recent announcement of the proposed private equity buyout of TXU and also announcements of significant base load capacity additions throughout the country, which may impact expected earnings.

I don't believe that the economic and capital market environment has shown any major changes recently to change my view that utility companies still benefit from a fairly low cost of capital environment. Even giving more weight to projected earnings growth rates of the water utility stocks, which investors in general tend to believe are overly optimistic, my recommended ROE is still firmly in the 8 to 9 percent range. My recommendation is slightly higher in this case than in MAWC's last rate case, Case No. WR-2003-0500. Because interest rates are generally lower than they were during MAWC's last rate case, I believe my recommendation is quite reasonable.

Q. Should the results from the DJUA be analyzed with some caution in this case?

A. Yes. The DJUA does not include any water utilities. It is comprised of mainly electric and diversified utilities. Consequently, I do not consider the DJUA as a good proxy group for Missouri-American. However, comparing utility index results to the rest of the stock market can provide insight on the value being placed on utility stocks in general.

Utility indices can also vary in their results. For example the Value Line Utilities group, which is composed of 83 "utility" companies, increased by 2.8 percent for the first quarter of 2007 compared to the 9.5 percent increase for the DJUA. However, the Value Line Utilities group did increase by an impressive 19.0 percent for the twelve months ended March 31, 2007. Considering that the Value Line Utilities index contains a much broader range of utility companies, including three of my four comparable water utility companies, and diversified natural gas companies, such as Devon Energy Corporation, I believe that this further illustrates the ability of utility companies, in general, to be able to attract capital at

reasonable costs in the current capital market environment. (For a more detailed discussion of historical economic conditions, please see Schedule B).

ECONOMIC PROJECTIONS

Q. Do you have any information on economic projections?

A. Yes. See Schedule C for projections on inflation, interest rates and gross domestic product (GDP).

BUSINESS OPERATIONS OF AMERICAN WATER AND MAWC

Q. Please describe American Water's business operations.

A. A brief summary of American Water's operations found on the Yahoo!Finance website (http://biz.yahoo.com/ic/10/10104.html) was as follows:

> The company [American Water], a subsidiary of RWE Thames Water (the water unit of German utility giant RWE), is one of the largest water utility holding companies in the US. Through its regulated utilities and its contract services division, American Water serves more than 18 million consumers in 29 US states, Canada and Puerto Rico. The company also provides wastewater treatment in some of its service areas. Nonregulated subsidiary American Water Services provides contract management services for water and wastewater systems.

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 is the largest regulated water utility in the state, currently serving over 1.3 million people in more than 100 communities throughout the state. It has eleven operations that serve in Brunswick, Jefferson City, Joplin, Mexico, Platte County, St. Charles, St. Joseph, St. Louis County, Warren County, Cedar Hill and Warrensburg (http://www.amwater.com/awpr1/moaw/about_american_water/your_local_company/page5570.html).

Q. Please describe the credit ratings of MAWC.

A. As indicated in MAWC's February 9, 2007, letter of objection from Dean L. Cooper of Brydon, Swearengen and England to Staff Data Request Nos. 96, 97, 100, 101 and 104, "I would note that it is my understanding that MAWC is not a rated entity." This is consistent with my understanding that MAWC does not have a credit rating.

Q. Do any of the entities that provide MAWC with financing have a credit rating?

A. Yes. 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, is rated by Standard & Poor's (S&P). Additionally, although American Water does not directly provide MAWC debt financing (although it does provide them equity financing), it is also rated by S&P. S&P started providing a direct credit rating for American Water on October 13, 2006. However, it should be noted that AWCC's credit rating has always been based on the consolidated creditworthiness of American Water. AWCC has been rated by S&P since June 19, 2000. Therefore, if American Water had been rated directly in the past along with AWCC, their credit ratings would most likely have been the same since the debt issued by AWCC is rated based on American Water's consolidated creditworthiness.

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

A. Currently, Standard & Poor's Corporation assigns a long-term corporate credit rating of A- with a negative CreditWatch for both AWCC and American Water. This rating currently reflects the stand-alone credit quality of American Water. In the past, American Water was rated one notch higher (A) because of its relationship with its parent company, RWE AG. Portions of S&P's recent May 18, 2007, Summary Research Report on AWCC follows:

The ratings on American Water Works Co. Inc. (A-/Watch Neg/A-2) and American Water Capital Corp. reflect the stand-alone credit quality of American Water Works. American Water Capital is a wholly owned subsidiary of American Water Works, which serves as the funding vehicle for American Water Works' regulated water utility subsidiaries.

The ratings on American Water Works and American Water Capital are on CreditWatch with negative implications and will remain on CreditWatch until the completion of the sale of American Water Works by parent RWE AG (A+/Negative/A-1), which is expected in 2007. The CreditWatch listing reflects continued uncertainty surrounding the extensive regulatory process associated with the sale, the need for an updated business plan, and completion of significant debt and equity offerings. As part of the sale process, the company has received approval from more than half the 13 states and completed its $900 million private placement offering in December 2006.

American Water Works' stand-alone business risk profile is '2' (excellent). (Utility business profiles are categorized from '1' (excellent) to '10' (vulnerable)). The business profile stems from insulation from competition, geographically diverse and largely residential markets, a supportive regulatory environment, and the relatively low operating risk of managing groundwater and water treatment facilities. Uncertainty associated with American Water Works' IPO in 2007, increasingly stringent water quality standards, and the company's reliance on acquisitions to provide growth partly offset its strengths.

American Water Works' stand-alone financial risk profile is intermediate and includes management's projected post-IPO debt-to-capital ratio of 45% to 55%. We will reassess the financial risk profile when additional information is available concerning the company's post-IPO business plan and capital structure.

Historical earnings and margins are stable, supported by healthy markets and regulatory recovery of operating and capital costs, although increased operating and capital expenses can lag regulatory recovery. For the past five years, funds from operations (FFO) to total debt has been about 10% and FFO interest coverage was in the 1.5x to 2.5x area. Given the business risk profile of '2', American Water Works' cash flow metrics are somewhat weak for the 'A-' rating.

In RWE's investor presentation related to the sale of its water businesses, the company stated that its North American Water segment, which includes some operations outside of American Water Works, plans to spend $3.6 billion on capital expenditures from 2005 to 2009, compared with about $500 million per year recently. American Water Works' increased capital spending is needed to upgrade aging water

systems, accommodate population and economic growth, and comply with environmental regulations. RWE projects negative free cash flow and external financing to fund the higher capital spending. Over the intermediate term, continued customer growth and regulatory rate increases could improve credit measures. However, improvements could be hindered if future regulatory rate increases do not keep pace with the company's increased capital spending.

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 valued correctly, the resulting total WACC, 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. The capital structure I have used for this case is American Water's capital structure on a consolidated basis, as of the test year in this proceeding, June 30, 2006. Schedule 8 presents American Water's capital structure and associated capital ratios. The resulting capital structure consists of 28.18 percent common stock equity, 46.36 percent long-term debt, 19.42 percent preferred stock and 6.36 percent short-term debt.

The amount of long-term debt outstanding on June 30, 2006, includes current maturities due within one year and was reduced by the net balance associated with the unamortized premiums, discounts and expenses as reported in MAWC's response to Staff Data Request No. 0091.

The amount of preferred stock outstanding on June 30, 2006, was reduced for the net balance associated with the unamortized issuance expense as reported in MAWC's response to Staff Data Request No. 0091.

As of June 30, 2006, American Water had $583,010,000 of short-term debt outstanding. Staff did not have enough information at the time of writing Direct testimony to determine if short-term debt should be reduced for any construction work in progress (CWIP) outstanding. Staff has requested more detailed information regarding CWIP and short-term debt balances and should be able to provide a more definitive short-term debt balance after analyzing this information. Staff will provide this information in Rebuttal testimony. For purposes of this testimony, I included the entire amount of short-term debt in my capital structure recommendation.

Q. Why did you use American Water's capital structure rather than MAWC's capital structure?

A. Because MAWC is not operating as an independent entity at least when considering MAWC's procurement of financing and the cost of that financing. While MAWC does still access the capital markets by issuing tax-advantaged bonds through the State Environmental Improvement and Energy Resources Authority, as indicated in MAWC's response to Staff Data Request No. 0102, "American Water Capital Corporation is the primary source of long-term debt and short-term debt for Missouri-American Water Company."

Q. How do you know that the cost of the financing from AWCC is based on the consolidated operations of American Water?

A. The debt issued by AWCC is rated based on the consolidated credit quality of American Water. Therefore, the cost of any debt that MAWC receives from AWCC is and will be based on the consolidated creditworthiness of American Water, which is based not only on the business risk associated with American Water's consolidated operations, but also on the financial risk, i.e. the parent company capital structure, of American Water, not on MAWC's business risk and capital structure.

Q. Do you have any other justification for recommending using American Water's consolidated capital structure for ratemaking purposes in this case?

A. Yes. First, MAWC has a Financial Services Agreement (see attached as Appendix 2, MAWC's Application in Case No. WF-2002-1096) with AWCC in which AWCC arranges short-term borrowings and performs cash management for MAWC. Under the cash management program, operating cash surpluses and deficits of each participating affiliate are lent to or borrowed from AWCC on a daily basis. This shows further integration of MAWC's financial management with the rest of American Water's other operations.

Second, American Water is primarily a regulated water distribution utility, meaning that the business risks of American Water are similar to that of Missouri-American. If the business risks of the parent company are similar to that of the subsidiary, then one would believe that the parent company would finance itself consistent with the business risks associated with a water utility company. Actually, because it is the parent company's consolidated operations that drive the cost of debt capital and equity capital, the parent company's capital structure is the capital structure that will be analyzed by investors when determining the required rate of return for debt issued by AWCC and equity issued by American Water. However, it is not always appropriate to use the parent company's cost of common equity if the parent company's business risk profile is significantly different than that of its regulated subsidiaries.

Third, American Water also employs double leverage, which is a situation in which the parent company uses financing other than equity financing raised at the parent company level to infuse equity in its subsidiaries. This situation explains why American Water has consistently had a more leveraged capital structure than at least its MAWC subsidiary. This is probably the case for American Water's other subsidiaries as well, but Staff has not been able to analyze this information because MAWC refused to provide it. After an *On-the-Record Discovery Conference* held in this case on March 6, 2007, Staff issued Staff Data Request No. 0096.1 so it could analyze American Water's subsidiaries' financial statements to assess its earned ROEs. Chief Regulatory Law Judge Colleen M. Dale indicated the following on page 29, lines 2 through 5, of the transcript from the hearing: So far as actuals [ROEs], maybe that's relevant, but projected for the sister subs I think is not likely to lead to any relevant information. MAWC also objected to this data request and Staff still has not been able to review this information. Counsel, Dean L. Cooper, for MAWC offered to make figures

available for Staff to review at the Law Offices of Brydon, Swearengen and England, but Staff believes it is important to receive the actual financial statements (rather than figures) so it can analyze this information in detail.

Although Staff requested the American Water subsidiary information to review actual earned ROEs, Staff could have also analyzed the other subsidiaries' capital structures to determine the extent of the use of double leverage with American Water's other subsidiaries. This would have assisted the Commission with comparing the differences in leverage of the parent company capital structure versus the rest of its subsidiaries.

A final consideration for Staff in deciding to recommend the use of American Water's consolidated capital structure for ratemaking purposes is what appears to be essentially a guarantee of the debt that MAWC receives from American Water. In American Water's 2002 Annual Report, the Company had indicated that American Water has "fully and unconditionally guaranteed the securities of AWCC." Therefore, although there are internal loan documents between MAWC and AWCC, the ultimate responsibility for the payment of the debt service on the debt through AWCC rests with American Water. This calls into question whether it is appropriate to consider the debt received by MAWC from AWCC as truly MAWC debt. The subsidiary's use of debt financing that is backed by the parent supports the Staff's recommendation to use American Water's consolidated capital structure.

Q. Have you compared MAWC's historical capital structures to American Water's?

A. Yes. Schedules 7-1 and 7-2 show MAWC's historical capital structures exclusive of short-term debt. The average common equity ratio for American Water was 35.23 percent for 1997 through 2006, whereas the average common equity ratio for Missouri-American Water was 42.13 percent for the same period. Most recently, the common equity

ratio for 2006 was significantly less for American Water compared to MAWC. While MAWC continues to maintain an equity ratio in the low 40 percent range, American Water's common equity ratio was only 29.89 percent. However, it should be noted that American Water carries a significant balance of preferred stock at 20.34 percent. It is clear that American Water has determined that it can obtain a lower cost of capital by financing its operations with a lower amount of common equity compared to that shown on MAWC's balance sheet.

Q. Why would there be such a wide disparity in the capital structure of MAWC versus American Water?

A. American Water's consolidated financial statements consist not only of the debt issued directly by American Water and AWCC, but also debt issued by its other subsidiaries. Additionally, American Water currently carries $1.75 billion in preferred stock at the holding company level. The $1.75 billion in preferred stock along with the $3 billion in common equity that was issued in 2003 was part of the financing for RWE's purchase of American Water. Consequently, this is the mix of capital that was deemed appropriate for the acquisition of the American Water operations and should be used for ratemaking purposes in this case.

Q. What embedded cost of long-term debt did you apply to your recommended ratemaking capital structure?

A. I applied the embedded cost of long-term debt based on the cost of the debt held at American Water, AWCC and MAWC as of June 30, 2006, which was 5.25 percent (see Schedule 9). The information used to calculate the embedded cost of long-term debt was provided by MAWC in response to Staff Data Request No. 0091. The embedded cost of long-term debt does not include the cost of debt held at American Water's other subsidiaries

because according to MAWC's response to Staff Data Request No. 0113, none of this debt is recourse to American Water, AWCC and/or MAWC. This methodology is consistent with the Commission's decision in the MGE rate case already referred to, Case No. GR-2004-0209.

Q. What embedded cost of preferred stock did you apply to your recommended ratemaking capital structure?

A. I applied the embedded cost of preferred stock based on the cost of preferred stock held at American Water and MAWC as of June 30, 2006, which was 5.90 percent (see Schedule 10). I believe this is also consistent with the Commission's decision in the cited MGE rate case, Case No. GR-2004-0209. The information used to calculate the embedded cost of preferred stock was provided by MAWC in response to Staff Data Request No. 0090.

Q. What cost of short-term debt did you apply to your recommended ratemaking capital structure?

A. I applied the average cost of short-term debt of 4.40 percent for the twelve-months ended, June 30, 2006, which according to MAWC's response to Staff Data Request No. 0092 is based on the pooled average costs of short-term debt provided through AWCC.

COST OF COMMON EQUITY

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

A. In order to estimate the cost of common equity for MAWC, I performed a comparable company cost of common equity analysis of four water utility companies. Even though American Water, MAWC's parent, would be an appropriate proxy to at least assist with the estimation of the MAWC's cost of common equity, American Water currently is not

a publicly-traded water utility so it is not possible to apply market dependent cost of capital models to it.

