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*Case Nos.:* *ST-2003-0562 and*  
*WT-2003-0563*  
*(Consolidated)*  
*Date Testimony Prepared:* *December 19, 2003*

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY SERVICES DIVISION**

**DIRECT TESTIMONY**

**OF**

**DAVID MURRAY**

**OSAGE WATER COMPANY**

**CASE NOS. ST-2003-0562 and WT-2003-0563  
(CONSOLIDATED)**

*Jefferson City, Missouri*  
*December 2003*

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

In The Matter of Sewer and Water Tariff  
Filings made by Osage Water Company

) Case No. ST-2003-0562 and  
) Case No. WT-2003-0563  
(Consolidated)

AFFIDAVIT OF DAVID MURRAY

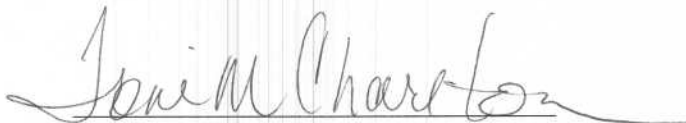
STATE OF MISSOURI     )  
                                  )     ss.  
COUNTY OF COLE     )

David Murray, being of lawful age, on his oath states: that he has participated in the preparation of the following Direct Testimony in question and answer form, consisting of 27 pages to be presented in the above case; that the answers in the following Direct Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.

  
\_\_\_\_\_  
David Murray

Subscribed and sworn to before me this 19th day of December 2003.



  
\_\_\_\_\_  
Notary

TONI M. CHARLTON  
NOTARY PUBLIC STATE OF MISSOURI  
COUNTY OF COLE  
My Commission Expires December 28, 2004

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A. My name is David Murray.

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

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

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

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 the same University in December 2003.

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

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

- 2 • TR-2001-344 Northeast Missouri Rural Telephone Company
- 3 • TC-2001-402 Ozark Telephone Company
- 4 • TT-2001-328 Oregon Farmers Mutual Telephone Company
- 5 • TC-2002-1076 BPS Telephone Company
- 6 • GR-2001-292 Southern Union Company d/b/a Missouri Gas Energy
- 7 • ER-2001-672 UtiliCorp United, Inc. d/b/a Missouri Public Service
- 8 • ER-2002-424 The Empire District Electric Company
- 9 • GM-2003-0238 Southern Union Company d/b/a Missouri Gas Energy
- 10 • WR-2003-0500 Missouri-American Water Company.

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

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

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

15 A. My testimony is presented to recommend to the Commission a fair and  
16 reasonable rate of return for Osage Water Company rate base.

17 Q. Have you prepared any schedules to your analysis of the cost of capital for  
18 Osage Water Company?

19 A. Yes. I am sponsoring a study entitled "An Analysis of the Cost of Capital for  
20 Osage Water Company Case Nos. ST-2003-0562 and WT-2003-0563" consisting of  
21 20 schedules which are attached to this direct testimony (see Schedule 1).

22 Q. What do you conclude is the cost of capital for Osage Water Company?

23 A. The cost of capital for Osage Water Company is in the range of 7.69 to  
24 8.57 percent.

25 **Economic and Legal Rationale for Regulation**

26 Q. Why are the prices charged to customers by utilities such as Osage Water  
27 Company regulated?

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

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

16           Water utility providers such as Osage Water Company provide water utility services  
17 essentially under a monopoly franchise. Therefore, it is clear that Osage Water Company has  
18 monopoly power.

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

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

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

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

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

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

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

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

- 22                   1.    A return “generally being made at the same time” in that “general  
23                   part of the country”;
- 24                   2.    A return achieved by other companies with “corresponding risks  
25                   and uncertainties”; and
- 26                   3.    A return “sufficient to assure confidence in the financial soundness  
27                   of the utility”.

1 The Court specifically stated:

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

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

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

24 The U.S. Supreme Court also discussed the reasonableness of a return for a utility in  
25 the case of Federal Power Commission et al. v. Hope Natural Gas Company, 320 U.S. 591  
26 (1944). The Court stated that:

27 The rate-making process . . . , i.e., the fixing of "just and reasonable"  
28 rates, involves a balancing of the investor and the consumer interests.  
29 Thus we stated . . . that "regulation does not insure that the business  
30 shall produce net revenues" . . . it is important that there be enough  
31 revenue not only for operating expenses but also for the capital costs  
32 of the business. These include service on the debt and dividends on  
33 the stock . . . . By that standard the return to the equity owner should  
34 be commensurate with returns on investments in other enterprises  
35 having corresponding risks. That return, moreover, should be  
36 sufficient to assure confidence in the financial integrity of the  
37 enterprise, so as to maintain its credit and to attract capital. Id. at 603.



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

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

7 We do not believe, however, . . . that the end result of a  
8 rate-making body’s adjudication *must* be the setting of rates at a level  
9 that will, in any given case, guarantee the continued financial integrity  
10 of the utility concerned . . . . In cases where the balancing of  
11 consumer interests against the interests of investors causes rates to be  
12 set at a “just and reasonable” level which is insufficient to ensure the  
13 continued financial integrity of the utility, it may simply be said that  
14 the utility has encountered one of the risks that imperil any business  
15 enterprise, namely the risk of financial failure. Pennsylvania Electric  
16 Company, et al. v. Pennsylvania Public Utility Commission, 502 A.2d  
17 130, 133-34 (1985), cert. denied, 476 U.S. 1137 (1986).

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

25 Through these and other court decisions, it has generally been recognized that public  
26 utilities can operate more efficiently when they operate as monopolies. It has also been  
27 recognized that regulation is required to offset the lack of competition and maintain prices at  
28 a reasonable level. It is the regulatory agency’s duty to determine a fair rate of return and the

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1 appropriate revenue requirement for the utility, while maintaining reasonable prices for the  
2 public consumer.

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

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

13 **Historical Economic Conditions**

14 Q. Please discuss the relevant historical economic conditions in which Osage  
15 Water Company has operated.

16 A. One of the most commonly accepted indicators of economic conditions is the  
17 discount rate set by the Federal Reserve Board (the Federal Reserve). The Federal Reserve  
18 tries to achieve its monetary policy objectives by controlling the discount rate (the interest  
19 rate charged by the Federal Reserve for loans of reserves to depository institutions) and the  
20 Federal (Fed) Funds Rate (the overnight lending rate between banks). However, recently the  
21 Fed Funds Rate has become the primary means for the Federal Reserve to achieve its  
22 monetary policy and the discount rate has become more of a symbolic interest rate. At the  
23 end of 1982, the U.S. economy was in the early stages of an economic expansion, following

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1 the longest post-World War II recession. This economic expansion began when the Federal  
2 Reserve reduced the discount rate seven times in the second half of 1982 in an attempt to  
3 stimulate the economy. This reduction in the discount rate led to a reduction in the prime  
4 interest rate (the rate charged by banks on short-term loans to borrowers with high credit  
5 ratings) from 16.50 percent in June 1982, to 11.50 percent in December 1982. The economic  
6 expansion continued for approximately eight years until July 1990, when the economy  
7 entered into a recession.

8 In December 1990, the Federal Reserve responded to the slumping economy by  
9 lowering the discount rate to 6.50 percent (see Schedules 2-1 and 2-2). Over the next  
10 year-and-a-half, the Federal Reserve lowered the discount rate another six times to a low of  
11 3.00 percent, which had the effect of lowering the prime interest rate to 6.00 percent  
12 (see Schedules 3-1 and 3-2).

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

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1 raised the discount rate to 5.25 percent, and in turn, banks raised the prime interest rate to  
2 9.00 percent.

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

7 The actions of the Federal Reserve from 1996 through 2000 were primarily focused  
8 on keeping the level of inflation under control, and it was successful. The inflation rate, as  
9 measured by the *Consumer Price Index - All Urban Consumers* (CPI), was at a high of  
10 3.70 percent in March 2000. The increase in CPI stood at 2.30 percent for the period ending  
11 October 31, 2003 (see Schedules 4-1 and 4-2). Although inflation has not been a problem  
12 recently, the unemployment rate has shown some signs that the job market has loosened,  
13 meaning unemployment has increased. While not as high as the January 1993 level of  
14 7.3 percent, the unemployment rate now stands at 6.1 percent as of September 30, 2003  
15 (see Schedule 6).

16 The combination of low inflation and low unemployment had led to a prosperous  
17 economy, until recently, as evidenced by the real gross domestic product (GDP) of the  
18 United States. Over the period of 1993 through the end of 2000, real GDP had increased  
19 every quarter. However, GDP data for the first three quarters of 2001 indicate there was a  
20 contraction in the economy during these three quarters. This contraction of GDP for more  
21 than two quarters in a row meets the textbook definition of a recession. According to the  
22 National Bureau of Economic Research, the recession began in March of 2001 and ended  
23 eight months later. Since the recession ended, GDP has been low for the most part from

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1 quarter-to-quarter, except for the first and third quarters of 2002 and the most recent quarter  
2 in 2003 when it grew by 7.20 percent (see Schedule 6). The stock market, as measured by  
3 the Dow Jones Composite Index, has increased by 12.73 percent between August 7, 1997 and  
4 November 13, 2003, while the Dow Jones Industrial Index has increased by 20.15 percent  
5 over that same time frame. The stock market has decreased 22.42 percent as measured by  
6 The Value Line Geometric Averages Composite Index from August 7, 1997 through  
7 November 13, 2003. The Value Line Geometric Averages Composite Index currently  
8 consists of an equally weighted geometric average of 1671 companies as compared to the  
9 Dow Jones Composite Index, which consists of a price-weighted arithmetic average of only  
10 65 companies.

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

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1 December 1991. The Federal Reserve justified its actions by citing eroding consumer and  
2 business confidence and rising energy costs.

3 The Federal Reserve cut the Fed Funds Rate a total of eleven times in 2001 with the  
4 last rate cut occurring on December 11, 2001, when it lowered the Fed Funds Rate to  
5 1.75 percent. The Federal Reserve again left the Fed Funds Rate unchanged at its March 19,  
6 2002 meeting stating that “the economy is expanding at a significant pace.”  
7 [Source: MSNBC, “Fed Holds Interest Rate Steady,” March 19, 2002,  
8 <http://www.msnbc.com/news/725818?0dm=C2BHB>].

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

16 On August 12, 2003, the Federal Reserve kept its interest rate target at a 45-year low  
17 of 1 percent, while making an unprecedented prediction that it will stay near that level for  
18 some time to come. The Fed also went on to say that the risks to growth in the next few  
19 quarters are balanced, but the risk of “undesirably low” price inflation outweighed the risk of  
20 inflation rising. The Fed indicated that the risk of falling inflation would be its “predominant  
21 concern” (*Wall Street Journal*, p. A2, August 13, 2003). However, although the Fed has  
22 made a commitment to keeping the Fed Funds Rate at its current level for some time to

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1 come, Thirty-Year U.S. Treasury Bonds have increased to 5.16 percent as of October 2003  
2 from a low of 4.37 percent as of June 2003 (see Schedule 5-2).

3 In light of the above interest rate activity, it is important to reflect on the results of the  
4 major stock market indexes in the past year. Based on opening and closing quotes from  
5 *Wall Street City* from November 26, 2002 through November 26, 2003, the Dow Jones  
6 Industrial Average rose 12.53 percent, the S&P 500 rose 15.39 percent and the NASDAQ  
7 rose 34.52 percent.