I have selected the DCF model (explained in detail in Schedule D) as the primary tool to determine the cost of common equity for MAWC, but I also used the CAPM (explained in detail in Schedule E) to check the reasonableness of the DCF results.

I will also provide the opinions and views of some of the most prominent individuals in the finance field to support a single digit cost of common equity recommendation. In addition, I reviewed some other external indicators to test the reasonableness of my recommendation. I will discuss these in more detail later in my testimony.

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

A. Schedule 11 presents a list of eleven market-traded water utility companies monitored by the financial-services firm of Edward Jones. This list was reviewed for the following criteria:

1. Classified as a water utility company by Edward Jones;
2. Stock publicly traded: this criterion did not eliminate any companies;
3. Information printed in Value Line: this criterion eliminated three companies;
4. Ten years of data available: this criterion eliminated one company;
5. At least investment grade credit rating: this criterion eliminated two additional companies because of lack of rating information;
6. Projected growth rate available from Value Line, S&P or I/B/E/S: this criterion eliminated one additional company;
7. Greater than 80 percent of revenues from water operations: this criterion didn't eliminate any companies.

It is important to understand that these criteria were used in order to produce a proxy group with similar risk to that of MAWC. This final group of four publicly-traded water

utility companies was used to estimate a proxy group cost of common equity to be applied to MAWC's operations. The comparables are listed on Schedule 12.

Q. Please explain how you approached the determination of the cost of common equity for the comparables.

A. I have calculated a DCF cost of common equity for each of the comparables. The first step was to estimate a growth rate. I reviewed the actual dividends per share (DPS), earnings per share (EPS), and book values per share (BVPS) as well as projected EPS growth rates for the comparables. Schedule 13-1 lists the annual compound growth rates for DPS, EPS, and BVPS for the past ten years. Schedule 13-2 lists the annual compound growth rates for DPS, EPS, and BVPS for the past five years. Schedule 13-3 presents the averages of the growth rates shown in Schedules 13-1 and 13-2. Schedule 14 presents the average historical growth rates and the projected growth rates for the comparables. The projected EPS growth rates were obtained from three outside sources; I/B/E/S Inc.'s *Institutional Brokers Estimate System*, Standard & Poor's Corporation's *Earnings Guide*, and *The Value Line Investment Survey: Ratings and Reports*. The three projected EPS growth rates were averaged to develop an average projected growth rate of 7.54 percent, which was averaged with the historical growth rates to produce an average historical and projected growth rate of 5.57 percent. I estimated a range of growth of 5.60 percent to 6.60 percent, which allows for some extra weight to be given to projected growth rates, but still allows for consideration of historical growth rates, which are important to consider when estimating growth rates for the long-run. The growth rates are shown on Schedule 14.

The next step was to calculate an expected yield for each of the comparables. The yield term of the DCF model is calculated by dividing the amount of DPS expected to be paid over the next twelve months by the market price per share of the firm's stock. 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 average market price for each of the comparables. This averaging technique is designed to minimize the effects on the dividend yield which can occur due to daily volatility in the stock market. Schedule 15 presents the average high / low stock price for the period of January 1, 2007, through March 31, 2007, for each of the comparables. Column 1 of Schedule 16 indicates the expected dividend for each comparable over the next 12-months as projected by *The Value Line Investment Survey: Ratings & Reports*, April 27, 2007. Column 3 of Schedule 16 shows the projected dividend yield for each of the comparables. The dividend yield for each comparable was averaged to estimate the projected dividend yield for the comparables of 2.90 percent.

As shown in Column 5 of Schedule 16, the average cost of common equity based on the projected dividend yield added to the average of historical and projected growth is 7.50 percent. However, this isn't my recommendation because I decided to give a little more weight to projected growth rates in this case. After adding my proposed range of growth of 5.60 percent to 6.60 percent to my recommended dividend yield of 2.90 percent, I arrived at my final proxy group recommendation of 8.50 percent to 9.50 percent. While some witnesses have been dismissing the lower results obtained from a DCF analysis, I will explain later in my testimony why these lower results are actually consistent with the current capital market environment, in which the cost of money is low compared to recent historical standards.

Q. What analysis did you perform to determine the reasonableness of your DCF model-derived cost of common equity for the comparable company group?

A. I performed a CAPM cost-of-common-equity analysis for the comparables.

Q. What did you use for your risk-free rate?

A. For purposes of this analysis, the risk-free rate I used was the yield on Thirty-year U.S. Treasury bonds. I determined the appropriate rate to be the average yield for the month of March 2007. The average yield of 4.72 percent was provided on the St. Louis Federal Reserve website.

For the second variable, beta, I researched Value Line in order to find the betas for my comparable group of companies. Schedule 17 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. Because I only used the CAPM as a test of reasonableness in this case, I only used risk premiums estimated based on historical differences between earned returns on stocks and earned returns on bonds. However, it is very important to emphasize that there is much debate on the topic of estimating equity risk premiums. Consequently, the reliability of cost of common equity results obtained from performing a CAPM analysis or risk premium analysis is heavily dependent on the estimated risk premium used to determine the cost of common equity. Many times analysts will determine an implied equity risk premium by analyzing the current valuation levels of stocks. This can be done using the dividend discount model or some other derivation, such as an earnings model. Regardless of the model used, most of the estimates of implied equity risk premiums are lower than the risk premium estimates using the differences between realized returns on stocks and bonds.

Q. Are you aware of any treatises that question the use of historical realized return spreads when estimating the cost of capital?

A. Yes. In the textbook, *Investment Analysis & Portfolio Management*, seventh edition, 2003, written by Frank K. Reilly and Keith C. Brown, the authors discussed the concept of the appropriate equity risk premium. In this discussion, the authors explained the often-used method of estimating the current equity risk premium by analyzing historical spreads between stock returns and U.S. Treasury returns (the risk-free rate). This is the method that Staff has used for several years in order to test the reasonableness of its DCF recommendations. However, the authors of this textbook cite many examples of research that questions estimates based on the historical actual returns that are reported in Ibbotson and Sinquefield's yearbook, *Stocks, Bonds, Bills and Inflation*. As a result of this concern, Frank K. Reilly and Brown used risk premium estimates based on historical returns for the high end of cost of capital estimates. Consequently, Staff's historical application of the CAPM has been on the high end of estimates made by many in the field of finance. Because Staff had used the CAPM as a test of reasonableness for its DCF recommendation, Staff believes that its past recommendations using the DCF model have been reliable and consistent with the current low cost-of-capital environment. Staff is still recommending that the Commission adopt its DCF recommendation, but by providing the Commission with information regarding the debate about lower-required-equity-risk premiums, Staff believes the Commission should be confident about the reasonableness of Staff's ROE recommendations.

Q. Please explain your application of the CAPM using historical return differences.

A. The first risk premium used was based on the long-term, arithmetic average of historical return differences from 1926 to 2006, which was 6.50 percent. The second risk premium was based on the long-term, geometric average of historical return differences from

1926 to 2006, which was determined to be 5.00 percent. The third risk premium was based on a short-term, geometric average of returns from 1997 to 2006, which was determined to be 0.59 percent. These risk premiums were taken from Ibbotson Associates, Inc.'s *Stocks, Bonds, Bills, and Inflation: 2007 Yearbook.*

Schedule 17 presents the CAPM analysis of the comparables using historical actual return spreads to estimate the required equity risk premium. The CAPM analysis using the long-term arithmetic average risk premium, the long-term geometric average risk premium and the short-term geometric average risk premium produces estimated costs of common equity of 10.33 percent, 9.03 percent and 5.23 percent respectively. The long-term arithmetic average risk premium CAPM result would support a higher cost of common equity. The long-term geometric average risk premium CAPM result supports a cost of common equity similar to what is currently produced in performing a DCF analysis. The short-term geometric average risk premium CAPM is not currently a good test of reasonableness for the DCF model.

Considering the fact that Reilly and Brown suggest using geometric averages when estimating the cost of common equity for long-term asset classes, I believe that the CAPM cost of common equity estimates provide considerable support for my DCF proxy group cost of common equity estimate of 8.50 percent to 9.50 percent.

Q. Are you aware of any articles published by prominent financial experts that question the use of historical average return spreads that include recent historical experience?

A. Yes, in 2002 Eugene F. Fama, PhD, Graduate School of Business, University of Chicago, and Kenneth R. French, PhD, Tuck School of Business, Dartmouth College, published an article that challenged the notion that the realized return spreads between equities and risk-free securities were an accurate reflection of investors' actual required

returns. [4] In this article, Fama and French maintained that the expected, i.e. required equity risk premium, for the period 1951 through 2000 was much lower than the realized equity risk premium that investors received for the same period. The authors specifically stated:

> Given the evidence that rational forecasts of long-term growth rates of dividends and earnings are not high in 2000, we conclude that the unexpected capital gains for 1951 to 2000 are largely due to a decline in the discount rate.

The decline in the discount rate is synonymous with stating that the cost of capital has decreased. Fama and French maintain that these excess returns were high enough to cause an upward bias in a risk premium estimate using the historical spread between equities and risk-free securities for the longer period of 1872 through 2000. Consequently, it is only logical to conclude that using the shorter-time period of 1926 through 2006 of Ibbotson Associates' data will be even more upwardly biased. In fact, in a December 26, 2005, article in *Fortune,*[5] Roger Ibbotson agrees that he can no longer rely on the historical equity risk premium to predict future returns. As a result, he and Peng Chen, director of research at Ibbotson Associates, have started to estimate the market risk premium based on a supply-side earnings model.

It is also important to note that in Fama and French's study that only the required returns on equities for the 1951 through 2000 period were measured using the dividend growth model and an earnings growth model. For the longer period of 1872 through 2000, only the dividend growth model was used because of data limitations. Regardless, the authors concluded that the estimates using the dividend growth model are more precise. Based on their study, the authors stated the following:

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[4] Eugene F. Fama and Kenneth R. French, "The Equity Premium," *The Journal of Finance*, (April 2002).
[5] Justin Fox, "9% Forever?: That's economist Roger Ibbotson's forecast for stock market returns. He's been right-*very* right-in the past. So how come people think we shouldn't believe him anymore?" *Fortune*, December 26, 2005, pp. 64 -72.

> Based on this and other evidence, our main message is that the unconditional expected equity premium of the last 50 years is probably far below the realized premium.

This means that the realized returns on equity had exceeded the cost of the equity, which the authors believe also explain recent higher market-to-book ratios.

Q. Has any other influential financial expert made any comments concerning investors' reduced required equity risk premiums?

A. Yes. In an August 26, 2005, symposium sponsored by the Federal Reserve Bank of Kansas City at Jackson Hole, Wyoming, Alan Greenspan, Chairman of The Federal Reserve at the time, stated the following about investors' appetite for risk; i.e. lower required equity risk premiums:

> Whether the currently elevated level of the wealth-to-income ratio will be sustained in the longer run remains to be seen. But arguably, the growing stability of the world economy over the past decade may have encouraged investors to accept increasingly lower levels of compensation for risk. They are exhibiting a seeming willingness to project stability and commit over an ever more extended time horizon.
>
> The lowered risk premiums--the apparent consequence of a long period of economic stability--coupled with greater productivity growth have propelled asset prices higher. The rising prices of stocks, bonds and, more recently, of homes, have engendered a large increase in the market value of claims which, when converted to cash, are a source of purchasing power. Financial intermediaries, of course, routinely convert capital gains in stocks, bonds, and homes into cash for businesses and households to facilitate purchase transactions. The conversions have been markedly facilitated by the financial innovation that has greatly reduced the cost of such transactions.
>
> Thus, this vast increase in the market value of asset claims is in part the indirect result of investors accepting lower compensation for risk. Such an increase in market value is too often viewed by market participants as structural and permanent. To some extent, those higher values may be reflecting the increased flexibility and resilience of our economy. But what they perceive as newly abundant liquidity can readily disappear. Any onset of increased investor caution elevates risk premiums and, as a consequence, lowers asset values and promotes the liquidation of the debt that supported higher asset prices. This is the

reason that history has not dealt kindly with the aftermath of protracted periods of low risk premiums.

Although Mr. Greenspan does not attempt to quantify investors' lower required equity risk premiums, it is clear that his views about investors not requiring much of a risk premium to invest in stocks, rather than risk-free treasuries, is similar to that of the other influential individuals in the field of finance that I have already mentioned. This provides further support for the lower results that are being achieved by a reasonable application of the DCF model. The lower results are not because the DCF model is unreliable; it is because the cost of common equity is now lower than in the past. In fact, because the DCF model incorporates the price of the subject companies' stocks, a reasonable application of this model will necessarily directly reflect lower costs of common equity.

Q. Have you considered other evidence to test the reasonableness of your recommendation?

A. Yes. In Staff Data Request No. 0105, Staff requested the expected return on American Water's pension plan assets and the details of this expected return, i.e. asset class allocations and expected returns on those asset classes. In the response provided by MAWC, the indicated expected return for American Water's pension assets is **___ ** percent. This was based upon an asset allocation of **___ ** percent for the S&P 500, ** ___ ** percent for small capitalization stocks, ** ___ ** percent of international stocks and ** ___ ** percent for fixed income investments, i.e. debt securities. The expected returns on each of the asset classes is as follows: S&P 500 – **___ ** percent, small capitalization stocks – ** ____ ** percent, international stocks – ** ____ ** percent and fixed income investments – ** ___ ** percent. The most relevant expected return is that of the S&P 500 because the S&P 500 is often used to estimate the market equity risk premium when

employing the CAPM. Because the average beta for my comparable companies is .86 as shown on Schedule 17, this implies that water utility stocks have less systematic risk, i.e. market risk, than the S&P 500. Consequently, if American Water used its own projections from its pension plan expected returns, the cost of common equity estimation would be less than **___ ** percent. Based on the recent Thirty-year U.S. Treasury bond's yield of around 4.75 percent, this would imply an equity risk premium of ** _ ** percent and when this is used in the CAPM, the cost of common equity would be approximately **___ ** percent (4.75 + 0.86** _____ **). This provides considerable support for the reasonableness of my recommendation, which is almost **___ ** basis points higher than the estimate using inputs from American Water's pension return expectations.

Q. Did the Commission rely in part on average authorized ROEs in other jurisdictions in recent decisions, such as in the Report and Order in the MGE rate case, Case No. GR-2004-0209; the Empire rate cases, Case Nos. ER-2004-0570 and ER-2006-0315; the KCPL rate case, Case No. ER-2006-0314; the Union Electric rate case, Case No. ER-2007-0002 and the Aquila rate case, Case No. ER-2007-0004?

A. Yes. In the MGE rate case, Case No. GR-2004-0209, the Commission stated that this information was important because "That is the market in which Southern Union will be seeking to raise capital." The Commission also considered average authorized ROEs in the other cases cited previously.

Q. Does Regulatory Research Associates provide average authorized ROEs for water utility companies, which is the publisher that has been relied upon in past rate cases?

A. Not to my knowledge.

Q. Did you request any information on American Water's authorized ROEs in other jurisdictions to obtain information that may assist the Commission with its decision in this case?