8 These economic changes have resulted in cost of capital changes for utilities and are  
9 closely reflected in the yields on public utility bonds and yields of Thirty-Year U.S. Treasury  
10 Bonds (see Schedule 5-1 and 5-2). Schedule 5-3 shows how closely the Mergent's "Public  
11 Utility Bond Yields" have followed the yields of Thirty-Year U.S. Treasury Bonds during the  
12 period from 1988 to the present. The average spread for this period between these two  
13 composite indices has been 139 basis points, with the spread ranging from a low of 80 basis  
14 points to a high of 250 basis points (see Schedule 5-4). These spread parameters can be  
15 utilized with numerous published forecasts of Thirty-Year U.S. Treasury Bond yields to  
16 estimate future long-term debt costs for utility companies.

17 **Economic Projections**

18 Q. What are the inflationary expectations for the remainder of 2003 through  
19 2006?

20 A. The latest inflation rate, as measured by the *Consumer Price Index-All Urban*  
21 *Consumers* (CPI), was 2.30 percent for the 12-months ended October 31, 2003. *The Value*  
22 *Line Investment Survey: Selection & Opinion*, August 29, 2003, predicts inflation to be  
23 1.9 percent for 2003, 2.0 percent for 2004 and 2.1 percent for 2005. The Congressional

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1 Budget Office, *The Budget and Economic Outlook: Fiscal Years 2003-2013*, issued  
2 January 2003, states that inflation is expected to be 2.3 percent for 2003, 1.9 percent for 2004  
3 and 2.4 percent for 2005 (see Schedule 6).

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

5 A. Short-term interest rates, those measured by Three-Month U.S. Treasury Bills,  
6 are expected to be 1.1 percent in 2003, 1.6 percent in 2004 and 2.0 percent in 2005 according  
7 to Value Line's predictions. Value Line expects long-term interest rates, those measured by  
8 the Thirty-Year U.S. Treasury Bond, to average 5.1 percent in 2003, 5.6 percent in 2004 and  
9 6.0 percent in 2005.

10 The current rate for the period ending September 1, 2003 is .96 percent for 3-month  
11 T-Bills, as noted on the Federal Reserve website, <http://www.stls.frb.org/fred/data/rates.html>.  
12 The current rate for the period ending October 16, 2003 is 5.16 percent for Thirty-Year U.S.  
13 Treasury Bonds as noted on Investopedia's website, <http://www.investopedia.com>.

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

16 A. GDP is a benchmark utilized by the Commerce Department to measure  
17 economic growth within the United States' borders. Real GDP is measured by the actual  
18 Gross Domestic Product, adjusted for inflation. Value Line stated that real GDP growth is  
19 expected to increase by 2.3 percent in 2003, 3.7 percent in 2004 and 3.7 percent in 2005.  
20 The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years*  
21 *2003-2013*, stated that real GDP is expected to increase by 2.2 percent in 2003, 3.8 percent in  
22 2004 and 3.5 percent in 2005 (see Schedule 6).



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

3 A. In summary, when combining the previously mentioned sources, inflation is  
4 expected to be in the range of 1.9 to 2.4 percent, increase in real GDP in the range of 2.2 to  
5 3.8 percent and long-term interest rates are expected to range from 5.1 to 6.0 percent.

6 The Value Line Investment Survey: Selection & Opinion, November 31, 2003, states  
7 that:

8 **There are very few clouds on the economic horizon as we**  
9 **approach the two-thirds mark of the fourth quarter.** Most of the  
10 economy's key sectors are responding very well, with industrial  
11 production, U.S. exports, retail spending (excluding autos), and  
12 employment, for example, all posting anywhere from modest to solid  
13 gains after selective weakness early in the year. Further, many  
14 companies, upon issuing their recent quarterly earnings statements,  
15 indicated that they had a strong book of new business going forward.  
16 As such...

17 **We think the gross domestic product will rise by around 4% in the**  
18 **current quarter and maintain that healthy pace in 2004.** True, that  
19 would be a step back from the third quarter, when growth had topped  
20 7%. But that eye-catching performance was helped by the effect of the  
21 Bush Administration's retroactive tax cut, which was implemented  
22 during the summer. Moreover, this projected rate of business growth  
23 is materially greater than appeared likely just a few months ago, when  
24 both capital spending and employment were still faltering.

25 **For now, we do not believe this solid rate of business activity will**  
26 **fan the fires of inflation.** Although the rate of job growth is  
27 increasing, the gains aren't sufficient to cause wages and benefits to  
28 rise sharply. In addition, productivity is surging, which is also helping  
29 to keep inflation at bay. Then, too, raw materials are still in plentiful  
30 supply and there is enough industrial capacity around to avoid most  
31 production bottlenecks, in our opinion.

32 **As such, we expect the Federal Reserve to proceed slowly on the**  
33 **interest-rate front.** Overall, we think borrowing costs will move  
34 higher in 2004, but we do not think this uptrend will commence until  
35 the year is well under way and the jobless rate starts to decline. Rates  
36 should then only edge modestly higher, unless there is an unexpected  
37 jump in inflation.

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**The stock market, though, has not been proceeding slowly**, with the leading indexes having recently risen to their best levels in more than a year. However, this showing, which has been interrupted by only brief bouts of profit taking, has left equities a little overextended.

S&P's Chief Technical Analyst, Mark Arbeter, states the following in the November 19, 2003 issue of *The Outlook*:

For the 10 years ended 1999, the S&P 500 advanced more than 315%. But from the end of 1999 through last year, the "500" tumbled more than 40%. Even though 2003 appears likely to end with a gain, stock investors could well experience a below-average decade.

In terms of performance, the 1990s were the best decade in modern stock market history. On average, the S&P 500 gained 16.13% a year during the boom period. Contrast that with what investors have seen since 2000. The average annual loss for the first three complete years of this decade has been 15.52%. Standard & Poor's estimates that the "500" will end 2003 at 1085 for a gain of 23.32%. If the market hits that target, the average annual loss for four years would still be 5.81%.

Could this turn out to be the worst decade for stocks in the history of the S&P 500? That infamous record currently is held by the 1930s, when stocks advanced a meager 0.04% a year. Assuming year end 2003 at 1085, the "500" would have to gain 3.94%, on average, for the remaining six years of the decade to match the performance of the 1930s. We think that the market is likely to do significantly better and that the Depression-era record for worst decade will probably stand.

The 1970s saw only a 3.2% annual gain in stocks. To simply match that performance, the market will have to rise 9.2% annually for the final six years of this decade if the index closes at 1085 this year.

Although that's possible, it is less probable, given our projections for modest GDP growth and inflation over the next several years. The upshot is that everyone, especially baby boomers set to begin retiring soon, will have to save more.

Alternative investment choices in bonds and cash equivalents look unappealing. We continue to recommend keeping 65% of your investment nest egg in stocks.

**Business Operations of Osage Water Company**

Q. Please describe Osage Water Company's business operations.

A. Osage Water Company had a net rate base of \$370,664 as of June 30, 2003. As of December 31, 2002, they had a net income of negative \$21,907. As of June 30, 2003, Osage Water Company had 329 water customers and 287 sewer customers.

**Determination of the Cost of Capital**

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

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

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

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

Assuming that the various forms of capital are within a reasonable balance and are costed correctly, the resulting total weighted cost of capital, when applied to rate base, will

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1 provide the funds necessary to service the various forms of capital. Thus, the total WACC  
2 corresponds to a fair rate of return for the utility company.

### 3 **Capital Structure and Embedded Costs**

4 Q. What capital structure did you use for Osage Water Company?

5 A. I have used Osage Water Company's capital structure as of June 30, 2003.  
6 Schedule 7 presents Osage Water Company's capital structure and associated capital ratios.  
7 The resulting capital structure consists of 87.58 percent common stock equity and  
8 12.42 percent long-term debt.

9 Q. What was the embedded cost of long-term debt for Osage Water Company on  
10 June 30, 2003?

11 A. The embedded cost of long-term debt for Osage Water Company was  
12 6.00 percent. This figure was acquired through a Staff audit.

### 13 **Cost of Equity**

14 Q. How do you propose to analyze those factors by which the cost of equity for  
15 Osage Water Company may be determined?

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

### 19 **The DCF Model**

20 Q. Please describe the DCF model.

21 A. The DCF model is a market-oriented approach for deriving the cost of equity.  
22 The return on equity calculated from the DCF model is inherently capable of attracting

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capital. This results from the theory that security prices adjust continually over time, so that an equilibrium price exists and the stock is neither undervalued nor overvalued. It can also be stated that stock prices continually fluctuate to reflect the required and expected return for the investor.

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

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

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:

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

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:

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

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

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

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.

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1 Q. Can you directly analyze the cost of equity for Osage Water Company?

2 A. No. In order to arrive at a company-specific DCF result, the company must  
3 have common stock that is market-traded and it must pay dividends. Osage Water  
4 Company's stock is not publicly traded.

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

7 A. Schedule 8 presents a list of market-traded water utility companies monitored  
8 by Edward Jones & Company. The criteria that I used to select the comparable companies is  
9 as follows:

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

20 This final group of four publicly traded water utility companies serves as a proxy  
21 group for determining a reasonable cost of common equity recommendation for Osage Water  
22 Company. The Comparables are listed on Schedule 9.

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

25 A. I reviewed the Comparables' actual dividends per share (DPS), earnings per  
26 share (EPS) and book values per share (BVPS) as well as projected growth rates for the

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1 Comparables. Schedule 10-1 lists annual compound growth rates calculated for DPS, EPS  
2 and BVPS for the periods of 1992 through 2002. Schedule 10-2 lists the annual compound  
3 growth rates for DPS, EPS, and BVPS for the periods of 1997 through 2002. Schedule 10-3  
4 presents the averages of the growth rates determined in Schedules 10-1 and 10-2.  
5 Schedule 11 presents the average historical growth rates and the projected growth rates for  
6 the Comparables. The projected growth rates were obtained from three outside sources:  
7 I/B/E/S Inc.'s Institutional Brokers Estimate System, July 17, 2003; Standard & Poor's  
8 Corporation's Earnings Guide, July 2003; and The Value Line Investment Survey: Ratings  
9 and Reports, May 2, 2003. The average of the historical and projected growth rates produces  
10 an average growth rate of 4.89 percent. Considering all of this information, I chose a  
11 reasonable growth rate range of 4.39 percent to 5.39 percent (see Schedule 11). This range  
12 of growth (g) is the range that I used in the DCF model to calculate a cost of common equity  
13 for the Comparables.

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

16 A. The expected yield term ( $D_1/P_0$ ) of the DCF model is calculated by dividing  
17 the amount of common dividends per share expected to be paid over the next twelve  
18 months ( $D_1$ ) by the current market price per share of the firm's common stock ( $P_0$ ). Even  
19 though a strict technical application of the model requires the use of a current spot market  
20 price, I have chosen to use a monthly high/low average market price for each of the  
21 Comparables. This averaging technique is an attempt to minimize the effects on the dividend  
22 yield, which can occur due to daily volatility in the stock market. Schedule 12 presents the  
23 average monthly high / low stock price for the period of March 1, 2003 through June 30,



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2003 for each Comparable. Column 1 of Schedule 13 indicates the expected dividend for each Comparable over the next 12 months, as projected by The Value Line Investment Survey: Ratings & Reports, May 2, 2003. However, because of the lack of projected dividend information for Middlesex Water Company, I estimated its dividend for the next 12 months by multiplying the 2002 dividend times Middlesex's average historical 5-year and 10-year dividend growth rate. Column 3 of Schedule 13 shows the projected dividend yield for each of the Comparables. The dividend yield for each Comparable was averaged to calculate the projected dividend yield for the Comparables of 3.54 percent.