A. Yes. In Staff Data Request No. 0104, I requested the authorized ROEs and RORs for all of American Water's jurisdictions since January 1, 2004. I had also requested the recommended ROEs and RORs for all of the parties that filed ROR testimony in each respective case in order to compare the ultimately authorized ROE and ROR to the parties' recommendations. American Water provided the awarded ROEs and requested ROEs for cases since January 1, 2004, but objected to Staff's request for other parties' recommendations. Counsel for MAWC stated the following during the *On-the-Record Discovery Conference* held on March 6, 2007:

> We would suggest that the only thing lacking is Staff's request for us to provide ROEs and rate of returns suggested by all parties to all rate cases since January 1, 2004 for all American Water affiliates or subsidiaries around the country, and we --we certainly think that that is overbroad and burdensome to start with, beyond just the lack of possession, custody or control that we just discussed.
>
> And as to relevance, as an example, we don't see why the City of Thousand Oaks' opinion on California-American's ROE, how that has anything whatsoever to do with this rate case before the Missouri Commission.
>
> What you'll see attached there is a listing of rate cases that are ongoing, proposed ROEs, proposed rate of returns, and then a second sheet that includes all the closed cases for the same period of time with all the same information, all of which is publicly available.
>
> Those lists also include the case numbers and jurisdictions. So I suppose that if there is additional information the Staff seeks, it could go obtain that information as easily as Missouri-American.

Chief Regulatory Law Judge Colleen M. Dale ruled that she believed that the information that MAWC had provided was sufficient and that if Staff wanted to pursue other parities' recommendations, it could do this research on its own.

Q. Have you obtained the information on the other parties' recommendations in these cases?

A. No. I have not been able to research the necessary information as of the time of writing this direct testimony. I will attempt to obtain this information as this case proceeds.

Q. What was the average authorized ROE for American Water's other jurisdictions for cases that have occurred since 2004?

A. According to the first page attached to MAWC's response to Staff Data Request No. 0104, the average authorized ROE was 10.09 percent, ranging from 9.00 percent to 12.00 percent and the average authorized ROR was 7.96 percent, ranging from 6.50 percent to 8.85 percent. If I eliminate the high and low ROE and ROR from each of the averages, the average authorized ROE was 10.04 percent and the average authorized ROR was 7.81 percent.

Q. Have you researched all of the cases mentioned above to determine the specifics of the cases?

A. No.

Q. For purposes of this proceeding, did you perform a risk premium analysis to test the reasonableness of your ROE recommendations?

A. No. Unlike the last MAWC rate case, I did not perform the type of risk premium analysis that the Financial Analysis Department had performed in the past. The reason I eliminated this analysis was because it wasn't necessarily an indicator of a company's cost of common equity, because it was not a market-based model. The past analysis relied on actual book earned returns on common equity for approximately the most recent ten years for the proxy companies. The actual earned book return on common equity may not be reflective of a company's cost of common equity.

Q. If you believed that the risk-premium analysis you were performing was not necessarily reflective of the subject utility company's cost of common equity, then why did you continue to perform such an analysis?

A. I only used it in prior rate cases to test the reasonableness of my DCF recommended cost of common equity. Now that the Commission appears to be giving weight to other models, I believe it is important for the Commission to have all of the information about the differences in professional opinions about the appropriate inputs for a market-based risk premium analysis and most of the research supports lower required equity risk premiums.

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

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

	DCF	**CAPM**
Comparable Companies	8.50% - 9.50%	10.33%; 9.03%; 5.23%

Q. Should there be any adjustments to the comparable group cost of common equity before it is applied to your recommended capital structure?

A. Yes. Because the average credit rating of the comparable companies is an A and the credit rating of American Water is currently A-, I increased the lower end and the upper end of the range by 10 basis points to reflect the higher risk implied by this credit rating differential. The average spread between A-rated utility bonds and BBB-rated utility bonds is usually around 30 basis points. This equates into a 10 basis point differential for each notch within the credit rating and, because American Water's credit rating is one notch below the average credit rating of the comparable companies, it is appropriate to increase the proxy group cost of common equity estimate by 10 basis points.

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 8.60 percent to 9.60 percent based on the results of my comparable-company-DCF analysis. Based on my tests of reasonableness and observations about the capital markets, this is a very reasonable recommendation.

RATE OF RETURN FOR MAWC

Q. Please explain how the returns developed for each capital component are used in the ratemaking approach you have adopted for MAWC.

A. The cost of service ratemaking method was adopted in this case to develop the public utility's revenue requirement. The cost of service (revenue requirement) is based on the following components: operating costs, rate base and a return allowed on the rate base (see Schedule 19).

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 cost of capital in the range of 6.27 to 6.55 percent was developed for MAWC's water utility operations (see Schedule 20). This rate was calculated by applying an embedded cost of long-term debt of 5.25 percent, an embedded cost of preferred stock of 5.90 percent, a cost of short-term debt of 4.40 percent and a cost of common equity range of 8.60 percent to 9.60 percent to a capital structure consisting of 46.36 percent long-term debt, 19.18 percent preferred stock, 6.28 percent short-term debt and 28.18 percent common equity. Therefore, from a financial risk/return prospective, as I

suggested earlier, I am recommending that MAWC's water utility operations be allowed to earn a return on its original cost rate base in the range of 6.27 percent to 6.55 percent.

Through my analysis, I believe that I have developed a fair and reasonable return, which, when applied to MAWC's jurisdictional 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.

CASE PROCEEDING PARTICIPATION

DAVID MURRAY

Date Filed	Issue	Case Number	Exhibit	Case Name
1/31/2001	Rate of Return Capital Structure	TC2001402	Direct	Ozark Telephone Company
2/28/2001	Rate of Return Capital Structure	TR2001344	Direct	Northeast Missouri Rural Telephone Company
3/1/2001	Rate of Return Capital Structure	TT2001328	Rebuttal	Oregon Farmers Mutual Telephone Company
4/19/2001	Rate of Return Capital Structure	GR2001292	Direct	Missouri Gas Energy, A Division of Southern Union Company
5/22/2001	Rate of Return Capital Structure	GR2001292	Rebuttal	Missouri Gas Energy, A Division of Southern Union Company
12/6/2001	Rate of Return Capital Structure	ER2001672	Direct	UtiliCorp United Inc. dba Missouri Public Service
12/6/2001	Rate of Return Capital Structure	EC2002265	Direct	UtiliCorp United Inc. dba Missouri Public Service
1/8/2002	Rate of Return Capital Structure	ER2001672	Rebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/8/2002	Rate of Return Capital Structure	EC2002265	Rebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/22/2002	Rate of Return Capital Structure	EC2002265	Surrebuttal	UtiliCorp United Inc. dba Missouri Public Service
1/22/2002	Rate of Return Capital Structure	ER2001265	Surrebuttal	UtiliCorp United Inc. dba Missouri Public Service
8/6/2002	Rate of Return Capital Structure	TC20021076	Direct	BPS Telephone Company
8/16/2002	Rate of Return Capital Structure	ER2002424	Direct	The Empire District Electric Company
9/24/2002	Rate of Return Capital Structure	ER2002424	Rebuttal	The Empire District Electric Company
10/16/2002	Rate of Return Capital Structure	ER2002424	Surrebuttal	The Empire District Electric Company
3/17/2003	Insulation	GM20030238	Rebuttal	Southern Union Co. dba Missouri Gas Energy
10/3/2003	Rate of Return Capital Structure	WC20040168	Direct	Missouri-American Water Company

Date Filed	Issue	Case Number	Exhibit	Case Name
10/3/2003	Rate of Return Capital Structure	WR20030500	Direct	Missouri-American Water Company
11/10/2003	Rate of Return Capital Structure	WR20030500	Rebuttal	Missouri-American Water Company
11/10/2003	Rate of Return Capital Structure	WC20040168	Rebuttal	Missouri-American Water Company
12/5/2003	Rate of Return Capital Structure	WC20040168	Surrebuttal	Missouri-American Water Co
12/5/2003	Rate of Return Capital Structure	WR20030500	Surrebuttal	Missouri-American Water Co
12/9/2003	Rate of Return Capital Structure	ER20040034	Direct	Aquila, Inc.
12/9/2003	Rate of Return Capital Structure	HR20040024	Direct	Aquila, Inc.
12/19/2003	Rate of Return Capital Structure	ST20030562	Direct	Osage Water Company
12/19/2003	Rate of Return Capital Structure	WT20030563	Direct	Osage Water Company
1/6/2004	Rate of Return Capital Structure	GR20040072	Direct	Aquila, Inc.
1/9/2004	Rate of Return Capital Structure	WT20030563	Rebuttal	Osage Water Company
1/9/2004	Rate of Return Capital Structure	ST20030562	Rebuttal	Osage Water Company
1/26/2004	Rate of Return Capital Structure	HR20040024	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P
1/26/2004	Rate of Return Capital Structure	ER20040034	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P
2/13/2004	Rate of Return Capital Structure	GR20040072	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
2/13/2004	Rate of Return Capital Structure	ER20040034	Surrebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
2/13/2004	Rate of Return Capital Structure	HR20040024	Surrebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
3/11/2004	Rate of Return Capital Structure	IR20040272	Direct	Fidelity Telephone Company

Date Filed	Issue	Case Number	Exhibit	Case Name
4/15/2004	Rate of Return Capital Structure	GR20040209	Direct	Missouri Gas Energy
5/24/04	Rate of Return Capital Structure	GR20040209	Rebuttal	Missouri Gas Energy
6/14/04	Rate of Return Capital Structure	GR20040209	Surrebuttal	Missouri Gas Energy
7/19/04	Rate of Return Capital Structure	GR20040209	True-Up Direct	Missouri Gas Energy
9/20/04	Rate of Return	ER20040570	Direct	Empire District Electric Co.
11/04/04	Rate of Return Capital Structure	ER20040570	Rebuttal	Empire District Electric Co.
11/24/04	Rate of Return Capital Structure	ER20040570	Surrebuttal	Empire District Electric Co.
10/14/05	Rate of Return Capital Structure	ER20050436	Direct	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
11/18/05	Rate of Return Capital Structure	ER20050436	Rebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
12/13/05	Rate of Return Capital Structure	ER20050436	Surrebuttal	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P
06/23/06	Rate of Return Capital Structure	ER20060315	Direct	Empire District Electric Co.
07/28/2006	Rate of Return Capital Structure	ER20060315	Rebuttal	Empire District Electric Co.
08/18/2006	Rate of Return Capital Structure	ER20060315	Surrebuttal	Empire District Electric Co.
10/13/2006	Rate of Return Capital Structure	GR20060422	Direct	Missouri Gas Energy
11/21/2006	Rate of Return Capital Structure	GR20060422	Rebuttal	Missouri Gas Energy
12/11/2006	Rate of Return Capital Structure	GR20060422	Surrebuttal	Missouri Gas Energy
12/27/2006	Rate of Return Capital Structure	GR20060422	True-up Direct	Missouri Gas Energy

DAVID MURRAY

TESTIMONY SCHEDULES A THROUGH E

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216 *et al.*

Q. Is the recommendation of the cost of common equity consistent with a fair rate of return on common equity?

A. Yes. It is generally recognized that authorizing an allowed return on common equity based on a utility's cost of common equity is consistent with a fair rate of return. It is for this very reason that the discounted cash flow (DCF) model is widely recognized as an appropriate model to utilize in arriving at a reasonable recommended return on equity that should be authorized for a utility. The concept underlying the DCF model is to determine the cost of common equity capital to the utility, which reflects the current economic and capital market environment. For example, a company may achieve a return on common equity that is higher than its cost of common equity. This situation will tend to increase the share price. However, this does not mean that this past achieved return is the barometer for what would be a fair authorized return in the context of a rate case. It is the lower cost of capital that should be recognized as a fair authorized return. If a utility continues to be allowed a return on common equity that is not reflective of today's current low-cost-of-capital environment, then this will result in the possibility of excessive returns.

The authorized return should provide a fair and reasonable return to the investors of the company, while ensuring that ratepayers do not support excessive earnings that could 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 a reasonable return may vary over time as economic conditions, such as the level of interest rates, 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.

Q. Please discuss the 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 (Federal Reserve or Fed). 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. This explains why the Federal Reserve's decisions now focus on the Fed Funds rate and this is reflected in the discussion of interest rates. It should also be noted that on January 9, 2003, the Federal Reserve changed the administration of the discount window. Under the changed administration of the discount window an eligible institution does not need to exhaust other sources of funds before coming to the discount window, nor are there restrictions on the purposes for which the borrower can use primary credit. This explains why the discount rate jumped from 0.75 percent to 2.25 percent on January 9, 2003, when the Fed Funds rate didn't change. Therefore, discount rates before January 9, 2003, are not comparable to discount rates after January 9.

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 increasing to 6.75 percent. The Federal Reserve took action again 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 5.00 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), had never been higher than 3.70 percent during this period. The increase in CPI stood at 2.80 percent for the twelve months ending March 31, 2007 (see Schedule 6).

The unemployment rate was 4.40 percent as of March 2007 (see Schedule 6), which is fairly low by historical standards. A lower unemployment rate usually provides the Fed with some flexibility to raise the Fed Funds rate if it believes it is needed to contain inflation.

The combination of low inflation and low unemployment had led to a prosperous economy from 1993 through 2000 as evidenced by the fact that real gross domestic product (GDP) of the United States increased every quarter during this period. However, GDP actually declined for the first three quarters of 2001, indicating 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 had been low up until the second quarter of 2003, but since the second quarter of 2003, GDP has been fairly healthy. GDP grew at a rate of only 1.30 percent for the first quarter of 2007 (see Schedule 6).

Q. Please explain the changes in utility bond yields and Thirty-year U.S. Treasury yields in a little more detail.

A. Cost of capital changes for utilities are closely reflected in the yields on public utility bonds and yields on Thirty-year U.S. Treasury bonds (see attached Schedules 5-1 and 5-2). Schedule 5-3, attached to this direct testimony, 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 1980 to the present. The average spread for this period between these two composite indices has been 150 basis points, with the spread ranging from a low of 80 basis points to a high of 304 basis points (see attached Schedule 5-4). Although there may be times when utility bond yield changes may lag the yield changes in the Thirty-year U.S. Treasury bond, these spread parameters show just how tightly correlated utilities' cost of capital is with the level of interest rates on long-term treasuries. This fact should be considered when determining the reasonableness of rate of return recommendations.

Q. What are the inflationary estimations and expectations for 2007 through 2009?

A. *The Value Line Investment Survey: Selection & Opinion*, February 23, 2007, estimates inflation to be 2.3 percent for 2007, 2.3 percent for 2008 and 2.4 percent for 2009. The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2008-2017,* issued January 2007, states that inflation is expected to be 1.9 percent for 2007, 2.3 percent for 2008 and 2.2 percent for 2009 (see attached Schedule 6).