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

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

| <u>Yield (<math>D_1/P_0</math>)</u> | + | <u>Growth Rate (g)</u> | = | <u>Cost of Equity (k)</u> |
|-------------------------------------|---|------------------------|---|---------------------------|
| 3.54%                               | + | 4.39%                  | = | 7.93%                     |
| 3.54%                               | + | 5.39%                  | = | 8.93%                     |

#### **Reasonableness of DCF Returns for the Comparable Companies**

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

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

Q. Please describe the capital asset pricing model.

A. The CAPM describes the relationship between a security's investment risk and its market rate of return. This relationship identifies the rate of return that investors expect a

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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;

$\beta$  = beta; and

$R_m - R_f$  = the market risk premium.

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

The second term of the CAPM is beta ( $\beta$ ). Beta is an indicator of a security's investment risk. It represents the relative movement and relative risk between a particular security and the market as a whole (where beta for the market equals 1.00). Securities with betas greater than 1.00 exhibit greater volatility than do securities with betas less than 1.00. This causes a higher beta security to be less desirable and therefore requires a higher return in order to attract investor capital away from a lower beta security. Schedule 14 contains the appropriate betas for the Comparables.

The final term of the CAPM is the market risk premium ( $R_m - R_f$ ). The market risk premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk-free investment. For purposes of this analysis, I looked

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1 at two time periods for risk premium estimates. The first risk premium used was based on  
2 the long-term period of 1926 to 2002, which was 6.40 percent. The second risk premium  
3 used was based on the short-term, recent period of 1993 to 2002, which was determined to be  
4 -0.34 percent. These risk premiums were taken from Ibbotson Associates, Inc.'s  
5 Stocks, Bonds, Bills, and Inflation: 2003 Yearbook.

6 Schedule 14 presents the CAPM analysis with regard to the Comparables. The  
7 CAPM analysis produces an estimated cost of common equity of 8.66 percent for the  
8 Comparables when using the long-term risk premium period. Using the short-term risk  
9 premium period, produces an estimated cost of common equity of 4.73 percent. Although  
10 the long-term risk premium CAPM results fall within the range of my DCF analysis, the  
11 CAPM has not historically been relied upon by the Financial Analysis Department in  
12 determining the cost of equity for a utility company. It is strictly used as a test of  
13 reasonableness to provide some comfort with the results of the DCF, and in this case the  
14 long-term risk premium CAPM supports the DCF results. Although the  
15 short-term risk premium CAPM results are extremely low, it is interesting to observe that the  
16 stock market returns over the last ten years have actually been less than the returns on  
17 long-term government bonds over the last ten years.

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

21 Q. Please describe the risk premium model.

22 A. The risk premium concept implies that the required return on equity is found  
23 by adding an explicit premium for risk to a current interest rate. Schedules 15-1

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1 through 15-4 show the average risk premium above the yield on the Thirty-Year  
2 U.S. Treasury Bond for each of the Comparables' actual returns on common equity.  
3 Although the expected returns on equity are usually used by the Financial Analysis  
4 Department for the risk premium analysis, this information was not available for  
5 Middlesex Water Company for the period of the analysis so I relied on all of the companies'  
6 actual returns on common equity for the sake of consistency. The use of actual returns on  
7 equity to perform the risk premium analysis is a commonly accepted practice when  
8 estimating the cost of common equity. This analysis shows that, on average, the actual  
9 returns on equity as reported by The Value Line Investment Survey: Ratings & Reports  
10 ranges from 340 basis points to 546 basis points higher than the average yields on the  
11 Thirty-Year U.S. Treasury Bonds for the period of January 1993 through December 2002  
12 (see Schedule 16). The risk premium is then added to the current yield on the Thirty-Year  
13 U.S. Treasury Bond. Column 3 of Schedule 16 shows that the risk premium cost of equity  
14 estimate for each of the Comparables ranged from 8.33 percent to 10.39 percent, with an  
15 average of 9.23 percent.

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

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

|                      | <u>DCF</u>    | <u>CAPM</u>  | <u>Risk Premium</u> |
|----------------------|---------------|--------------|---------------------|
| Comparable Companies | 7.93% - 8.93% | 8.66%; 4.73% | 9.23%               |

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

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1           A.     I am recommending a return on common equity in the range of 7.93 percent to  
2     8.93 percent, based on the results of the DCF analysis.

3           Q.     Did you perform an analysis on Osage Water Company's resulting pretax  
4     interest coverage ratios?

5           A.     Yes. A pro forma pretax interest coverage calculation was completed for  
6     Osage Water Company (see Schedule 18). It reveals that the return-on-equity range of 7.93  
7     to 8.93 percent would yield a pretax interest coverage ratio in the range of 16.63 to 18.60  
8     times. This interest coverage range is above Standard & Poor's Utility Financial Targets of  
9     3.4 to 4.0 times for a "AA" rating for a company with a business position of 3, on a scale of 1  
10    to 10 with 1 being the least risky and 10 being the most risky. A business position of 3 is the  
11    average business position for the Comparables.

12    **Rate of Return for Osage Water Company**

13          Q.     Please explain how the returns developed for each capital component are used  
14    in the ratemaking approach you have adopted to be applied to Osage Water Company water  
15    utility operations.

16          A.     The cost-of-service ratemaking method was adopted in this case. This  
17    approach develops the public utility's revenue requirement. The cost of service (revenue  
18    requirement) is based on the following components: prudent operation costs, rate base and a  
19    return allowed on the rate base (see Schedule 19).

20                It is my responsibility to calculate and recommend a rate of return that should be  
21    authorized on the Missouri jurisdictional water utility rate base for Osage Water Company.  
22    Under the cost- of-service ratemaking approach, a weighted average cost of capital in the  
23    range of 7.69 to 8.57 percent was developed for Osage Water Company's water utility

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1 operations (see Schedule 20). This rate was calculated by applying an embedded cost of  
2 long-term debt of 6.00 percent, and a return-on-common-equity range of 7.93 to 8.93 percent  
3 to a capital structure consisting of 87.58 percent common equity and 12.42 percent long-term  
4 debt. Therefore, I am recommending that Osage Water Company's water utility operations  
5 be allowed to earn a return on its original cost rate base in the range of 7.69 to 8.57 percent.

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

10 Q. Does this conclude your prepared direct testimony?

11 A. Yes, it does.

**AN ANALYSIS OF THE COST OF CAPITAL**

**FOR**

**OSAGE WATER COMPANY**

**CASE NOS. ST-2003-0562 &  
WT-2003-0563**

**SCHEDULES**

**BY**

**DAVID MURRAY**

**UTILITY SERVICES DIVISION**

**MISSOURI PUBLIC SERVICE COMMISSION**

**DECEMBER 2003**

**OSAGE WATER COMPANY**  
**CASE NOS. ST-2003-0562 and**  
**WT-2003-0563**  
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OSAGE WATER COMPANY  
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**Federal Reserve Discount Rate Changes**

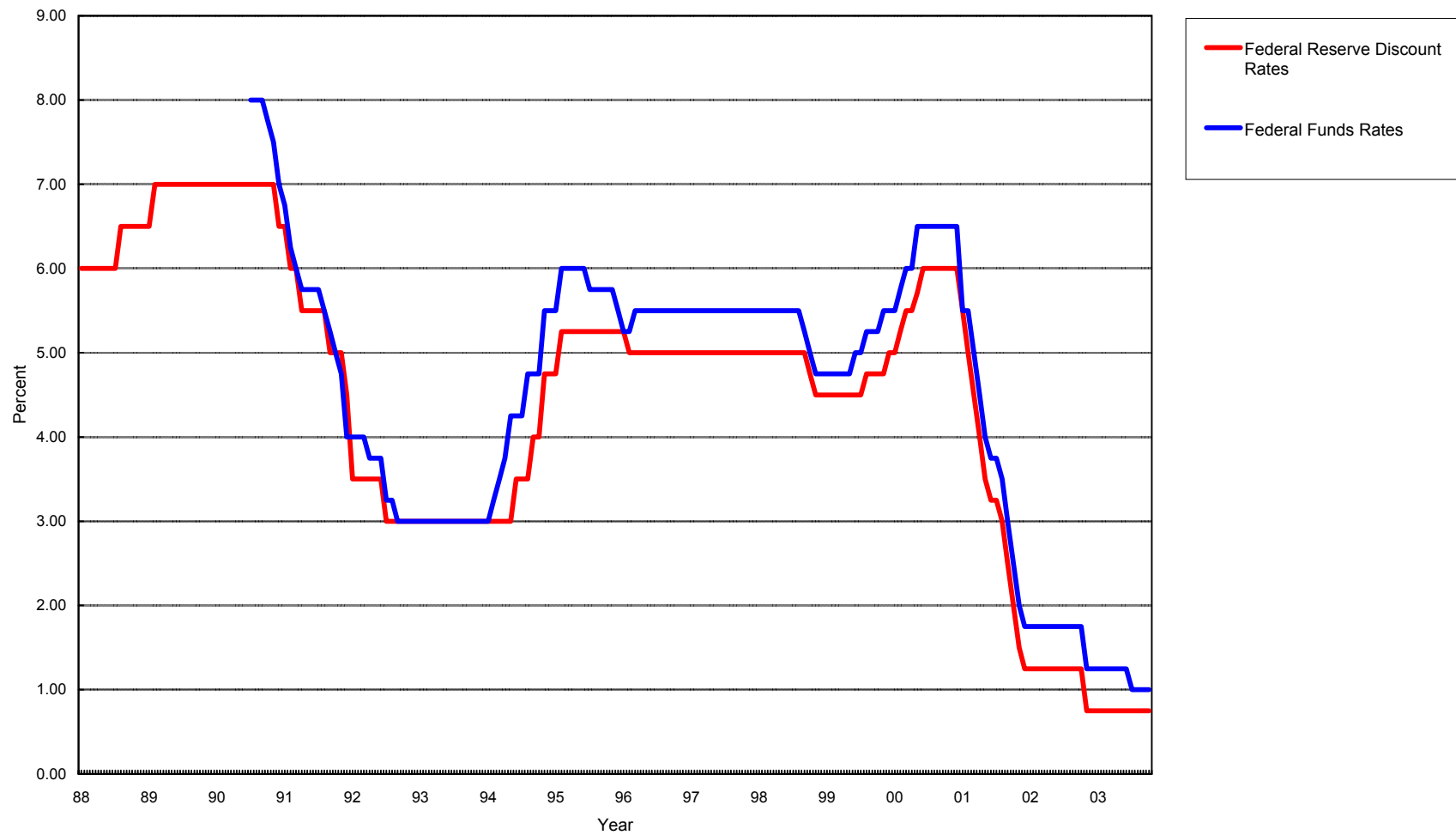
| Date     | Discount Rate | Federal Funds Rate |
|----------|---------------|--------------------|
| 05/20/85 | 7.50%         |                    |
| 03/07/86 | 7.00%         |                    |
| 04/21/86 | 6.50%         |                    |
| 07/11/86 | 6.00%         |                    |
|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

\* Began tracking the Federal Funds Rate.