Q. What are the interest rate estimates and forecasts for 2007, 2008 and 2009?

A. Short-term interest rates, those measured by three-month U.S. Treasury Bills, are estimated to be 5.0 percent in 2007, 4.9 percent in 2008 and 4.9 percent in 2009 according to Value Line's predictions. Value Line expects long-term treasury bond rates to average 5.0 percent in 2007, 5.2 percent in 2008 and 5.5 percent in 2009.

The current rate for March 2007 was 4.94 percent for three-month U.S. Treasury Bills, St. Louis Federal Reserve website: http://www.stls.frb.org/fred/data/rates.html). The rate for Thirty-Year U.S. Treasury Bonds was 4.72 percent as of March 2007 (St. Louis Federal Reserve website: http://research.stlouisfed.org/fred2/data/GS30.txt).

Q. What are the growth estimates and expectations for real GDP?

A. GDP is a benchmark utilized by the Commerce Department to measure economic growth within the U.S. borders. Real GDP is measured by the actual GDP, adjusted for inflation. Value Line stated that real GDP growth is expected to increase by 2.8 percent in 2007, 3.0 percent in 2008 and 3.2 percent in 2009. The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2008-2017*, stated that real GDP is expected to increase by 2.3 percent in 2007, 3.0 percent in 2008 and 3.1 percent in 2009 (see attached 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 1.9 to 2.4 percent, increase in real GDP in the range of 2.3 to 3.2 percent and long-term interest rates are expected to range from 5.0 to 5.5 percent.

The Value Line Investment Survey: Selection & Opinion, October 6, 2006, stated the following in its Economic and Stock Market Commentary:

> **The Federal Reserve appears to be satisfied with the present level of interest rates.** We base this view on its May 9th decision to leave rates unchanged. That vote marked the seventh time (dating back to last summer) in as many meetings that the Fed had voted to leave rates at current levels. Such rate stability follows two years in which borrowing costs were raised at each meeting.
>
> **The Fed is doing a balancing act.** It apparently believes that the current level of interest rates is low enough to sustain the slowing business uptrend over the next few quarters. At the same time, its rate decision suggests that it senses borrowing costs are high enough to keep inflation at bay.
>
> **The economy is moving forward at an uneven pace.** Specifically, the past few weeks have witnessed the release of data showing further gains in personal income, manufacturing activity, and the nonmanufacturing sector. Unfortunately, we also have seen a slowing in payroll growth, a decline in industrial production, and further weakness in housing (abetted by rising mortgage defaults). Housing is clearly the principal drag on the economy. The overall slowing in the economy was further affirmed by the release of data showing that the U.S. gross domestic product rose by just 1.3% in the first quarter. That was well below the trend in place for the past several years.
>
> **We aren't looking for a material change in economic direction in the months to come.** Although it may be that the 1.3% opening-quarter increase in GDP will mark the low point for 2007, it is unlikely that growth will accelerate meaningfully from this subpar level in the absence of a sustained recovery in housing. And such a revival is unlikely until 2008. A soft housing market lessens the likelihood the Fed will raise rates this year. On the other hand, a vote to lower rates slightly could come in the second half, in order to give housing and the rest of the economy a lift.

Investors are being rewarded. In fact, buoyed by solid earnings growth, the prospect for further modest GDP improvement, and the potential for an interest-rate cut later in 2007, stocks have forged ahead nicely this year.

Conclusion: We remain upbeat on the outlook for stocks, but note that equities have come a long way in a short span of time, thus raising the overall level of risk in the market...

Q. Please describe the DCF model.

A. The DCF model is a market-oriented approach for deriving the cost of common equity. The cost of common 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 constant-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 which discounts the sum of the future expected cash flows to the current market price of the common stock is the calculated cost of common equity. This can be expressed algebraically as:

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

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. Please describe the CAPM.

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 which 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 (Rf). 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.

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 to a risk-averse investor and therefore requires a higher return in order to attract investor capital away from a lower beta security.

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.

AN ANALYSIS OF THE COST OF CAPITAL

FOR

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216

SCHEDULES

BY

DAVID MURRAY

UTILITY SERVICES DIVISION

MISSOURI PUBLIC SERVICE COMMISSION

JUNE 2007

List of Schedules

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2007-0216

Federal Reserve Discount Rate Changes and Federal Reserve Funds Rate Changes

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
07/19/82	11.50%	
07/31/82	11.00%	
08/14/82	10.50%	
08/26/82	10.00%	
10/10/82	9.50%	
11/20/82	9.00%	
12/14/82	8.50%	
01/01/83	8.50%	
12/31/83	8.50%	
04/09/84	9.00%	
11/21/84	8.50%	
12/24/84	8.00%	
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%
05/19/00	6.00%	6.50%
01/03/01	5.75%	6.00%
01/04/01	5.50%	6.00%
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%
11/06/02	0.75%	1.25%
01/09/03	2.25%**	1.25%
06/25/03	2.00%	1.00%
06/30/04	2.25%	1.25%
08/10/04	2.50%	1.50%
09/21/04	2.75%	1.75%
11/10/04	3.00%	2.00%
12/14/04	3.25%	2.25%
02/02/05	3.50%	2.50%
03/22/05	3.75%	2.75%
05/03/05	4.00%	3.00%
06/30/05	4.25%	3.25%
08/09/05	4.50%	3.50%
09/20/05	4.75%	3.75%
11/01/05	5.00%	4.00%
12/13/05	5.25%	4.25%
01/31/06	5.50%	4.50%
03/28/06	5.75%	4.75%
05/10/06	6.00%	5.00%
06/29/06	6.25%	5.25%

* Staff began tracking the Federal Funds Rate.
**Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy results in incomparability of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

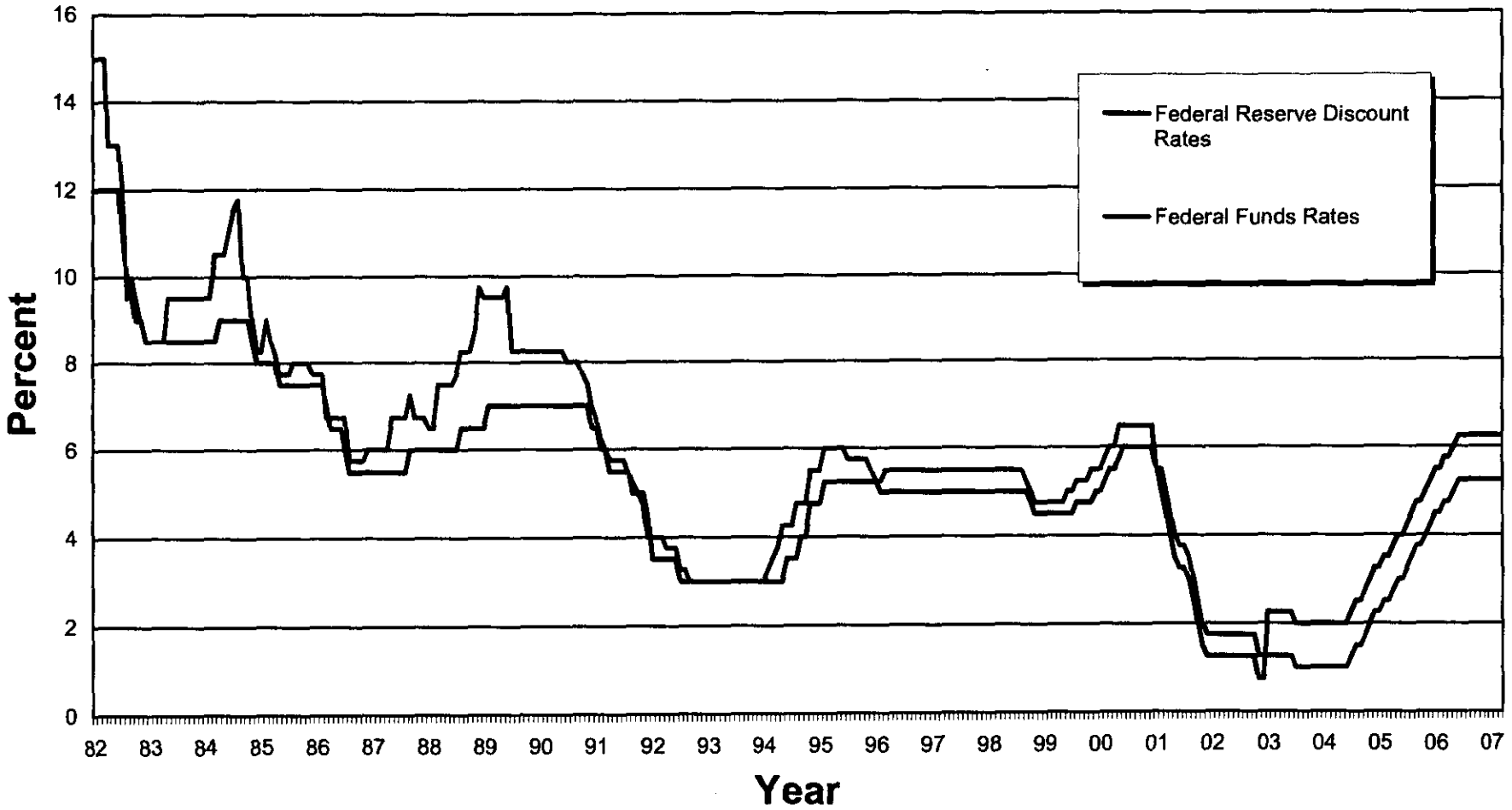
Source:
Federal Reserve Discount rate http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html
Federal Reserve Funds rate http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html

Note: Interest rates as of December 31 for each year are underlined.

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2007-0216

Federal Reserve Discount Rates and Federal Funds Rates

1982 - 2007



SCHEDULE 2-2

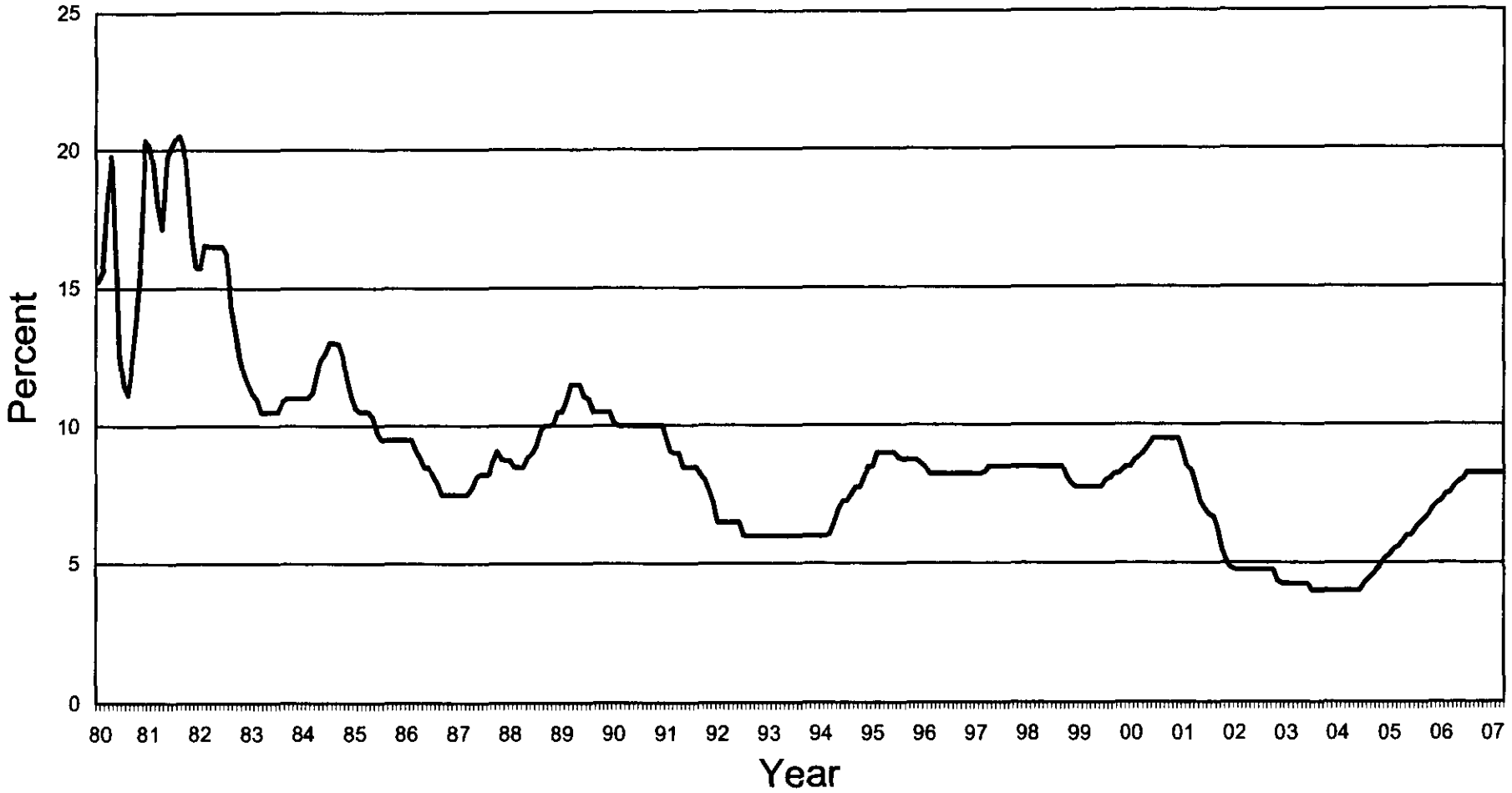
Average Prime Interest Rates

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	15.25	Jan 1984	11.00	Jan 1988	8.75	Jan 1992	6.50	Jan 1996	8.50	Jan 2000	8.50	Jan 2004	4.00
Feb	15.63	Feb	11.00	Feb	8.51	Feb	6.50	Feb	8.25	Feb	8.73	Feb	4.00
Mar	18.31	Mar	11.21	Mar	8.50	Mar	6.50	Mar	8.25	Mar	8.83	Mar	4.00
Apr	19.77	Apr	11.93	Apr	8.50	Apr	6.50	Apr	8.25	Apr	9.00	Apr	4.00
May	16.57	May	12.39	May	8.84	May	6.50	May	8.25	May	9	May	4.00
Jun	12.63	Jun	12.60	Jun	9.00	Jun	6.50	Jun	8.25	Jun	9.50	Jun	4.00
Jul	11.48	Jul	13.00	Jul	9.29	Jul	6.02	Jul	8.25	Jul	9.50	Jul	4.25
Aug	11.12	Aug	13.00	Aug	9.84	Aug	6.00	Aug	8.25	Aug	9.50	Aug	4.43
Sep	12.23	Sep	12.97	Sep	10.00	Sep	6.00	Sep	8.25	Sep	9.50	Sep	4.58
Oct	13.79	Oct	12.58	Oct	10.00	Oct	6.00	Oct	8.25	Oct	9.50	Oct	4.75
Nov	16.08	Nov	11.77	Nov	10.05	Nov	6.00	Nov	8.25	Nov	9.50	Nov	4.93
Dec	20.35	Dec	11.06	Dec	10.50	Dec	6.00	Dec	8.25	Dec	9.50	Dec	5.15
Jan 1981	20.16	Jan 1985	10.61	Jan 1989	10.50	Jan 1993	6.00	Jan 1997	8.26	Jan 2001	9.05	Jan 2005	5.25
Feb	19.43	Feb	10.50	Feb	10.93	Feb	6.00	Feb	8.25	Feb	8.50	Feb	5.49
Mar	18.05	Mar	10.50	Mar	11.50	Mar	6.00	Mar	8.30	Mar	8.32	Mar	5.58
Apr	17.15	Apr	10.50	Apr	11.50	Apr	6.00	Apr	8.50	Apr	7.80	Apr	5.75
May	19.61	May	10.31	May	11.50	May	6.00	May	8.50	May	7	May	5.98
Jun	20.03	Jun	9.76	Jun	11.07	Jun	6.00	Jun	8.50	Jun	6.98	Jun	6.01
Jul	20.39	Jul	9.50	Jul	10.98	Jul	6.00	Jul	8.50	Jul	6.75	Jul	6.25
Aug	20.50	Aug	9.50	Aug	10.50	Aug	6.00	Aug	8.50	Aug	6.67	Aug	6.44
Sep	20.08	Sep	9.50	Sep	10.50	Sep	6.00	Sep	8.50	Sep	6.28	Sep	6.59
Oct	18.45	Oct	9.50	Oct	10.50	Oct	6.00	Oct	8.50	Oct	5.53	Oct	6.75
Nov	16.84	Nov	9.50	Nov	10.50	Nov	6.00	Nov	8.50	Nov	5.10	Nov	7.00
Dec	15.75	Dec	9.50	Dec	10.50	Dec	6.00	Dec	8.50	Dec	4.84	Dec	7.15
Jan 1982	15.75	Jan 1986	9.50	Jan 1990	10.11	Jan 1994	6.00	Jan 1998	8.50	Jan 2002	4.75	Jan 2006	7.26
Feb	16.56	Feb	9.50	Feb	10.00	Feb	6.00	Feb	8.50	Feb	4.75	Feb	7.50
Mar	16.50	Mar	9.10	Mar	10.00	Mar	6.06	Mar	8.50	Mar	4.75	Mar	7.53
Apr	16.50	Apr	8.83	Apr	10.00	Apr	6.45	Apr	8.50	Apr	4.75	Apr	7.75
May	16.50	May	8.50	May	10.00	May	6.99	May	8.50	May	4.75	May	7.93
Jun	16.50	Jun	8.50	Jun	10.00	Jun	7.25	Jun	8.50	Jun	4.75	June	8.02
Jul	16.26	Jul	8.16	Jul	10.00	Jul	7.25	Jul	8.50	Jul	4.75	July	8.25
Aug	14.39	Aug	7.90	Aug	10.00	Aug	7.51	Aug	8.50	Aug	4.75	Aug	8.25
Sep	13.50	Sep	7.50	Sep	10.00	Sep	7.75	Sep	8.49	Sep	4.75	Sep	8.25
Oct	12.52	Oct	7.50	Oct	10.00	Oct	7.75	Oct	8.12	Oct	4.75	Oct	8.25
Nov	11.85	Nov	7.50	Nov	10.00	Nov	8.15	Nov	7.89	Nov	4.35	Nov	8.25
Dec	11.50	Dec	7.50	Dec	10.00	Dec	8.50	Dec	7.75	Dec	4.25	Dec	8.25
Jan 1983	11.16	Jan 1987	7.50	Jan 1991	9.52	Jan 1995	8.50	Jan 1999	7.75	Jan 2003	4.25	Jan 2007	8.25
Feb	10.98	Feb	7.50	Feb	9.05	Feb	9.00	Feb	7.75	Feb	4.25	Feb	8.25
Mar	10.50	Mar	7.50	Mar	9.00	Mar	9.00	Mar	7.75	Mar	4.25	Mar	8.25
Apr	10.50	Apr	7.75	Apr	9.00	Apr	9.00	Apr	7.75	Apr	4.25		
May	10.50	May	8.14	May	8.50	May	9.00	May	7.75	May	4.25		
Jun	10.50	Jun	8.25	Jun	8.50	Jun	9.00	Jun	7.75	Jun	4.22		
Jul	10.50	Jul	8.25	Jul	8.50	Jul	8.80	Jul	8.00	Jul	4.00		
Aug	10.89	Aug	8.25	Aug	8.50	Aug	8.75	Aug	8.06	Aug	4.00		
Sep	11.00	Sep	8.70	Sep	8.20	Sep	8.75	Sep	8.25	Sep	4.00		
Oct	11.00	Oct	9.07	Oct	8.00	Oct	8.75	Oct	8.25	Oct	4.00		
Nov	11.00	Nov	8.78	Nov	7.58	Nov	8.75	Nov	8.37	Nov	4.00		
Dec	11.00	Dec	8.75	Dec	7.21	Dec	8.65	Dec	8.50	Dec	4.00		

Source:
http://research.stlouisfed.org/fred2/data/MPRIME.txt

MISSOURI-AMERICAN COMPANY
CASE NO. WR-2007-0216

Average Prime Interest Rates
1980 - 2007



SCHEDULE 3-2

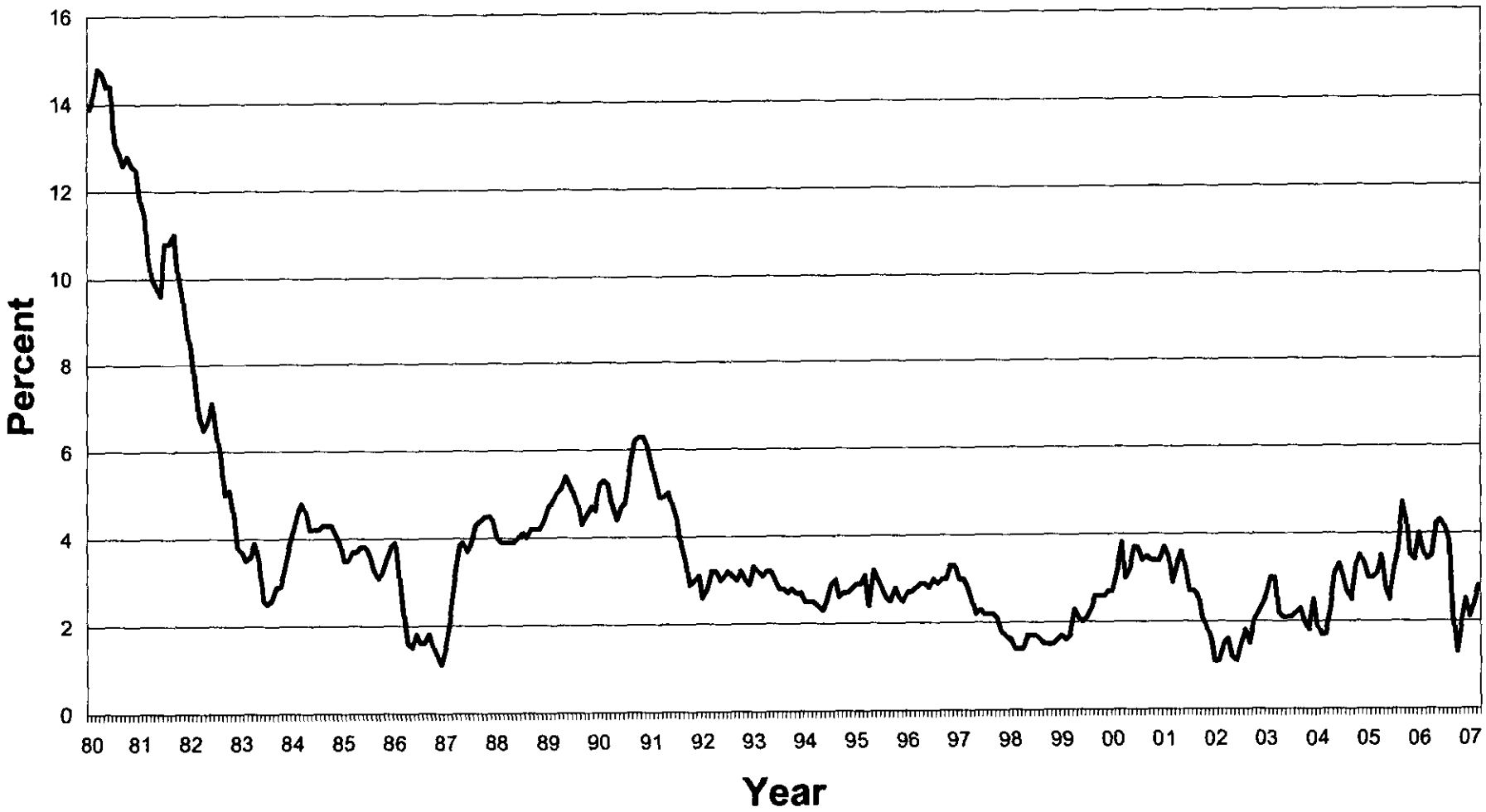
Rate of Inflation

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	13.90	Jan 1984	4.20	Jan 1988	4.00	Jan 1992	2.60	Jan 1996	2.70	Jan 2000	2.70	Jan 2004	1.90
Feb	14.20	Feb	4.60	Feb	3.90	Feb	2.80	Feb	2.70	Feb	3.20	Feb	1.70
Mar	14.80	Mar	4.80	Mar	3.90	Mar	3.20	Mar	2.80	Mar	3.70	Mar	1.70
Apr	14.70	Apr	4.60	Apr	3.90	Apr	3.20	Apr	2.90	Apr	3.00	Apr	2.30
May	14.40	May	4.20	May	3.90	May	3.00	May	2.90	May	3.20	May	3.10
Jun	14.40	Jun	4.20	Jun	4.00	Jun	3.10	Jun	2.80	Jun	3.70	Jun	3.30
Jul	13.10	Jul	4.20	Jul	4.10	Jul	3.20	Jul	3.00	Jul	3.70	Jul	3.00
Aug	12.90	Aug	4.30	Aug	4.00	Aug	3.10	Aug	2.90	Aug	3.40	Aug	2.70
Sep	12.60	Sep	4.30	Sep	4.20	Sep	3.00	Sep	3.00	Sep	3.50	Sep	2.50
Oct	12.80	Oct	4.30	Oct	4.20	Oct	3.20	Oct	3.00	Oct	3.40	Oct	3.30
Nov	12.60	Nov	4.10	Nov	4.20	Nov	3.00	Nov	3.30	Nov	3.40	Nov	3.50
Dec	12.50	Dec	3.90	Dec	4.40	Dec	2.90	Dec	3.30	Dec	3.40	Dec	3.30
Jan 1981	11.80	Jan 1985	3.50	Jan 1989	4.70	Jan 1993	3.30	Jan 1997	3.00	Jan 2001	3.70	Jan 2005	3.00
Feb	11.40	Feb	3.50	Feb	4.80	Feb	3.20	Feb	3.00	Feb	3.50	Feb	3.00
Mar	10.50	Mar	3.70	Mar	5.00	Mar	3.10	Mar	2.80	Mar	2.90	Mar	3.10
Apr	10.00	Apr	3.70	Apr	5.10	Apr	3.20	Apr	2.50	Apr	3.30	Apr	3.50
May	9.80	May	3.80	May	5.40	May	3.20	May	2.20	May	3.60	May	2.80
Jun	9.60	Jun	3.80	Jun	5.20	Jun	3.00	Jun	2.30	Jun	3.20	Jun	2.50
Jul	10.80	Jul	3.60	Jul	5.00	Jul	2.80	Jul	2.20	Jul	2.70	Jul	3.20
Aug	10.80	Aug	3.30	Aug	4.70	Aug	2.80	Aug	2.20	Aug	2.70	Aug	3.60
Sep	11.00	Sep	3.10	Sep	4.30	Sep	2.70	Sep	2.20	Sep	2.60	Sep	4.70
Oct	10.10	Oct	3.20	Oct	4.50	Oct	2.80	Oct	2.10	Oct	2.10	Oct	4.30
Nov	9.60	Nov	3.50	Nov	4.70	Nov	2.70	Nov	1.80	Nov	1.90	Nov	3.50
Dec	8.90	Dec	3.80	Dec	4.60	Dec	2.70	Dec	1.70	Dec	1.60	Dec	3.40
Jan 1982	8.40	Jan 1986	3.90	Jan 1990	5.20	Jan 1994	2.50	Jan 1998	1.60	Jan 2002	1.10	Jan 2006	4.00
Feb	7.60	Feb	3.10	Feb	5.30	Feb	2.50	Feb	1.40	Feb	1.10	Feb	3.60
Mar	6.80	Mar	2.30	Mar	5.20	Mar	2.50	Mar	1.40	Mar	1.50	Mar	3.40
Apr	6.50	Apr	1.60	Apr	4.70	Apr	2.40	Apr	1.40	Apr	1.60	Apr	3.50
May	6.70	May	1.50	May	4.40	May	2.30	May	1.70	May	1.20	May	4.20
Jun	7.10	Jun	1.80	Jun	4.70	Jun	2.50	Jun	1.70	Jun	1.10	June	4.30
Jul	6.40	Jul	1.60	Jul	4.80	Jul	2.90	Jul	1.70	Jul	1.50	July	4.10
Aug	5.90	Aug	1.60	Aug	5.60	Aug	3.00	Aug	1.60	Aug	1.80	Aug	3.80
Sep	5.00	Sep	1.80	Sep	6.20	Sep	2.60	Sep	1.50	Sep	1.50	Sep	2.10
Oct	5.10	Oct	1.50	Oct	6.30	Oct	2.70	Oct	1.50	Oct	2.00	Oct	1.30
Nov	4.60	Nov	1.30	Nov	6.30	Nov	2.70	Nov	1.50	Nov	2.20	Nov	2.00
Dec	3.80	Dec	1.10	Dec	6.10	Dec	2.80	Dec	1.60	Dec	2.40	Dec	2.50
Jan 1983	3.70	Jan 1987	1.50	Jan 1991	5.70	Jan 1995	2.90	Jan 1999	1.70	Jan 2003	2.60	Jan 2007	2.10
Feb	3.50	Feb	2.10	Feb	5.30	Feb	2.90	Feb	1.60	Feb	3.00	Feb	2.40
Mar	3.60	Mar	3.00	Mar	4.90	Mar	3.10	Mar	1.70	Mar	3.00	Mar	2.80
Apr	3.90	Apr	3.80	Apr	4.90	Apr	2.40	Apr	2.30	Apr	2.20		
May	3.50	May	3.90	May	5.00	May	3.20	May	2.10	May	2.10		
Jun	2.60	Jun	3.70	Jun	4.70	Jun	3.00	Jun	2.00	Jun	2.10		
Jul	2.50	Jul	3.90	Jul	4.40	Jul	2.80	Jul	2.10	Jul	2.10		
Aug	2.60	Aug	4.30	Aug	3.80	Aug	2.60	Aug	2.30	Aug	2.20		
Sep	2.90	Sep	4.40	Sep	3.40	Sep	2.50	Sep	2.60	Sep	2.30		
Oct	2.90	Oct	4.50	Oct	2.90	Oct	2.80	Oct	2.60	Oct	2.00		
Nov	3.30	Nov	4.50	Nov	3.00	Nov	2.60	Nov	2.60	Nov	1.80		
Dec	3.80	Dec	4.40	Dec	3.10	Dec	2.50	Dec	2.70	Dec	1.90		