Sources: Federal Reserve Bank of New York: <http://www.ny.frb.org/pihome/statistics/dllyrates/fedrate.html>  
[Historical Changes of the Fed Fund and Discount Rate - Statistics - Federal Reserve Bank of New York](#)

# Federal Reserve Discount Rates and Federal Funds Rates

1988 - 2003



OSAGE WATER COMPANY  
CASE NOS. ST-2003-0562 and WT-2003-0563

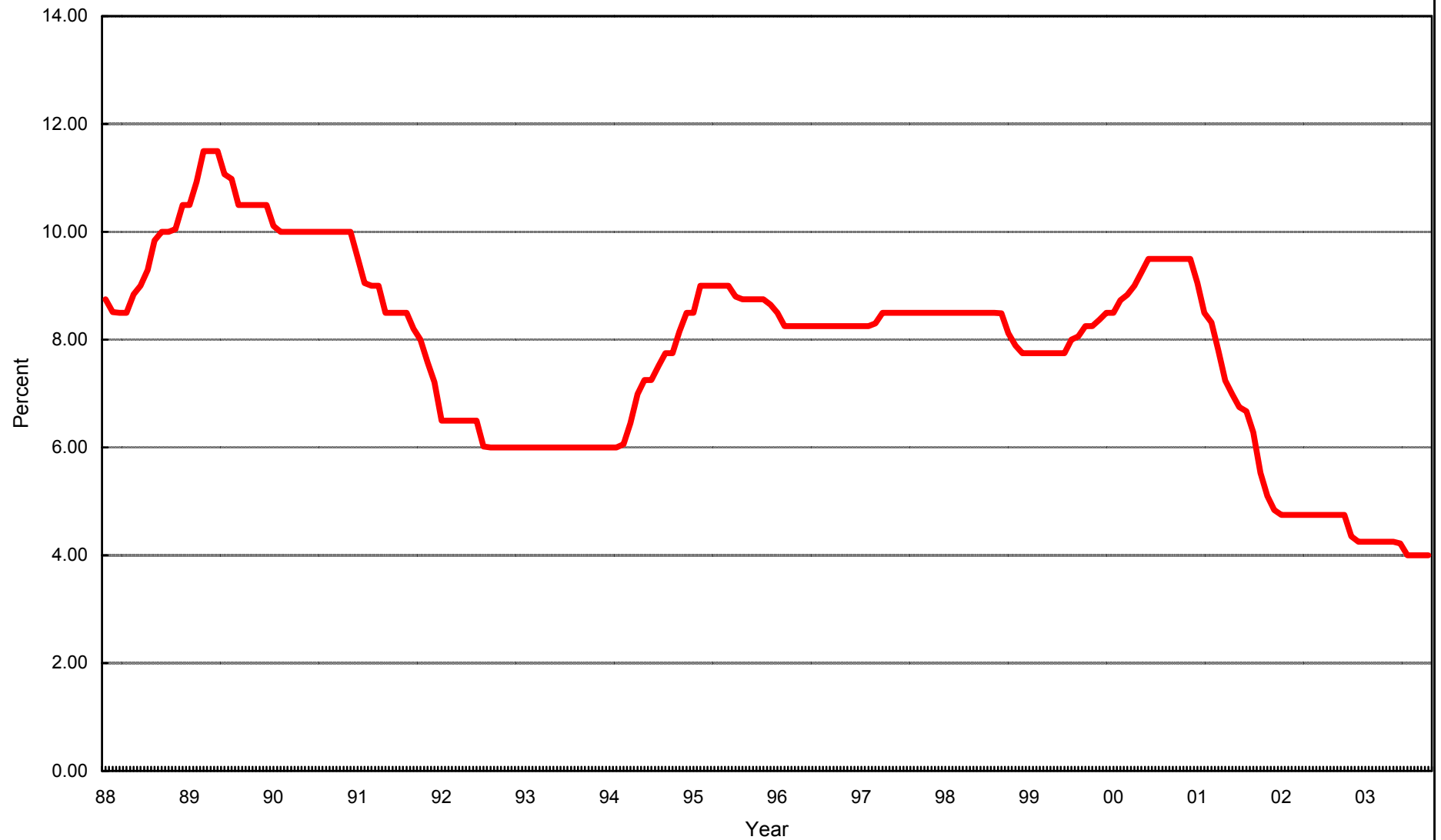
**Average Prime Interest Rates**

| <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> |
|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Jan 1988       | 8.75            | Jan 1992       | 6.50            | Jan 1996       | 8.50            | Jan 2000       | 8.50            |
| Feb            | 8.51            | Feb            | 6.50            | Feb            | 8.25            | Feb            | 8.73            |
| Mar            | 8.50            | Mar            | 6.50            | Mar            | 8.25            | Mar            | 8.83            |
| Apr            | 8.50            | Apr            | 6.50            | Apr            | 8.25            | Apr            | 9.00            |
| May            | 8.84            | May            | 6.50            | May            | 8.25            | May            | 9.24            |
| Jun            | 9.00            | Jun            | 6.50            | Jun            | 8.25            | Jun            | 9.50            |
| Jul            | 9.29            | Jul            | 6.02            | Jul            | 8.25            | Jul            | 9.50            |
| Aug            | 9.84            | Aug            | 6.00            | Aug            | 8.25            | Aug            | 9.50            |
| Sep            | 10.00           | Sep            | 6.00            | Sep            | 8.25            | Sep            | 9.50            |
| Oct            | 10.00           | Oct            | 6.00            | Oct            | 8.25            | Oct            | 9.50            |
| Nov            | 10.05           | Nov            | 6.00            | Nov            | 8.25            | Nov            | 9.50            |
| Dec            | 10.50           | Dec            | 6.00            | Dec            | 8.25            | Dec            | 9.50            |
| Jan 1989       | 10.50           | Jan 1993       | 6.00            | Jan 1997       | 8.26            | Jan 2001       | 9.05            |
| Feb            | 10.93           | Feb            | 6.00            | Feb            | 8.25            | Feb            | 8.50            |
| Mar            | 11.50           | Mar            | 6.00            | Mar            | 8.30            | Mar            | 8.32            |
| Apr            | 11.50           | Apr            | 6.00            | Apr            | 8.50            | Apr            | 7.80            |
| May            | 11.50           | May            | 6.00            | May            | 8.50            | May            | 7.24            |
| Jun            | 11.07           | Jun            | 6.00            | Jun            | 8.50            | Jun            | 6.98            |
| Jul            | 10.98           | Jul            | 6.00            | Jul            | 8.50            | Jul            | 6.75            |
| Aug            | 10.50           | Aug            | 6.00            | Aug            | 8.50            | Aug            | 6.67            |
| Sep            | 10.50           | Sep            | 6.00            | Sep            | 8.50            | Sep            | 6.28            |
| Oct            | 10.50           | Oct            | 6.00            | Oct            | 8.50            | Oct            | 5.53            |
| Nov            | 10.50           | Nov            | 6.00            | Nov            | 8.50            | Nov            | 5.10            |
| Dec            | 10.50           | Dec            | 6.00            | Dec            | 8.50            | Dec            | 4.84            |
| Jan 1990       | 10.11           | Jan 1994       | 6.00            | Jan 1998       | 8.50            | Jan 2002       | 4.75            |
| Feb            | 10.00           | Feb            | 6.00            | Feb            | 8.50            | Feb            | 4.75            |
| Mar            | 10.00           | Mar            | 6.06            | Mar            | 8.50            | Mar            | 4.75            |
| Apr            | 10.00           | Apr            | 6.45            | Apr            | 8.50            | Apr            | 4.75            |
| May            | 10.00           | May            | 6.99            | May            | 8.50            | May            | 4.75            |
| Jun            | 10.00           | Jun            | 7.25            | Jun            | 8.50            | Jun            | 4.75            |
| Jul            | 10.00           | Jul            | 7.25            | Jul            | 8.50            | Jul            | 4.75            |
| Aug            | 10.00           | Aug            | 7.51            | Aug            | 8.50            | Aug            | 4.75            |
| Sep            | 10.00           | Sep            | 7.75            | Sep            | 8.49            | Sep            | 4.75            |
| Oct            | 10.00           | Oct            | 7.75            | Oct            | 8.12            | Oct            | 4.75            |
| Nov            | 10.00           | Nov            | 8.15            | Nov            | 7.89            | Nov            | 4.35            |
| Dec            | 10.00           | Dec            | 8.50            | Dec            | 7.75            | Dec            | 4.25            |
| Jan 1991       | 9.52            | Jan 1995       | 8.50            | Jan 1999       | 7.75            | Jan 2003       | 4.25            |
| Feb            | 9.05            | Feb            | 9.00            | Feb            | 7.75            | Feb            | 4.25            |
| Mar            | 9.00            | Mar            | 9.00            | Mar            | 7.75            | Mar            | 4.25            |
| Apr            | 9.00            | Apr            | 9.00            | Apr            | 7.75            | Apr            | 4.25            |
| May            | 8.50            | May            | 9.00            | May            | 7.75            | May            | 4.25            |
| Jun            | 8.50            | Jun            | 9.00            | Jun            | 7.75            | Jun            | 4.22            |
| Jul            | 8.50            | Jul            | 8.80            | Jul            | 8.00            | Jul            | 4.00            |
| Aug            | 8.50            | Aug            | 8.75            | Aug            | 8.06            | Aug            | 4.00            |
| Sep            | 8.20            | Sep            | 8.75            | Sep            | 8.25            | Sep            | 4.00            |
| Oct            | 8.00            | Oct            | 8.75            | Oct            | 8.25            | Oct            | 4.00            |
| Nov            | 7.58            | Nov            | 8.75            | Nov            | 8.37            |                |                 |
| Dec            | 7.21            | Dec            | 8.65            | Dec            | 8.50            |                |                 |