Source: U.S. Dept of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers.
Change for 12-Month Period, Bureau of Labor Statistics,
http://www.bls.gov/schedule/archives/cpi_nr.htm

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2007-0216

Rate of Inflation
1980 - 2007



SCHEDULE 4-2

Average Yields on Mergent's Public Utility Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	12.12	Jan 1984	13.40	Jan 1988	10.75	Jan 1992	8.67	Jan 1996	7.20	Jan 2000	8.22	Jan 2004	6.23
Feb	13.48	Feb	13.50	Feb	10.11	Feb	8.77	Feb	7.37	Feb	8.10	Feb	6.17
Mar	14.33	Mar	14.03	Mar	10.11	Mar	8.84	Mar	7.72	Mar	8.14	Mar	6.01
Apr	13.50	Apr	14.30	Apr	10.53	Apr	8.79	Apr	7.88	Apr	8.14	Apr	6.38
May	12.17	May	14.95	May	10.75	May	8.72	May	7.99	May	9	May	6.68
Jun	11.87	Jun	15.16	Jun	10.71	Jun	8.64	Jun	8.07	Jun	8	Jun	6.53
Jul	12.12	Jul	14.92	Jul	10.96	Jul	8.46	Jul	8.02	Jul	8	Jul	6.34
Aug	12.82	Aug	14.29	Aug	11.09	Aug	8.34	Aug	7.84	Aug	8	Aug	6.18
Sep	13.29	Sep	14.04	Sep	10.56	Sep	8.32	Sep	8.01	Sep	8	Sep	6.01
Oct	13.53	Oct	13.68	Oct	9.92	Oct	8.44	Oct	7.76	Oct	8.08	Oct	5.95
Nov	14.07	Nov	13.15	Nov	9.89	Nov	8.53	Nov	7.48	Nov	8.03	Nov	5.97
Dec	14.48	Dec	12.96	Dec	10.02	Dec	8.36	Dec	7.58	Dec	7.79	Dec	5.93
Jan 1981	14.22	Jan 1985	12.88	Jan 1989	10.02	Jan 1993	8.23	Jan 1997	7.79	Jan 2001	7.76	Jan 2005	5.80
Feb	14.84	Feb	13.00	Feb	10.02	Feb	8.00	Feb	7.68	Feb	7.69	Feb	5.64
Mar	14.86	Mar	13.66	Mar	10.16	Mar	7.85	Mar	7.92	Mar	7.59	Mar	5.86
Apr	15.32	Apr	13.42	Apr	10.14	Apr	7.76	Apr	8.08	Apr	7.81	Apr	5.72
May	15.84	May	12.89	May	9.92	May	7.78	May	7.94	May	7.88	May	5.60
Jun	15.27	Jun	11.91	Jun	9.49	Jun	7.68	Jun	7.77	Jun	7.75	Jun	5.39
Jul	15.87	Jul	11.88	Jul	9.34	Jul	7.53	Jul	7.52	Jul	7.71	Jul	5.50
Aug	16.33	Aug	11.93	Aug	9.37	Aug	7.21	Aug	7.57	Aug	7.57	Aug	5.51
Sep	16.89	Sep	11.95	Sep	9.43	Sep	7.01	Sep	7.50	Sep	7.73	Sep	5.54
Oct	16.76	Oct	11.84	Oct	9.37	Oct	6.99	Oct	7.37	Oct	7.64	Oct	5.79
Nov	15.50	Nov	11.33	Nov	9.33	Nov	7.30	Nov	7.24	Nov	7.61	Nov	5.88
Dec	15.77	Dec	10.82	Dec	9.31	Dec	7.33	Dec	7.16	Dec	7.86	Dec	5.83
Jan 1982	16.73	Jan 1986	10.66	Jan 1990	9.44	Jan 1994	7.31	Jan 1998	7.03	Jan 2002	7.69	Jan 2006	5.77
Feb	16.72	Feb	10.16	Feb	9.66	Feb	7.44	Feb	7.09	Feb	7.62	Feb	5.83
Mar	16.07	Mar	9.33	Mar	9.75	Mar	7.83	Mar	7.13	Mar	7.83	Mar	5.98
Apr	15.82	Apr	9.02	Apr	9.87	Apr	8.20	Apr	7.12	Apr	7.74	Apr	6.28
May	15.60	May	9.52	May	9.89	May	8.32	May	7.11	May	7.76	May	6.39
Jun	16.18	Jun	9.51	Jun	9.69	Jun	8.31	Jun	6.99	Jun	7.67	June	6.39
Jul	16.04	Jul	9.19	Jul	9.66	Jul	8.47	Jul	6.99	Jul	7.54	July	6.37
Aug	15.22	Aug	9.15	Aug	9.84	Aug	8.41	Aug	6.96	Aug	7.34	Aug	6.20
Sep	14.56	Sep	9.42	Sep	10.01	Sep	8.65	Sep	6.88	Sep	7.23	Sep	6.03
Oct	13.88	Oct	9.39	Oct	9.94	Oct	8.88	Oct	6.88	Oct	7.43	Oct	6.01
Nov	13.58	Nov	9.15	Nov	9.76	Nov	9.00	Nov	6.96	Nov	7.31	Nov	5.82
Dec	13.55	Dec	8.96	Dec	9.57	Dec	8.79	Dec	6.84	Dec	7.20	Dec	5.83
Jan 1983	13.46	Jan 1987	8.77	Jan 1991	9.56	Jan 1995	8.77	Jan 1999	6.87	Jan 2003	7.13	Jan 2007	5.96
Feb	13.60	Feb	8.81	Feb	9.31	Feb	8.56	Feb	7.00	Feb	6.92	Feb	5.91
Mar	13.28	Mar	8.75	Mar	9.39	Mar	8.41	Mar	7.18	Mar	6.80	Mar	4.87
Apr	13.03	Apr	9.30	Apr	9.30	Apr	8.30	Apr	7.16	Apr	6.68		
May	13.00	May	9.82	May	9.29	May	7.93	May	7.42	May	6.35		
Jun	13.17	Jun	9.87	Jun	9.44	Jun	7.62	Jun	7.70	Jun	6.21		
Jul	13.28	Jul	10.01	Jul	9.40	Jul	7.73	Jul	7.66	Jul	6.54		
Aug	13.50	Aug	10.33	Aug	9.16	Aug	7.86	Aug	7.86	Aug	6.78		
Sep	13.35	Sep	11.00	Sep	9.03	Sep	7.62	Sep	7.87	Sep	6.58		
Oct	13.19	Oct	11.32	Oct	8.99	Oct	7.46	Oct	8.02	Oct	6.50		
Nov	13.33	Nov	10.82	Nov	8.93	Nov	7.40	Nov	7.86	Nov	6.44		
Dec	13.48	Dec	10.99	Dec	8.76	Dec	7.21	Dec	8.04	Dec	6.36		

Source:
Mergent Bond Record

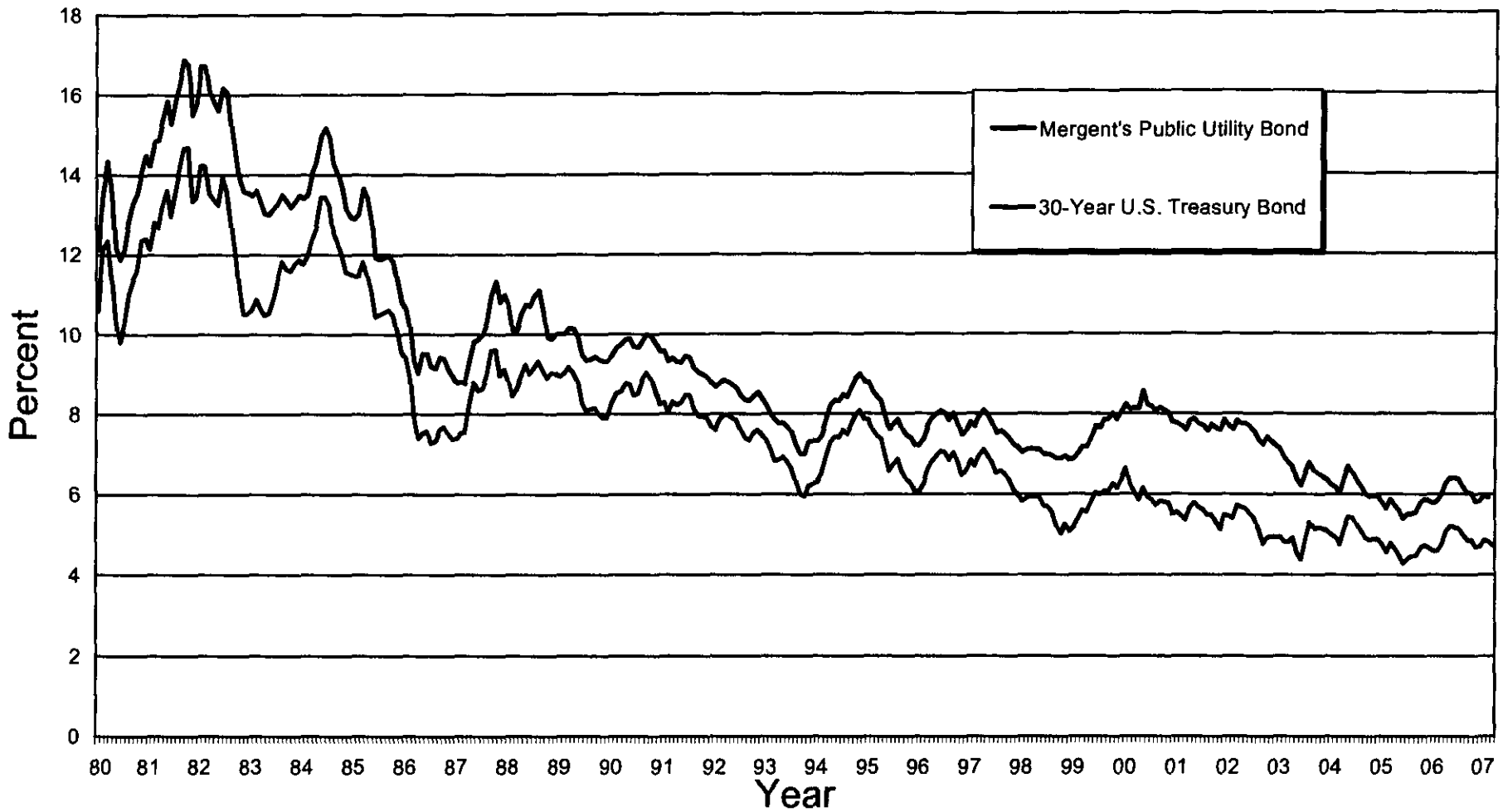
Average Yields on Thirty-Year U.S. Treasury Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	10.60	Jan 1984	11.75	Jan 1988	8.83	Jan 1992	7.58	Jan 1996	6.05	Jan 2000	6.63	Jan 2004	5
Feb	12.13	Feb	11.95	Feb	8.43	Feb	7.85	Feb	6.24	Feb	6.23	Feb	5
Mar	12.34	Mar	12.38	Mar	8.63	Mar	7.97	Mar	6.60	Mar	6.05	Mar	5
Apr	11.40	Apr	12.65	Apr	8.95	Apr	7.96	Apr	6.79	Apr	5.85	Apr	5.14
May	10.36	May	13.43	May	9.23	May	7.89	May	6.93	May	6	May	5.42
Jun	9.81	Jun	13.44	Jun	9.00	Jun	7.84	Jun	7.06	Jun	6	Jun	5.41
Jul	10.24	Jul	13.21	Jul	9.14	Jul	7.60	Jul	7.03	Jul	6	Jul	5.22
Aug	11.00	Aug	12.54	Aug	9.32	Aug	7.39	Aug	6.84	Aug	5.72	Aug	5.06
Sep	11.34	Sep	12.29	Sep	9.06	Sep	7.34	Sep	7.03	Sep	5.83	Sep	4.90
Oct	11.59	Oct	11.98	Oct	8.89	Oct	7.53	Oct	6.81	Oct	5.80	Oct	4.86
Nov	12.37	Nov	11.56	Nov	9.02	Nov	7.61	Nov	6.48	Nov	6	Nov	4.89
Dec	12.40	Dec	11.52	Dec	9.01	Dec	7.44	Dec	6.55	Dec	5	Dec	4.86
Jan 1981	12.14	Jan 1985	11.45	Jan 1989	8.93	Jan 1993	7.34	Jan 1997	6.83	Jan 2001	5.54	Jan 2005	4.73
Feb	12.80	Feb	11.47	Feb	9.01	Feb	7.09	Feb	6.69	Feb	5.45	Feb	4.55
Mar	12.69	Mar	11.81	Mar	9.17	Mar	6.82	Mar	6.93	Mar	5.34	Mar	4.78
Apr	13.20	Apr	11.47	Apr	9.03	Apr	6.85	Apr	7.09	Apr	5.65	Apr	4.65
May	13.60	May	11.05	May	8.83	May	6.92	May	6.94	May	5.78	May	4.49
Jun	12.96	Jun	10.44	Jun	8.27	Jun	6.81	Jun	6.77	Jun	5.67	Jun	4.29
Jul	13.59	Jul	10.50	Jul	8.06	Jul	6.63	Jul	6.51	Jul	5.61	Jul	4.41
Aug	14.17	Aug	10.56	Aug	8.12	Aug	6.32	Aug	6.58	Aug	5.48	Aug	4.46
Sep	14.67	Sep	10.61	Sep	8.15	Sep	6.00	Sep	6.50	Sep	5.48	Sep	4.47
Oct	14.68	Oct	10.50	Oct	8.00	Oct	5.94	Oct	6.33	Oct	5.32	Oct	4.67
Nov	13.35	Nov	10.06	Nov	7.90	Nov	6.21	Nov	6.11	Nov	5.12	Nov	4.73
Dec	13.45	Dec	9.54	Dec	7.90	Dec	6.25	Dec	5.99	Dec	5.48	Dec	4.66
Jan 1982	14.22	Jan 1986	9.40	Jan 1990	8.26	Jan 1994	6.29	Jan 1998	5.81	Jan 2002	5.44	Jan 2006	4.59
Feb	14.22	Feb	8.93	Feb	8.50	Feb	6.49	Feb	5.89	Feb	5.39	Feb	4.58
Mar	13.53	Mar	7.96	Mar	8.56	Mar	6.91	Mar	5.95	Mar	5.71	Mar	4.73
Apr	13.37	Apr	7.39	Apr	8.76	Apr	7.27	Apr	5.92	Apr	5.67	Apr	5.06
May	13.24	May	7.52	May	8.73	May	7.41	May	5.93	May	5.64	May	5.20
Jun	13.92	Jun	7.57	Jun	8.46	Jun	7.40	Jun	5.70	Jun	5.52	Jun	5.16
Jul	13.55	Jul	7.27	Jul	8.50	Jul	7.58	Jul	5.68	Jul	5.38	July	5.13
Aug	12.77	Aug	7.33	Aug	8.86	Aug	7.49	Aug	5.54	Aug	5.08	Aug	5.00
Sep	12.07	Sep	7.62	Sep	9.03	Sep	7.71	Sep	5.20	Sep	4.76	Sep	4.85
Oct	11.17	Oct	7.70	Oct	8.86	Oct	7.94	Oct	5.01	Oct	4.93	Oct	4.85
Nov	10.54	Nov	7.52	Nov	8.54	Nov	8.08	Nov	5.25	Nov	4.95	Nov	4.69
Dec	10.54	Dec	7.37	Dec	8.24	Dec	7.87	Dec	5.06	Dec	4.92	Dec	4.68
Jan 1983	10.63	Jan 1987	7.39	Jan 1991	8.27	Jan 1995	7.85	Jan 1999	5.16	Jan 2003	4.94	Jan 2007	4.85
Feb	10.88	Feb	7.54	Feb	8.03	Feb	7.61	Feb	5.37	Feb	4.81	Feb	4.82
Mar	10.63	Mar	7.55	Mar	8.29	Mar	7.45	Mar	5.58	Mar	4.80	Mar	4.72
Apr	10.48	Apr	8.25	Apr	8.21	Apr	7.36	Apr	5.55	Apr	4.90		
May	10.53	May	8.78	May	8.27	May	6.95	May	5.81	May	4.53		
Jun	10.93	Jun	8.57	Jun	8.47	Jun	6.57	Jun	6.04	Jun	4.37		
Jul	11.40	Jul	8.64	Jul	8.45	Jul	6.72	Jul	5.98	Jul	4.93		
Aug	11.82	Aug	8.97	Aug	8.14	Aug	6.86	Aug	6.07	Aug	5.30		
Sep	11.63	Sep	9.59	Sep	7.95	Sep	6.55	Sep	6.07	Sep	5.14		
Oct	11.58	Oct	9.61	Oct	7.93	Oct	6.37	Oct	6.26	Oct	5.16		
Nov	11.75	Nov	8.95	Nov	7.92	Nov	6.26	Nov	6.15	Nov	5.13		
Dec	11.88	Dec	9.12	Dec	7.70	Dec	6.06	Dec	6.35	Dec	5.08		