Sources: <http://research.stlouisfed.org/fred2/data/MPRIME.txt>

# Average Prime Interest Rate

1988 - 2003



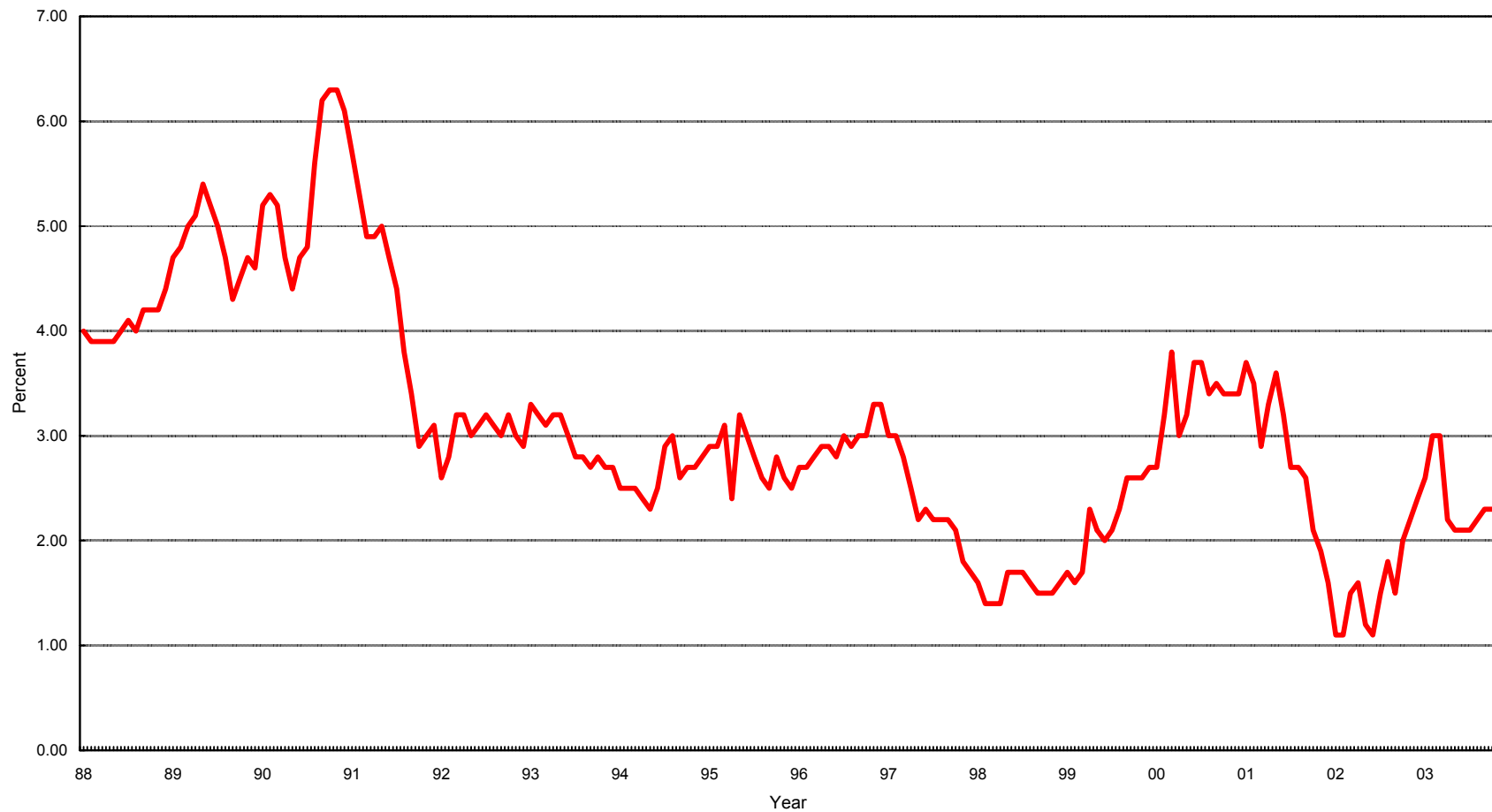
OSAGE WATER COMPANY  
CASE NOS. ST-2003-0562 and WT-2003-0563

**Rate of Inflation**

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

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

Rate of Inflation  
1988 - 2003



OSAGE WATER COMPANY  
CASE NOS. ST-2003-0562 and WT-2003-0563

**Average Yields on Mergent's Public Utility Bonds**

| <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> |
|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Jan 1988       | 10.75           | Jan 1992       | 8.67            | Jan 1996       | 7.20            | Jan 2000       | 8.22            |
| Feb            | 10.11           | Feb            | 8.77            | Feb            | 7.37            | Feb            | 8.10            |
| Mar            | 10.11           | Mar            | 8.84            | Mar            | 7.72            | Mar            | 8.14            |
| Apr            | 10.53           | Apr            | 8.79            | Apr            | 7.88            | Apr            | 8.14            |
| May            | 10.75           | May            | 8.72            | May            | 7.99            | May            | 8.55            |
| Jun            | 10.71           | Jun            | 8.64            | Jun            | 8.07            | Jun            | 8.22            |
| Jul            | 10.96           | Jul            | 8.46            | Jul            | 8.02            | Jul            | 8.17            |
| Aug            | 11.09           | Aug            | 8.34            | Aug            | 7.84            | Aug            | 8.05            |
| Sep            | 10.56           | Sep            | 8.32            | Sep            | 8.01            | Sep            | 8.16            |
| Oct            | 9.92            | Oct            | 8.44            | Oct            | 7.76            | Oct            | 8.08            |
| Nov            | 9.89            | Nov            | 8.53            | Nov            | 7.48            | Nov            | 8.03            |
| Dec            | 10.02           | Dec            | 8.36            | Dec            | 7.58            | Dec            | 7.79            |
| Jan 1989       | 10.02           | Jan 1993       | 8.23            | Jan 1997       | 7.79            | Jan 2001       | 7.76            |
| Feb            | 10.02           | Feb            | 8.00            | Feb            | 7.68            | Feb            | 7.69            |
| Mar            | 10.16           | Mar            | 7.85            | Mar            | 7.92            | Mar            | 7.59            |
| Apr            | 10.14           | Apr            | 7.76            | Apr            | 8.08            | Apr            | 7.81            |
| May            | 9.92            | May            | 7.78            | May            | 7.94            | May            | 7.88            |
| Jun            | 9.49            | Jun            | 7.68            | Jun            | 7.77            | Jun            | 7.75            |
| Jul            | 9.34            | Jul            | 7.53            | Jul            | 7.52            | Jul            | 7.71            |
| Aug            | 9.37            | Aug            | 7.21            | Aug            | 7.57            | Aug            | 7.57            |
| Sep            | 9.43            | Sep            | 7.01            | Sep            | 7.50            | Sep            | 7.73            |
| Oct            | 9.37            | Oct            | 6.99            | Oct            | 7.37            | Oct            | 7.64            |
| Nov            | 9.33            | Nov            | 7.30            | Nov            | 7.24            | Nov            | 7.61            |
| Dec            | 9.31            | Dec            | 7.33            | Dec            | 7.16            | Dec            | 7.86            |
| Jan 1990       | 9.44            | Jan 1994       | 7.31            | Jan 1998       | 7.03            | Jan 2002       | 7.69            |
| Feb            | 9.66            | Feb            | 7.44            | Feb            | 7.09            | Feb            | 7.62            |
| Mar            | 9.75            | Mar            | 7.83            | Mar            | 7.13            | Mar            | 7.83            |
| Apr            | 9.87            | Apr            | 8.20            | Apr            | 7.12            | Apr            | 7.74            |
| May            | 9.89            | May            | 8.32            | May            | 7.11            | May            | 7.76            |
| Jun            | 9.69            | Jun            | 8.31            | Jun            | 6.99            | Jun            | 7.67            |
| Jul            | 9.66            | Jul            | 8.47            | Jul            | 6.99            | Jul            | 7.54            |
| Aug            | 9.84            | Aug            | 8.41            | Aug            | 6.96            | Aug            | 7.34            |
| Sep            | 10.01           | Sep            | 8.65            | Sep            | 6.88            | Sep            | 7.23            |
| Oct            | 9.94            | Oct            | 8.88            | Oct            | 6.88            | Oct            | 7.43            |
| Nov            | 9.76            | Nov            | 9.00            | Nov            | 6.96            | Nov            | 7.31            |
| Dec            | 9.57            | Dec            | 8.79            | Dec            | 6.84            | Dec            | 7.20            |
| Jan 1991       | 9.56            | Jan 1995       | 8.77            | Jan 1999       | 6.87            | Jan 2003       | 7.13            |
| Feb            | 9.31            | Feb            | 8.56            | Feb            | 7.00            | Feb            | 6.92            |
| Mar            | 9.39            | Mar            | 8.41            | Mar            | 7.18            | Mar            | 6.80            |
| Apr            | 9.30            | Apr            | 8.30            | Apr            | 7.16            | Apr            | 6.68            |
| May            | 9.29            | May            | 7.93            | May            | 7.42            | May            | 6.35            |
| Jun            | 9.44            | Jun            | 7.62            | Jun            | 7.70            | Jun            | 6.21            |
| Jul            | 9.40            | Jul            | 7.73            | Jul            | 7.66            | Jul            | 6.54            |
| Aug            | 9.16            | Aug            | 7.86            | Aug            | 7.86            | Aug            | 6.78            |
| Sep            | 9.03            | Sep            | 7.62            | Sep            | 7.87            | Sep            | 6.58            |
| Oct            | 8.99            | Oct            | 7.46            | Oct            | 8.02            |                |                 |
| Nov            | 8.93            | Nov            | 7.40            | Nov            | 7.86            |                |                 |
| Dec            | 8.76            | Dec            | 7.21            | Dec            | 8.04            |                |                 |

Source: Mergent Bond Record

OSAGE WATER COMPANY  
CASE NOS. ST-2003-0562 and WT-2003-0563

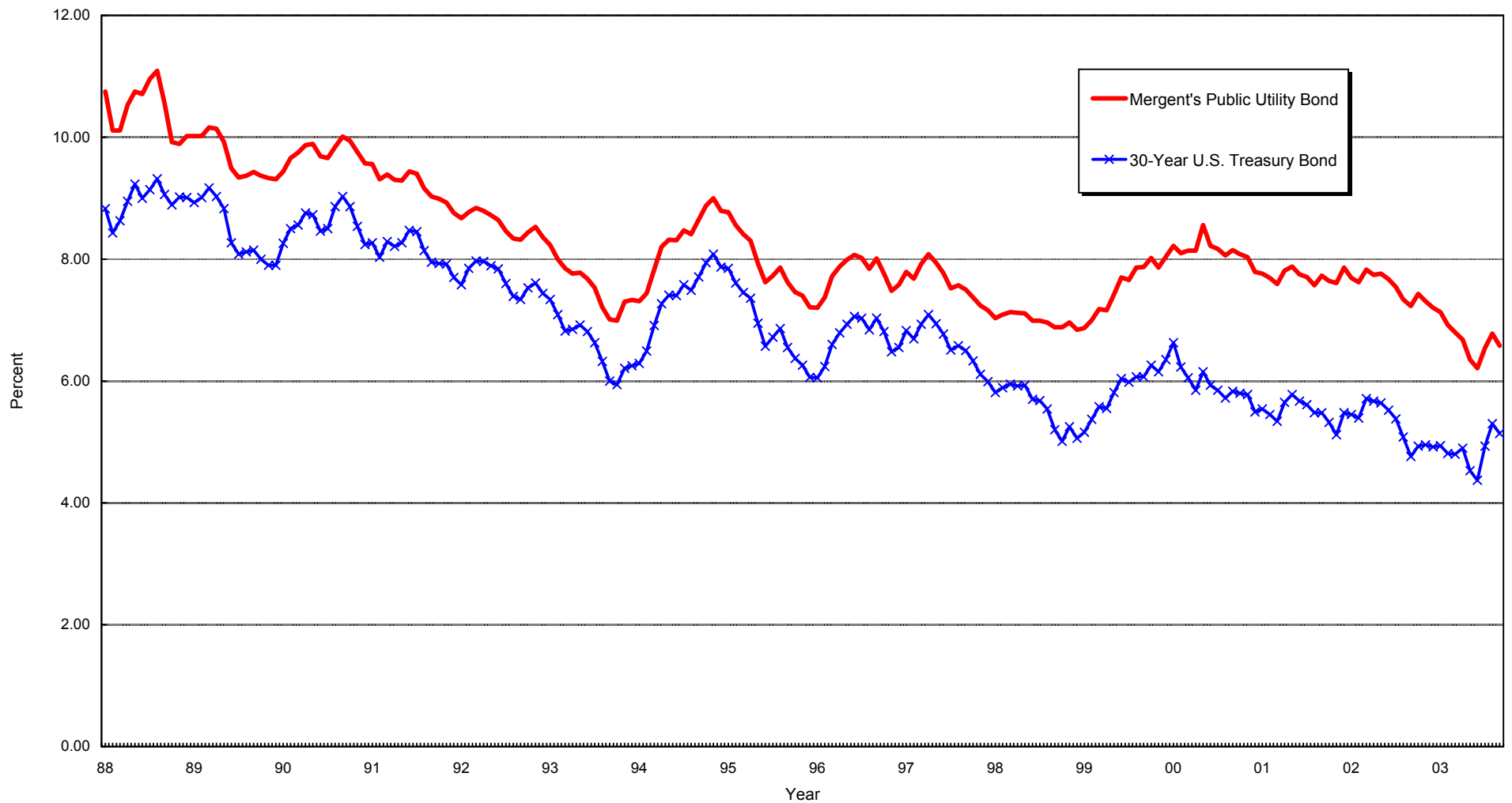
**Average Yields on Thirty-Year U.S. Treasury Bonds**

| <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> | <u>Mo/Year</u> | <u>Rate (%)</u> |
|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Jan 1988       | 8.83            | Jan 1992       | 7.58            | Jan 1996       | 6.05            | Jan 2000       | 6.63            |
| Feb            | 8.43            | Feb            | 7.85            | Feb            | 6.24            | Feb            | 6.23            |
| Mar            | 8.63            | Mar            | 7.97            | Mar            | 6.60            | Mar            | 6.05            |
| Apr            | 8.95            | Apr            | 7.96            | Apr            | 6.79            | Apr            | 5.85            |
| May            | 9.23            | May            | 7.89            | May            | 6.93            | May            | 6.15            |
| Jun            | 9.00            | Jun            | 7.84            | Jun            | 7.06            | Jun            | 5.93            |
| Jul            | 9.14            | Jul            | 7.60            | Jul            | 7.03            | Jul            | 5.85            |
| Aug            | 9.32            | Aug            | 7.39            | Aug            | 6.84            | Aug            | 5.72            |
| Sep            | 9.06            | Sep            | 7.34            | Sep            | 7.03            | Sep            | 5.83            |
| Oct            | 8.89            | Oct            | 7.53            | Oct            | 6.81            | Oct            | 5.80            |
| Nov            | 9.02            | Nov            | 7.61            | Nov            | 6.48            | Nov            | 5.78            |
| Dec            | 9.01            | Dec            | 7.44            | Dec            | 6.55            | Dec            | 5.49            |
| Jan 1989       | 8.93            | Jan 1993       | 7.34            | Jan 1997       | 6.83            | Jan 2001       | 5.54            |
| Feb            | 9.01            | Feb            | 7.09            | Feb            | 6.69            | Feb            | 5.45            |
| Mar            | 9.17            | Mar            | 6.82            | Mar            | 6.93            | Mar            | 5.34            |
| Apr            | 9.03            | Apr            | 6.85            | Apr            | 7.09            | Apr            | 5.65            |
| May            | 8.83            | May            | 6.92            | May            | 6.94            | May            | 5.78            |
| Jun            | 8.27            | Jun            | 6.81            | Jun            | 6.77            | Jun            | 5.67            |
| Jul            | 8.08            | Jul            | 6.63            | Jul            | 6.51            | Jul            | 5.61            |
| Aug            | 8.12            | Aug            | 6.32            | Aug            | 6.58            | Aug            | 5.48            |
| Sep            | 8.15            | Sep            | 6.00            | Sep            | 6.50            | Sep            | 5.48            |
| Oct            | 8.00            | Oct            | 5.94            | Oct            | 6.33            | Oct            | 5.32            |
| Nov            | 7.90            | Nov            | 6.21            | Nov            | 6.11            | Nov            | 5.12            |
| Dec            | 7.90            | Dec            | 6.25            | Dec            | 5.99            | Dec            | 5.48            |
| Jan 1990       | 8.26            | Jan 1994       | 6.29            | Jan 1998       | 5.81            | Jan 2002       | 5.45            |
| Feb            | 8.50            | Feb            | 6.49            | Feb            | 5.89            | Feb            | 5.39            |
| Mar            | 8.56            | Mar            | 6.91            | Mar            | 5.95            | Mar            | 5.71            |
| Apr            | 8.76            | Apr            | 7.27            | Apr            | 5.92            | Apr            | 5.67            |
| May            | 8.73            | May            | 7.41            | May            | 5.93            | May            | 5.64            |
| Jun            | 8.46            | Jun            | 7.40            | Jun            | 5.70            | Jun            | 5.52            |
| Jul            | 8.50            | Jul            | 7.58            | Jul            | 5.68            | Jul            | 5.38            |
| Aug            | 8.86            | Aug            | 7.49            | Aug            | 5.54            | Aug            | 5.08            |
| Sep            | 9.03            | Sep            | 7.71            | Sep            | 5.20            | Sep            | 4.76            |
| Oct            | 8.86            | Oct            | 7.94            | Oct            | 5.01            | Oct            | 4.93            |
| Nov            | 8.54            | Nov            | 8.08            | Nov            | 5.25            | Nov            | 4.95            |
| Dec            | 8.24            | Dec            | 7.87            | Dec            | 5.06            | Dec            | 4.92            |
| Jan 1991       | 8.27            | Jan 1995       | 7.85            | Jan 1999       | 5.16            | Jan 2003       | 4.94            |
| Feb            | 8.03            | Feb            | 7.61            | Feb            | 5.37            | Feb            | 4.81            |
| Mar            | 8.29            | Mar            | 7.45            | Mar            | 5.58            | Mar            | 4.80            |
| Apr            | 8.21            | Apr            | 7.36            | Apr            | 5.55            | Apr            | 4.90            |
| May            | 8.27            | May            | 6.95            | May            | 5.81            | May            | 4.53            |
| Jun            | 8.47            | Jun            | 6.57            | Jun            | 6.04            | Jun            | 4.37            |
| Jul            | 8.45            | Jul            | 6.72            | Jul            | 5.98            | Jul            | 4.93            |
| Aug            | 8.14            | Aug            | 6.86            | Aug            | 6.07            | Aug            | 5.30            |
| Sep            | 7.95            | Sep            | 6.55            | Sep            | 6.07            | Sep            | 5.14            |
| Oct            | 7.93            | Oct            | 6.37            | Oct            | 6.26            | Oct            | 5.16            |
| Nov            | 7.92            | Nov            | 6.26            | Nov            | 6.15            |                |                 |
| Dec            | 7.70            | Dec            | 6.06            | Dec            | 6.35            |                |                 |

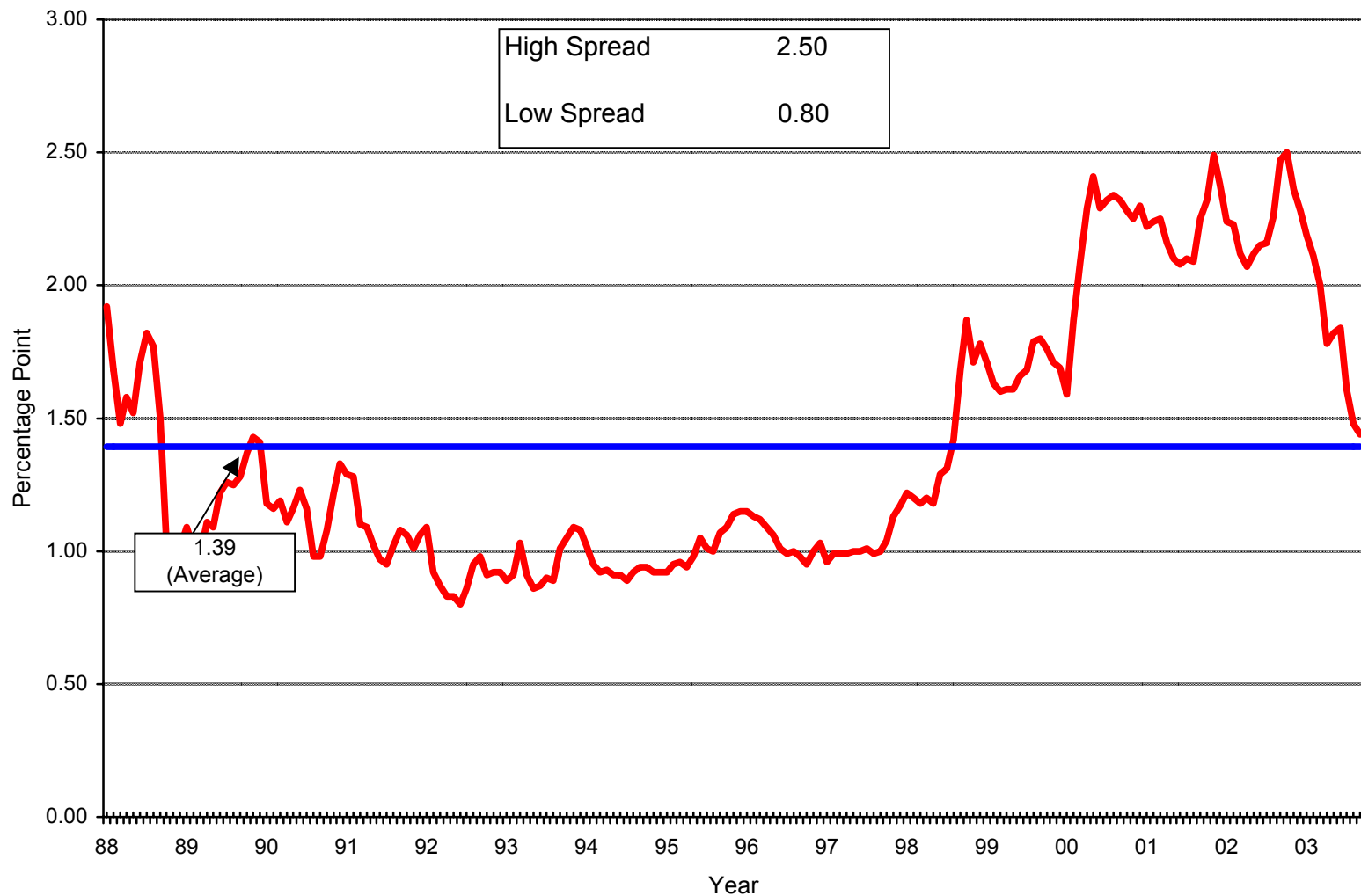
Source: <http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETEX&d=1y>



**Average Yields on Mergent's Public Utility Bonds and  
Thirty-Year U.S. Treasury Bonds (1988 - 2003)**



**Monthly Spreads Between Yields on Mergent's  
Public Utility Bonds  
and Thirty-Year U.S. Treasury Bonds (1988 - 2003)**



**OSAGE WATER COMPANY**  
**CASE NOS. ST-2003-0562 and WT-2003-0563**

**Economic Estimates and Projections, 2003 - 2005**

| Source  | Inflation Rate |       |       | Real GDP |       |       | Unemployment |       |       | 3-Mo. T-Bill Rate |       |       | 30-Yr. T-Bond Rate |       |       |
|---|----------------|-------|-------|----------|-------|-------|--------------|-------|-------|-------------------|-------|-------|--------------------|-------|-------|
|   | 2003           | 2004  | 2005  | 2003     | 2004  | 2005  | 2003         | 2004  | 2005  | 2003              | 2004  | 2005  | 2003               | 2004  | 2005  |
| Value Line<br>Investment Survey<br>(08/29/03)     | 1.90%          | 2.00% | 2.10% | 2.30%    | 3.70% | 3.70% | 6.10%        | 6.00% | 5.70% | 1.10%             | 1.60% | 2.00% | 5.10%              | 5.60% | 6.00% |
| The Budget and<br>Economic Outlook<br>FY2003-2013 | 2.30%          | 1.90% | 2.40% | 2.20%    | 3.80% | 3.50% | 6.20%        | 6.20% | 5.70% | 1.00%             | 1.70% | 3.20% | N.A.               | N.A.  | N.A.  |
| Current rate                                      | 2.30%          |       |       | 7.20%    |       |       | 6.10%        |       |       | 0.96%             |       |       | 5.16%              |       |       |

Notes: N.A. = Not Available.