Sources:
http://finance.yahoo.com/q/hp?s=^TYX

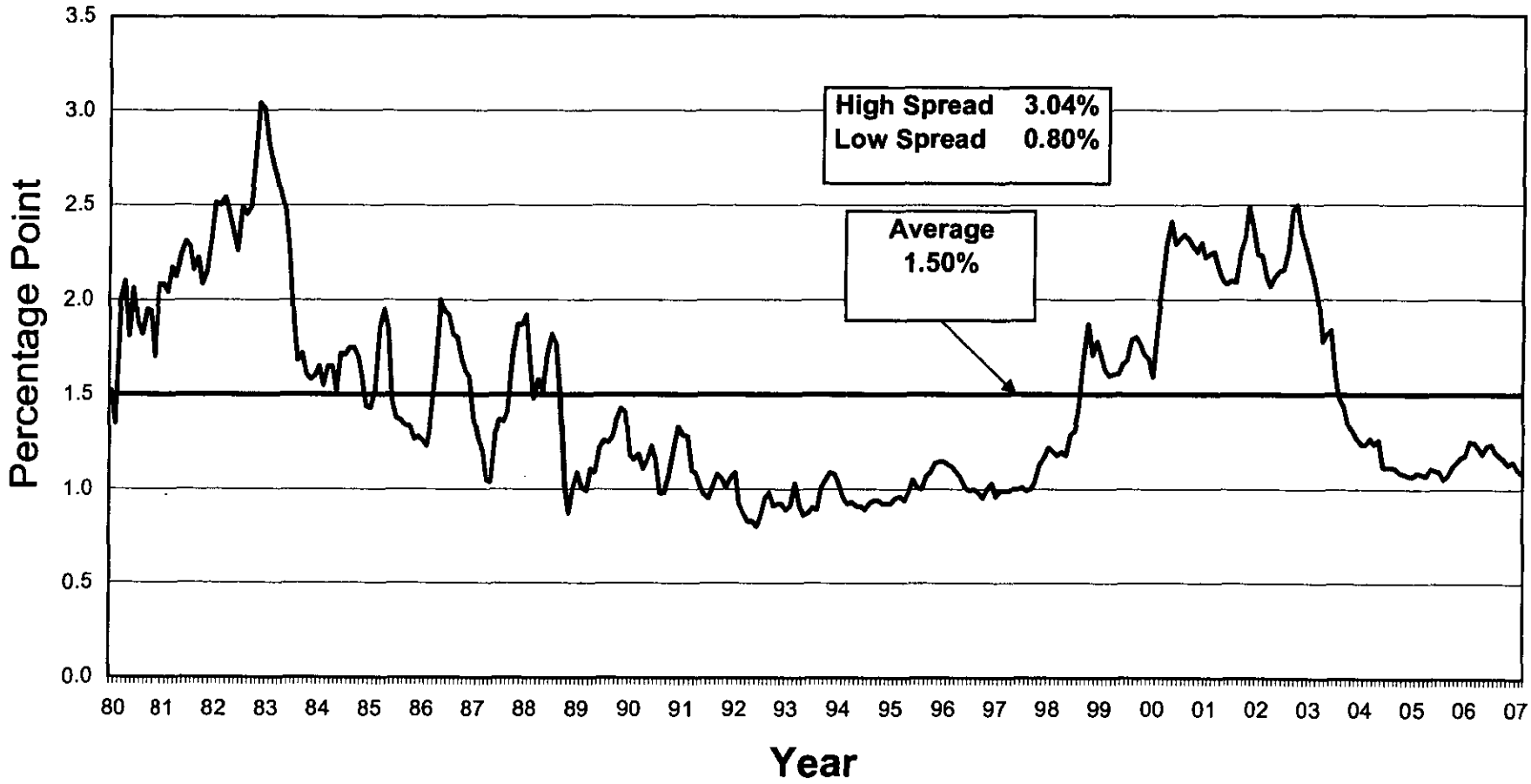
MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2007-0216

Average Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds (1980 - 2007)

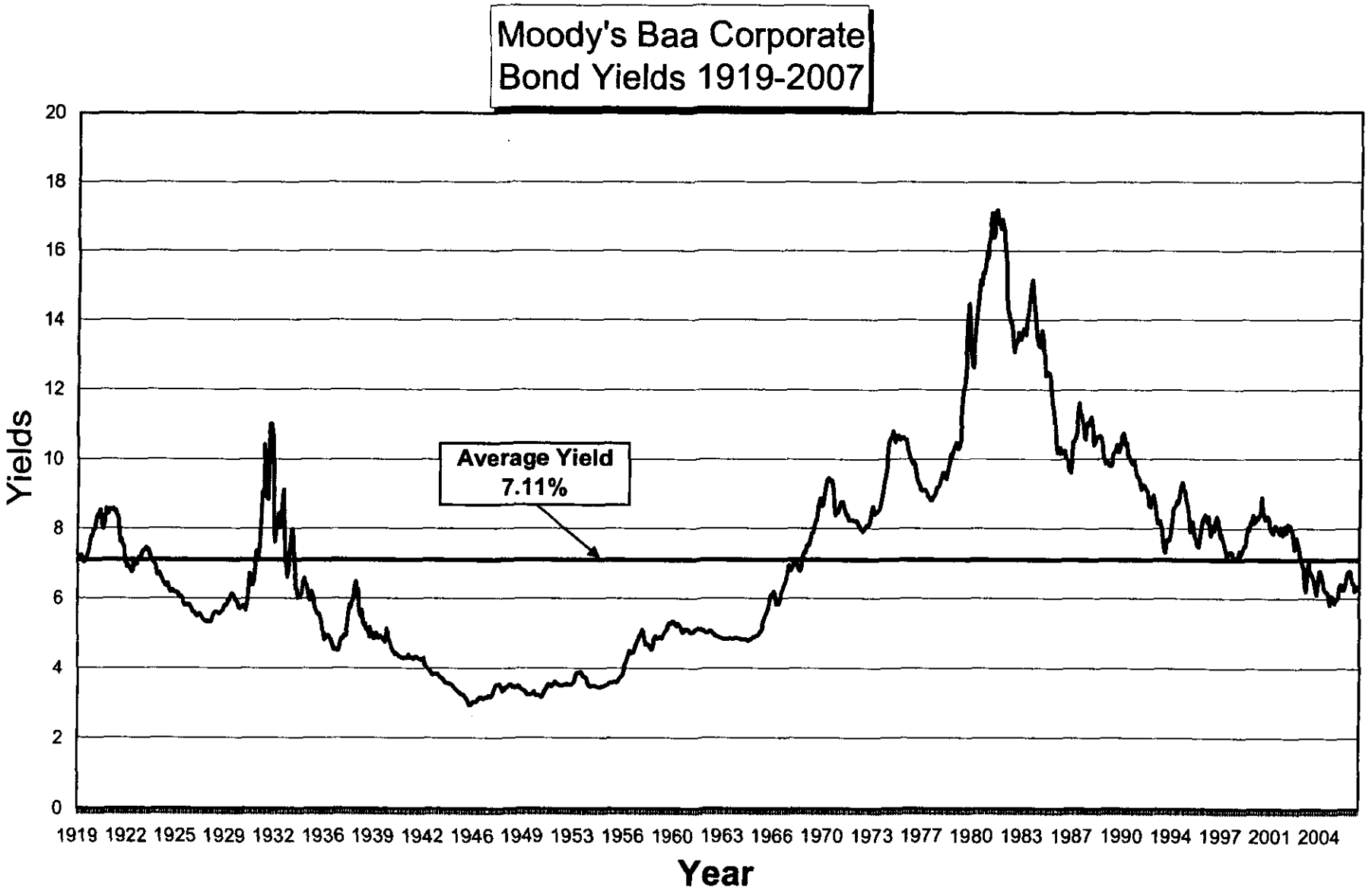


SCHEDULE 5-3

Monthly Spreads Between Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds (1980 - 2007)



SCHEDULE 5-4



Source: St. Louis Federal Reserve Website: http://stlouisfed.org

Schedule 5-5

Economic Estimates and Projections, 2007 - 2009

	Inflation Rate			Real GDP			Unemployment			3-Mo. T-Bill Rate			Long-Term T-Bond Rate		
Source	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Value Line Investment Survey -- Selection & Opinion (02-23-07, page 4851)	2.30%	2.30%	2.40%	2.80%	3.00%	3.20%	4.60%	4.70%	4.70%	5.00%	4.90%	4.90%	5.00%	5.20%	5.50%
The Budget and Economic Outlook FY2008-2017	1.90%	2.30%	2.20%	2.30%	3.00%	3.10%	4.70%	4.90%	5.00%	4.80%	4.50%	4.40%	N/A	N/A	N/A
Current rate	2.80%			1.30%			4.40%			4.94%			4.72%		

Notes: N.A. = Not Available.
CBO data for 2007 and 2008 are forecasted, data for 2009 is projected.

Sources of Current Rates:

Inflation:	The Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, 12-Month Period Ending, March 31, 2007. http://www.bls.gov/news.release/cpi.nr0.htm
GDP:	U.S. Department of Commerce, Bureau of Economic Analysis for the Quarter Ending March 31, 2007 (see first paragraph). http://www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm
Unemployment:	The Bureau of Labor Statistics, Economy Situation Summary - Unemployment Rate, March 2007. http://www.bls.gov/news.release/empsit.nr0.htm
3-Month Treasury:	St. Louis Federal Reserve website for March 1, 2007. http://research.stlouisfed.org/fred2/series/TB3MS/22
30-Yr. T-Bond:	St. Louis Federal Reserve website for March 1, 2007. http://research.stlouisfed.org/fred2/series/GS30?&cid=115
Other Sources:	ValueLine Investment Survey Selection & Opinion, February 23, 2007, page 4851.
	The Congressional Budget Office, The Budget and Economic Outlook: Fiscal Years 2008-2017, January 2007. http://www.cbo.gov/budget/econproj.shtml

Historical Consolidated Capital Structures for American Water

(Dollars in thousands)

Capital Components	1997	1998	1999	2000	2001
Common Equity	$1,341,946.0	$1,239,174.0	$1,634,798.0	$1,669,677.0	$1,758,018.0
Preferred Stock	97,663.0	97,089.0	93,811.0	52,693.0	49,415.0
Long-Term Debt	2,129,228.0 [1]	2,159,332.0 [1]	2,431,452.0 [1]	2,432,560.0 [1]	2,716,106.0 [1]
	$3,568,837.0	$3,495,595.0	$4,160,061.0	$4,154,930.0	$4,523,539.0

Capital Components	2002	2003	2004	2005	2006[4]
Common Equity	$1,801,921.0	$3,009,396.0	$2,888,896.0	$2,609,458.0	$2,613,696.0
Preferred Stock	33,858.0	1,782,610.0	1,779,875.0 [2]	1,779,795.0 [2 3]	1,779,088.0 [2 3]
Long-Term Debt	3,668,589.0 [1]	3,822,885.0 [1]	3,952,172.0 [1]	4,366,629.0 [1]	4,352,691.0 [1]
	$5,504,368.0	$8,614,891.0	$8,620,943.0	$8,755,882.0	$8,745,475.0

Historical Consolidated Capital Structures for Missouri-American

(Dollars in thousands)

Capital Components	1997	1998	1999	2000	2001
Common Equity	$34,894.8	$45,687.4	$47,632.4	$65,203.0	$196,249.3
Preferred Stock	2,794.0	2,768.0	2,742.0	2,716.0	2,704.0
Long-Term Debt	47,795.5 [1]	65,475.9 [1]	65,010.0 [1]	93,495.0 [1]	234,146.4 [1]
Total	$85,484.3	$113,931.3	$115,384.4	$161,414.0	$433,099.7

Capital Components	2002	2003	2004	2005	2006[4]
Common Equity	$210,515.0	$215,245.0	$214,999.0	$219,543.0	$222,961.6
Preferred Stock	2,692.0	2,680.0	2,668.0	2,664.0	2,704.0
Long-Term Debt	290,130.0 [1]	290,005.0 [1]	289,985.0 [1]	284,245.0 [1]	286,901.0 [1]
Total	$503,337.0	$507,930.0	$507,652.0	$506,452.0	$512,566.6

Note: 1. Includes current maturities on long-term debt.
2. Includes redeemable preferred stock.
3. Includes current maturities on preferred stock.
4. As of June 30, 2006.