Sources of Current Rates:

The Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, 12-Month Period Ending October 31, 2003.  
Investopedia, 30-Year U.S. Treasury Bond Rate, <http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETUX&d=1y>  
as of October 16, 2003.  
The Federal Reserve Bank of St. Louis, 3-Month Treasury Bill Rate, <http://research.stlouisfed.org/fred2/data/GS3M.txt> as of September 01, 2003.  
U.S. Department of Commerce, Bureau of Economic Analysis, Real GDP for the 3-month period ending September 30, 2003.  
The Bureau of Labor Statistics, Economy at a Glance - Unemployment Rate as of September 2003.

Other Sources:

The Congressional Budget Office, The Budget and Economic Outlook: Fiscal Years 2003-2013  
<http://www.cbo.gov/showdoc.cfm?index=2727&sequence=11>.

OSAGE WATER COMPANY  
CASE NOS. ST-2003-0562 and WT-2003-0563

**Capital Structure as of June 30, 2003  
for Osage Water Company**

| Capital Component           | Amount<br>in Dollars | Percentage<br>of Capital |
|-----------------------------|----------------------|--------------------------|
| Common Stock Equity         | \$324,614            | 87.58%                   |
| Preferred Stock             | 0                    | 0.00%                    |
| Long-Term Debt              | 46,050               | 12.42%                   |
| Short-Term Debt             | 0                    | 0.00%                    |
| <b>Total Capitalization</b> | <b>\$370,664</b>     | <b>100.00%</b>           |

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

|   |                |          |                |
|---|----------------|----------|----------------|
| Standard & Poor's RatingsDirect<br>July 7, 2000 | Lower Quartile | Median   | Upper Quartile |
|   | <b>A</b>       | <b>A</b> | <b>A</b>       |
|   | 53%            | 56%      | 61%            |

Source: Staff Audit

**OSAGE WATER COMPANY**  
**CASE NOS. ST-2003-0562 and WR-2003-0563**

## Criteria for Selecting Comparable Water Utility Companies

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

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

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

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

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

**Four Comparable Water Utility Companies**

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

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

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

| ----- Annual Compound Growth Rates ----- |                     |                     |                     |         |
|--|---------------------|---------------------|---------------------|---------|
| Company Name                             | DPS                 | EPS                 | BVPS                | Average |
|  | 1992 - 2002         | 1992 - 2002         | 1992 - 2002         |         |
| American States Water Company            | 1.23%               | 1.54%               | 4.73%               | 2.50%   |
| California Water Services Group          | 1.88%               | 1.38%               | 2.24%               | 1.83%   |
| Middlesex Water Company                  | 2.72%               | 1.95%               | 3.68%               | 2.78%   |
| Philadelphia Suburban Corporation        | <u>5.05%</u>        | <u>8.72%</u>        | <u>7.63%</u>        | 7.13%   |
| <b>Average</b>                           | <b><u>2.72%</u></b> | <b><u>3.40%</u></b> | <b><u>4.57%</u></b> |         |
| Standard Deviation                       | 1.45%               | 3.08%               | 1.97%               |         |

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

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

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

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

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



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

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

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

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

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

Sources:    Column 1 = Average Historical DPS, EPS, & BVPS Growth Rates from Schedule 10-3.  
               Column 2 = I/B/E/S Inc.'s Institutional Brokers Estimate System (Utility Sector  
                             Five-Year Growth Rate-Company Data by Industry), July 17, 2003  
               Column 3 = Standard & Poor's Corporation's Earnings Guide, July 2003.  
               Column 4 = The Value Line Investment Survey: Ratings and Reports, May 2, 2003.

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

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

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

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

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

|                                   | (1)                      | (2)                                 | (3)                             | (4)                        | (5)                          |
|-----------------------------------|--------------------------|-------------------------------------|---------------------------------|----------------------------|------------------------------|
| <b>Company Name</b>               | <b>Expected Dividend</b> | <b>Average High/Low Stock Price</b> | <b>Projected Dividend Yield</b> | <b>Average Growth Rate</b> | <b>Cost of Common Equity</b> |
| American States Water Company     | \$0.89                   | \$25.379                            | 3.51%                           | 3.52%                      | 7.03%                        |
| California Water Services Group   | \$1.15                   | \$27.069                            | 4.23%                           | 2.45%                      | 6.68%                        |
| Middlesex Water Company           | \$0.87 *                 | \$22.786                            | 3.83%                           | 4.91%                      | 8.74%                        |
| Philadelphia Suburban Corporation | \$0.59                   | \$22.651                            | 2.58%                           | 8.67%                      | 11.25%                       |
|                                   |                          |                                     | <u><b>3.54%</b></u>             | <u><b>4.89%</b></u>        | <u><b>8.43%</b></u>          |
|                                   |                          |                                     | <b>Proposed Dividend Yield</b>  |                            | <b>3.54%</b>                 |
|                                   |                          |                                     | <b>Proposed Range of Growth</b> |                            | <b>4.39 - 5.39%</b>          |
|                                   |                          |                                     | <b>Estimated Cost of Equity</b> |                            | <b>7.93 - 8.93%</b>          |

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

Sources: Column 1 = The Value Line Investment Survey: Ratings and Reports, May 02, 2003  
Average of 2003 estimated DPS and 2004 estimated DPS  
\*Except for Middlesex, which was calculated by taking the 2002 dividend times the average historical 5-year and 10-year dividend growth rate.  
Column 2 = Schedule 12.  
Column 4 = Schedule 11.

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

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

Notes:

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

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

Sources:

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

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

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

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

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

| American States'<br>Actual<br>Mo/Year<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | American States'<br>Risk<br>Premium | American States'<br>Actual<br>Mo/Year<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | American States'<br>Risk<br>Premium |
|--|--|-------------------------------------|--|--|-------------------------------------|
| Jan 1993                                     | 10.20%                                     | 7.34%                               | Jan 1998                                     | 9.40%                                      | 5.81%                               |
| Feb  | 10.20%                                     | 7.09%                               | Feb  | 9.40%                                      | 5.89%                               |
| Mar  | 10.20%                                     | 6.82%                               | Mar  | 9.40%                                      | 5.95%                               |
| Apr  | 10.20%                                     | 6.85%                               | Apr  | 9.40%                                      | 5.92%                               |
| May  | 10.20%                                     | 6.92%                               | May  | 9.40%                                      | 5.93%                               |
| Jun  | 10.20%                                     | 6.81%                               | Jun  | 9.40%                                      | 5.70%                               |
| Jul  | 10.20%                                     | 6.63%                               | Jul  | 9.40%                                      | 5.68%                               |
| Aug  | 10.20%                                     | 6.32%                               | Aug  | 9.40%                                      | 5.54%                               |
| Sep  | 10.20%                                     | 6.00%                               | Sep  | 9.40%                                      | 5.20%                               |
| Oct  | 10.20%                                     | 5.94%                               | Oct  | 9.40%                                      | 5.01%                               |
| Nov  | 10.20%                                     | 6.21%                               | Nov  | 9.40%                                      | 5.25%                               |
| Dec  | 10.20%                                     | 6.25%                               | Dec  | 9.40%                                      | 5.06%                               |
| Jan 1994                                     | 9.50%                                      | 6.29%                               | Jan 1999                                     | 10.10%                                     | 5.16%                               |
| Feb  | 9.50%                                      | 6.49%                               | Feb  | 10.10%                                     | 5.37%                               |
| Mar  | 9.50%                                      | 6.91%                               | Mar  | 10.10%                                     | 5.58%                               |
| Apr  | 9.50%                                      | 7.27%                               | Apr  | 10.10%                                     | 5.55%                               |
| May  | 9.50%                                      | 7.41%                               | May  | 10.10%                                     | 5.81%                               |
| Jun  | 9.50%                                      | 7.40%                               | June   | 10.10%                                     | 6.04%                               |
| Jul  | 9.50%                                      | 7.58%                               | July   | 10.10%                                     | 5.98%                               |
| Aug  | 9.50%                                      | 7.49%                               | Aug  | 10.10%                                     | 6.07%                               |
| Sep  | 9.50%                                      | 7.71%                               | Sept   | 10.10%                                     | 6.07%                               |
| Oct  | 9.50%                                      | 7.94%                               | Oct  | 10.10%                                     | 6.26%                               |
| Nov  | 9.50%                                      | 8.08%                               | Nov  | 10.10%                                     | 6.15%                               |
| Dec  | 9.50%                                      | 7.87%                               | Dec  | 10.10%                                     | 6.35%                               |
| Jan 1995                                     | 10.00%                                     | 7.85%                               | Jan 2000                                     | 9.30%                                      | 6.63%                               |
| Feb  | 10.00%                                     | 7.61%                               | Feb  | 9.30%                                      | 6.23%                               |
| Mar  | 10.00%                                     | 7.45%                               | March  | 9.30%                                      | 6.05%                               |
| Apr  | 10.00%                                     | 7.36%                               | Apr  | 9.30%                                      | 5.85%                               |
| May  | 10.00%                                     | 6.95%                               | May  | 9.30%                                      | 6.15%                               |
| Jun  | 10.00%                                     | 6.57%                               | June   | 9.30%                                      | 5.93%                               |
| Jul  | 10.00%                                     | 6.72%                               | July   | 9.30%                                      | 5.85%                               |
| Aug  | 10.00%                                     | 6.86%                               | Aug  | 9.30%                                      | 5.72%                               |
| Sep  | 10.00%                                     | 6.55%                               | Sept   | 9.30%                                      | 5.83%                               |
| Oct  | 10.00%                                     | 6.37%                               | Oct  | 9.30%                                      | 5.80%                               |
| Nov  | 10.00%                                     | 6.26%                               | Nov  | 9.30%                                      | 5.78%                               |
| Dec  | 10.00%                                     | 6.06%                               | Dec  | 9.30%                                      | 5.49%                               |
| Jan 1996                                     | 9.00%                                      | 6.05%                               | Jan 2001                                     | 10.10%                                     | 5.54%                               |
| Feb  | 9.00%                                      | 6.24%                               | Feb  | 10.10%                                     | 5.45%                               |
| Mar  | 9.00%                                      | 6.60%                               | March  | 10.10%                                     | 5.34%                               |
| Apr  | 9.00%                                      | 6.79%                               | Apr  | 10.10%                                     | 5.65%                               |
| May  | 9.00%                                      | 6.93%                               | May  | 10.10%                                     | 5.78%                               |
| Jun  | 9.00%                                      | 7.06%                               | June   | 10.10%                                     | 5.67%                               |
| Jul  | 9.00%                                      | 7.03%                               | July   | 10.10%                                     | 5.61%                               |
| Aug  | 9.00%                                      | 6.84%                               | Aug  | 10.10%                                     | 5.48%                               |
| Sep  | 9.00%                                      | 7.03%                               | Sept   | 10.10%                                     | 5.48%                               |
| Oct  | 9.00%                                      | 6.81%                               | Oct  | 10.10%                                     | 5.32%                               |
| Nov  | 9.00%                                      | 6.48%                               | Nov  | 10.10%                                     | 5.12%                               |
| Dec  | 9.00%                                      | 6.55%                               | Dec  | 10.10%                                     | 5.48%                               |
| Jan 1997                                     | 9.20%                                      | 6.83%                               | Jan 2002                                     | 9.50%                                      | 5.45%                               |
| Feb  | 9.20%                                      | 6.69%                               | Feb  | 9.50%                                      | 5.40%                               |
| Mar  | 9.20%                                      | 6.93%                               | Mar  | 9.50%                                      | 5.71%                               |
| Apr  | 9.20%                                      | 7.09%                               | Apr  | 9.50%                                      | 5.67%                               |
| May  | 9.20%                                      | 6.94%                               | May  | 9.50%                                      | 5.64%                               |
| Jun  | 9.20%                                      | 6.77%                               | June   | 9.50%                                      | 5.52%                               |
| Jul  | 9.20%                                      | 6.51%                               | July   | 9.50%                                      | 5.38%                               |
| Aug  | 9.20%                                      | 6.58%                               | Aug  | 9.50%                                      | 5.08%                               |
| Sep  | 9.20%                                      | 6.50%                               | Sept   | 9.50%                                      | 4.76%                               |
| Oct  | 9.20%                                      | 6.33%                               | Oct  | 9.50%                                      | 4.93%                               |
| Nov  | 9.20%                                      | 6.11%                               | Nov  | 9.50%                                      | 4.95%                               |
| Dec  | 9.20%                                      | 5.99%                               | Dec  | 9.50%                                      | 4.92%                               |