Sources: Missouri-American Water Company's response to Staff Data Request Nos. 0068 and 0090.
Schedule 1 attached to Staff witness David Murray's surrebuttal testimony in Case No. WR-2003-0500.

Historical Consolidated Capital Structures for American Water

(In Percentages)

Capital Structure	1997	1998	1999	2000	2001
Common Equity	37.60%	35.45%	39.30%	40.19%	38.86%
Preferred Stock	2.74%	2.78%	2.26%	1.27%	1.09%
Long-Term Debt	59.66% [1]	61.77% [1]	58.45% [1]	58.55% [1]	60.04% [1]
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Capital Structure	2002	2003	2004	2005	2006[4]	**Average**
Common Equity	32.74%	34.93%	33.51%	29.80%	29.89%	**35.23%**
Preferred Stock	0.62%	20.69%	20.65% [2]	20.33% [2 3]	20.34%	**9.26%**
Long-Term Debt	66.65% [1]	44.38% [1]	45.84% [1]	49.87% [1]	49.77% [1]	**55.50%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Historical Consolidated Capital Structures for Missouri-American

(In Percentages)

Capital Structure	1997	1998	1999	2000	2001
Common Equity	40.82%	40.10%	41.28%	40.39%	45.31%
Preferred Stock	3.27%	2.43%	2.38%	1.68%	0.62%
Long-Term Debt	55.91% [1]	57.47% [1]	56.34% [1]	57.92% [1]	54.06% [1]
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Capital Structure	2002	2003	2004	2005	2006[4]	**Average**
Common Equity	41.82%	42.38%	42.35%	43.35%	43.50%	**42.13%**
Preferred Stock	0.53%	0.53%	0.53%	0.53%	0.53%	**1.30%**
Long-Term Debt	57.64% [1]	57.10% [1]	57.12% [1]	56.12% [1]	55.97% [1]	**56.57%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Note: 1. Includes current maturities on long-term debt.
2. Includes redeemable preferred stock.
3. Includes current maturities on preferred stock.
4. As of June 30, 2006.

Sources: Missouri-American Water Company's response to Staff Data Request 0068.

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Capital Structure as of June 30, 2006 for American Water

Capital Component	Amount in Dollars	Percentage of Capital
Common Stock Equity	$2,613,696,000 [1]	28.18%
Preferred Stock	1,779,324,374 [2]	19.18%
Long-Term Debt	4,300,271,634 [3]	46.36%
Short-Term Debt	583,010,000 [4]	6.28%
Total Capitalization	**$9,276,302,008**	**100.00%**

Utility Financial Ratio Benchmark for Capital Structure Total Debt / Total Capital

Standard & Poor's Corporation's RatingsDirect, Revised Financial Guidelines as of June 2, 2004	A Credit Rating based on a "2" Business Profile
	52% to 58%

Notes:
1. Based on common equity shown on American Water's June 30, 2006 balance sheet.
2. Based on total preferred stock shown on American Water's June 30, 2006 balance sheet less unamortized preferred stock expenses.
3. Based on total long-term debt shown on American Water's June 30, 2006 balance sheet less unamortized long-term debt expenses.
4. Based on short-term debt shown on American Water's June 30, 2006 balance sheet.

Source: MAWC's response to Staff Data Request Nos. 0090 and 0091.

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Embedded Cost of Long-Term Debt as of June 30, 2006
for American Water (Excluding Debt Held at American Water's Subsidiaries Besides MAWC)

Total Annual Cost:	$137,837,748	
Total Carrying Value:	$2,625,745,517	
Embedded Cost = Total Annual Cost/Total Carrying Value		5.25%

Sources: Missouri-American Water Company's response to Staff's Data Information Requests No. 0091.

SCHEDULE 9

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Embedded Cost of Preferred Stock as of June 30, 2006

for American Water (Excluding Debt Held at American Water's Subsidiaries Besides MAWC)

Total Annual Cost:	$103,489,228	
Total Carrying Value:	$1,752,610,145	
Embedded Cost = Total Annual Cost/Total Carrying Value		5.90%

Sources: Missouri-American Water Company's response to Staff's Data Information Request No. 0090.

SCHEDULE 10

Criteria for Selecting Comparable Water Utility Companies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Water Utility Companies(Ticker)	Stock Publicly Traded	Information Printed In Value Line	10-Years of Data Available	At Least Investment Grade Credit Rating	Projected Growth Rate Available from Value Line, S&P or I/B/E/S	>80% of Revenues from Water Operations	Comparable Company Met All Criteria
American States Water Company (AWR)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Aqua America Inc. (WTR)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Artesian Resources Corporation (ARTNA)	Yes	No					
BIW Ltd. (BIW)	Yes	No					
California Water Service Group (CWT)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Connecticut Water Service, Inc. (CTWS)	Yes	Yes	Yes	Yes	No		
Middlesex Water Company (MSEX)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Pennichuck Corporation (PNNW)	Yes	No					
SJW Corporation (SJW)	Yes	Yes	Yes	N.R.			
Southwest Water Company (SWWC)	Yes	Yes	Yes	N.R.			
York Water Company (YORW)	Yes	Yes	No				

Sources: Columns 1 and 2 = Edward Jones Water Utility Industry Summary Quarterly Financial and Common Stock Information for March 31, 2007.
Columns 3, 4 and 6 = The Value Line Investment Survey: Ratings & Reports, April 27, 2007.
Column 5 = Standard & Poor's RatingsDirect.
Column 6 = April 2007 Earnings Guide and I/B/E/S Inc.'s Institutional Brokers Estimate System, October 19, 2007.

Notes: N.R.=Not Rated by Standard and Poor's

Four Comparable Water Utility Companies

Number	Ticker Symbol	Company Name
1	AWR	American States Water Company
2	WTR	Aqua America Inc.
3	CWT	California Water Service Group
4	MSEX	Middlesex Water Company

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

	10-Year Annual Compound Growth Rates			
Company Name	DPS	EPS	BVPS	Average of 10 Year Annual Compound Growth Rates
American States Water Company	1.00%	0.00%	4.00%	1.67%
Aqua America Inc.	6.00%	9.00%	9.50%	8.17%
California Water Service Group	1.50%	1.00%	3.00%	1.83%
Middlesex Water Company	2.18%	1.51%	4.56%	2.75%
Average	**2.67%**	**2.88%**	**5.27%**	**3.60%**
Standard Deviation	1.97%	3.58%	2.51%	2.67%

Source: The Value Line Investment Survey: Ratings & Reports, April 27, 2007.

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

	5-Year Annual Compound Growth Rates			
Company Name	DPS	EPS	BVPS	Average of 5 Year Annual Compound Growth Rates
American States Water Company	1.00%	-2.50%	4.50%	1.00%
Aqua America Inc.	6.50%	8.50%	11.00%	8.67%
California Water Service Group	1.00%	-0.50%	3.00%	1.17%
Middlesex Water Company	2.00%	3.50%	5.00%	3.50%
Average	**2.63%**	**2.25%**	**5.88%**	**3.58%**
Standard Deviation	2.27%	4.21%	3.05%	3.10%

Source: The Value Line Investment Survey: Ratings & Reports, April 27, 2007.

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Average of Ten- and Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share of Growth Rates for the Four 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	1.67%	1.00%	1.33%
Aqua America Inc.	8.17%	8.67%	8.42%
California Water Service Group	1.83%	1.17%	1.50%
Middlesex Water Company	2.75%	3.50%	3.13%
Average	**3.60%**	**3.58%**	**3.59%**

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

Company Name	(1) Historical Growth Rate (DPS, EPS and BVPS)	(2) Projected 5-Year EPS Growth IBES (Mean)	(3) Projected 5-Year EPS Growth S&P	(4) Projected 3-5 Year EPS Growth Value Line	(5) Average Projected Growth	(6) Average of Historical & Projected Growth
American States Water Company	1.33%	4.50%	5.00%	9.00%	6.17%	3.75%
Aqua America Inc.	8.42%	10.00%	10.00%	7.50%	9.17%	8.79%
California Water Service Group	1.50%	7.00%	7.00%	6.50%	6.83%	4.17%
Middlesex Water Company	3.13%	8.00%	8.00%	N.A.	8.00%	5.56%
Average	**3.59%**	**7.38%**	**7.50%**	**7.67%**	**7.54%**	**5.57%**

Proposed Range of Growth for Comparables: **5.60% - 6.60%**

Sources: Column 1 = Average of 10-Year and 5-Year Annual Compound Growth Rates from Schedule 13-3.

Column 2 = I/B/E/S Inc.'s Institutional Brokers Estimate System, April 19, 2007.

Column 3 = Standard & Poor's Earnings Guide, April 2007.

Column 4 = The Value Line Investment Survey: Ratings and Reports, April 27, 2007.

MISSOURI-AMERICAN WATER COMPANY
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Average High / Low Stock Price for January 2007 through April 2007
for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	-- January 2007 --		-- February 2007 --		-- March 2007 --		-- April 2007 --		**Average High/Low Stock Price (1/07 - 4/07)**
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	
American States Water Company	$39.490	$36.520	$40.470	$37.550	$41.120	$35.360	$37.710	$35.480	**$37.963**
Aqua America Inc.	$23.260	$22.000	$24.030	$22.250	$23.090	$20.500	$23.450	$22.000	**$22.573**
California Water Service Group	$44.580	$38.300	$41.600	$38.200	$42.120	$35.500	$41.450	$37.020	**$39.846**
Middlesex Water Company	$19.070	$18.030	$18.720	$16.930	$18.740	$17.750	$19.070	$18.120	**$18.304**

Notes:

Column 9 = [(Column 1 + Column 2 + Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 8) / 8].

Source: http://finance.yahoo.com/q?s.

MISSOURI-AMERICAN WATER COMPANY
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Discounted Cash Flow (DCF) Estimated Costs of Common Equity 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 of Historical & Projected Growth	Estimated Cost of Common Equity
American States Water Company	$0.96		$37.963	2.52%	3.75%	6.27%
Aqua America Inc.	$0.52		$22.573	2.28%	8.79%	11.07%
California Water Service Group	$1.17		$39.846	2.92%	4.17%	7.09%
Middlesex Water Company	$0.69	*	$18.304	3.79%	5.56%	9.36%
Average				**2.88%**	**5.57%**	**8.45%**

Proposed Dividend Yield: **2.90%**

Proposed Range of Growth: **5.60%-6.60%**

Estimated Proxy Cost of Common Equity: **8.50%-9.50%**

Notes: Column 1 = Average of 2007 and 2008 Estimated Dividends Declared per share from Value Line.

Column 3 = (Column 1 / Column 2).

Column 5 = (Column 3 + Column 4).

Sources: Column 1 = The Value Line Investment Survey: Ratings and Reports, April 27, 2007.

Column 2 = Schedule 15.

Column 4 = Schedule 14.

Note *Middlesex was calculated by taking the 2005 dividend of $0.67 times the average historical 5-year and 10-year dividend growth rate.

MISSOURI-AMERICAN WATER COMPANY
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Capital Asset Pricing Model (CAPM) Costs of Common Equity Estimates
Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries
for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Company Name	Risk Free Rate	Company's Value Line Beta	Arithmetic Average Market Risk Premium (1926-2006)	Geometric Average Market Risk Premium (1926-2006)	Geometric Average Market Risk Premium (1996-2006)	Arithmetic CAPM Cost of Common Equity (1926-2006)	Geometric CAPM Cost of Common Equity (1926-2006)	Geometric CAPM Cost of Common Equity (1997-2006)
American States Water Company	4.72%	0.80	6.50%	5.00%	0.59%	9.92%	8.72%	5.19%
Aqua America Inc.	4.72%	0.90	6.50%	5.00%	0.59%	10.57%	9.22%	5.25%
California Water Service Group	4.72%	0.90	6.50%	5.00%	0.59%	10.57%	9.22%	5.25%
Middlesex Water Company	4.72%	0.85	6.50%	5.00%	0.59%	10.25%	8.97%	5.22%
Average		**0.86**				**10.33%**	**9.03%**	**5.23%**

Sources:

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for March 2007 which was obtained from the St. Louis Federal Reserve website at http://research.stlouisfed.org/fred2/series/GS30/22.

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, April 17, 2007.

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 appropriate Market Risk Premium for the period 1926 - 2006 was determined to be 6.50% based on an arithmetic average as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2007 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 appropriate Market Risk Premium for the period 1926 - 2006 was determined to be 5.00% based on a geometric average as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2007 Yearbook.

Column 5 = 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 appropriate Market Risk Premium for the period 1997 - 2006 was determined to be 0.59% as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2007 Yearbook.

Column 6 = (Column 1 + (Column 2 * Column 3)).

Column 7 = (Column 1 + (Column 2 * Column 4)).

Column 8 = (Column 1 + (Column 2 * Column 5)).

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Selected Financial Ratios for the Four Comparable Water Utility Companies

Company Name	(1) 2006 Common Equity Ratio	(2) 2006 Long-Term Debt Ratio	(3) Funds From Operations Interest Coverage	(4) Funds From Operations to Total Debt	(5) Market-to-Book Value	(6) 2006 Return on Common Equity	(7) 2007 Projected Return on Common Equity	(8) Bond Rating
American States Water Company	51.40%	48.60%	3.50 x	18.0%	2.30 x	8.10%	8.50%	A-
Aqua America Inc.	49.20%	50.80%	4.30 x	17.0%	3.12 x	10.00%	11.00%	A+
California Water Service Group	56.20%	43.30%	3.90 x	17.8%	2.35 x	6.80%	8.50%	A+
Middlesex Water Company	50.49%	49.51%	3.60 x	13.0%	2.10 x	7.50%	N.A.	A-
Average	**51.82%**	**48.05%**	**3.83** x	**16.5%**	**2.47** x	**8.10%**	**9.33%**	**A**

Sources:

The Value Line Investment Survey Ratings & Reports, April 27, 2007: for columns (1), (2), (6) and (7).
Standard & Poor's Reports for February 12, 2007 on American States Water Co., November 2, 2006 on Aqua Pennsylvania, December 18, 2006 on California Water Service Co. and October 6, 2006 on Middlesex for columns (3), (4) and (8).
AUS Utility Reports, April 2007 for column (5).

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

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Weighted Cost of Capital as of June 30, 2006 for Missouri-American Water Company

Capital Component	Percentage of Capital	Embedded Cost	Weighted Cost of Capital Using Common Equity Return of: 8.60%	9.10%	9.60%
Common Stock Equity	28.18%	---	2.42%	2.56%	2.70%
Preferred Stock	19.18%	5.90%	1.13%	1.13%	1.13%
Long-Term Debt	46.36%	5.25%	2.43%	2.43%	2.43%
Short-Term Debt	6.28%	4.40%	0.28%	0.28%	0.28%
	100.00%		**6.27%**	**6.41%**	**6.55%**

Notes:

See Schedule 8 for the Capital Structure Ratios.

See Schedule 9 for the Embedded Cost of Long-Term Debt.

See Schedule 10 for the Embedded Cost of Preferred Stock.

SCHEDULE 20