**Summary Information (January 1993 - December 2002)**

Average Risk Premium: 3.40%

High Risk Premium: 4.98%

Low Risk Premium: 1.42%

Sources: The Value Line Investment Survey: Ratings & Reports.

St. Louis Federal Reserve Website: <http://www.stls.frb.org/fred/data/irates/g30>

Yahoo Finance at:

<http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETEX&d=1y>

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

| Mo/Year  | California Water's<br>Actual<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | California Water's<br>Risk<br>Premium | Mo/Year  | California Water's<br>Actual<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | California<br>Water's<br>Risk<br>Premium |
|----------|-------------------------------------|--|---------------------------------------|----------|-------------------------------------|--|--|
| Jan 1993 | 12.40%                              | 7.34%                                      | 5.06%                                 | Jan 1998 | 10.80%                              | 5.81%                                      | 4.99%                                    |
| Feb      | 12.40%                              | 7.09%                                      | 5.31%                                 | Feb      | 10.80%                              | 5.89%                                      | 4.91%                                    |
| Mar      | 12.40%                              | 6.82%                                      | 5.58%                                 | Mar      | 10.80%                              | 5.95%                                      | 4.85%                                    |
| Apr      | 12.40%                              | 6.85%                                      | 5.55%                                 | Apr      | 10.80%                              | 5.92%                                      | 4.88%                                    |
| May      | 12.40%                              | 6.92%                                      | 5.48%                                 | May      | 10.80%                              | 5.93%                                      | 4.87%                                    |
| Jun      | 12.40%                              | 6.81%                                      | 5.59%                                 | Jun      | 10.80%                              | 5.70%                                      | 5.10%                                    |
| Jul      | 12.40%                              | 6.63%                                      | 5.77%                                 | Jul      | 10.80%                              | 5.68%                                      | 5.12%                                    |
| Aug      | 12.40%                              | 6.32%                                      | 6.08%                                 | Aug      | 10.80%                              | 5.54%                                      | 5.26%                                    |
| Sep      | 12.40%                              | 6.00%                                      | 6.40%                                 | Sep      | 10.80%                              | 5.20%                                      | 5.60%                                    |
| Oct      | 12.40%                              | 5.94%                                      | 6.46%                                 | Oct      | 10.80%                              | 5.01%                                      | 5.79%                                    |
| Nov      | 12.40%                              | 6.21%                                      | 6.19%                                 | Nov      | 10.80%                              | 5.25%                                      | 5.55%                                    |
| Dec      | 12.40%                              | 6.25%                                      | 6.15%                                 | Dec      | 10.80%                              | 5.06%                                      | 5.74%                                    |
| Jan 1994 | 9.90%                               | 6.29%                                      | 3.61%                                 | Jan 1999 | 11.40%                              | 5.16%                                      | 6.24%                                    |
| Feb      | 9.90%                               | 6.49%                                      | 3.41%                                 | Feb      | 11.40%                              | 5.37%                                      | 6.03%                                    |
| Mar      | 9.90%                               | 6.91%                                      | 2.99%                                 | Mar      | 11.40%                              | 5.58%                                      | 5.82%                                    |
| Apr      | 9.90%                               | 7.27%                                      | 2.63%                                 | Apr      | 11.40%                              | 5.55%                                      | 5.85%                                    |
| May      | 9.90%                               | 7.41%                                      | 2.49%                                 | May      | 11.40%                              | 5.81%                                      | 5.59%                                    |
| Jun      | 9.90%                               | 7.40%                                      | 2.50%                                 | June     | 11.40%                              | 6.04%                                      | 5.36%                                    |
| Jul      | 9.90%                               | 7.58%                                      | 2.32%                                 | July     | 11.40%                              | 5.98%                                      | 5.42%                                    |
| Aug      | 9.90%                               | 7.49%                                      | 2.41%                                 | Aug      | 11.40%                              | 6.07%                                      | 5.33%                                    |
| Sep      | 9.90%                               | 7.71%                                      | 2.19%                                 | Sept     | 11.40%                              | 6.07%                                      | 5.33%                                    |
| Oct      | 9.90%                               | 7.94%                                      | 1.96%                                 | Oct      | 11.40%                              | 6.26%                                      | 5.14%                                    |
| Nov      | 9.90%                               | 8.08%                                      | 1.82%                                 | Nov      | 11.40%                              | 6.15%                                      | 5.25%                                    |
| Dec      | 9.90%                               | 7.87%                                      | 2.03%                                 | Dec      | 11.40%                              | 6.35%                                      | 5.05%                                    |
| Jan 1995 | 9.90%                               | 7.85%                                      | 2.05%                                 | Jan 2000 | 10.10%                              | 6.63%                                      | 3.47%                                    |
| Feb      | 9.90%                               | 7.61%                                      | 2.29%                                 | Feb      | 10.10%                              | 6.23%                                      | 3.87%                                    |
| Mar      | 9.90%                               | 7.45%                                      | 2.45%                                 | March    | 10.10%                              | 6.05%                                      | 4.05%                                    |
| Apr      | 9.90%                               | 7.36%                                      | 2.54%                                 | Apr      | 10.10%                              | 5.85%                                      | 4.25%                                    |
| May      | 9.90%                               | 6.95%                                      | 2.95%                                 | May      | 10.10%                              | 6.15%                                      | 3.95%                                    |
| Jun      | 9.90%                               | 6.57%                                      | 3.33%                                 | June     | 10.10%                              | 5.93%                                      | 4.17%                                    |
| Jul      | 9.90%                               | 6.72%                                      | 3.18%                                 | July     | 10.10%                              | 5.85%                                      | 4.25%                                    |
| Aug      | 9.90%                               | 6.86%                                      | 3.04%                                 | Aug      | 10.10%                              | 5.72%                                      | 4.38%                                    |
| Sep      | 9.90%                               | 6.55%                                      | 3.35%                                 | Sept     | 10.10%                              | 5.83%                                      | 4.27%                                    |
| Oct      | 9.90%                               | 6.37%                                      | 3.53%                                 | Oct      | 10.10%                              | 5.80%                                      | 4.30%                                    |
| Nov      | 9.90%                               | 6.26%                                      | 3.64%                                 | Nov      | 10.10%                              | 5.78%                                      | 4.32%                                    |
| Dec      | 9.90%                               | 6.06%                                      | 3.84%                                 | Dec      | 10.10%                              | 5.49%                                      | 4.61%                                    |
| Jan 1996 | 12.30%                              | 6.05%                                      | 6.25%                                 | Jan 2001 | 7.20%                               | 5.54%                                      | 1.66%                                    |
| Feb      | 12.30%                              | 6.24%                                      | 6.06%                                 | Feb      | 7.20%                               | 5.45%                                      | 1.75%                                    |
| Mar      | 12.30%                              | 6.60%                                      | 5.70%                                 | March    | 7.20%                               | 5.34%                                      | 1.86%                                    |
| Apr      | 12.30%                              | 6.79%                                      | 5.51%                                 | Apr      | 7.20%                               | 5.65%                                      | 1.55%                                    |
| May      | 12.30%                              | 6.93%                                      | 5.37%                                 | May      | 7.20%                               | 5.78%                                      | 1.42%                                    |
| Jun      | 12.30%                              | 7.06%                                      | 5.24%                                 | June     | 7.20%                               | 5.67%                                      | 1.53%                                    |
| Jul      | 12.30%                              | 7.03%                                      | 5.27%                                 | July     | 7.20%                               | 5.61%                                      | 1.59%                                    |
| Aug      | 12.30%                              | 6.84%                                      | 5.46%                                 | Aug      | 7.20%                               | 5.48%                                      | 1.72%                                    |
| Sep      | 12.30%                              | 7.03%                                      | 5.27%                                 | Sept     | 7.20%                               | 5.48%                                      | 1.72%                                    |
| Oct      | 12.30%                              | 6.81%                                      | 5.49%                                 | Oct      | 7.20%                               | 5.32%                                      | 1.88%                                    |
| Nov      | 12.30%                              | 6.48%                                      | 5.82%                                 | Nov      | 7.20%                               | 5.12%                                      | 2.08%                                    |
| Dec      | 12.30%                              | 6.55%                                      | 5.75%                                 | Dec      | 7.20%                               | 5.48%                                      | 1.72%                                    |
| Jan 1997 | 14.10%                              | 6.83%                                      | 7.27%                                 | Jan 2002 | 9.50%                               | 5.45%                                      | 4.05%                                    |
| Feb      | 14.10%                              | 6.69%                                      | 7.41%                                 | Feb      | 9.50%                               | 5.40%                                      | 4.10%                                    |
| Mar      | 14.10%                              | 6.93%                                      | 7.17%                                 | Mar      | 9.50%                               | 5.71%                                      | 3.79%                                    |
| Apr      | 14.10%                              | 7.09%                                      | 7.01%                                 | Apr      | 9.50%                               | 5.67%                                      | 3.83%                                    |
| May      | 14.10%                              | 6.94%                                      | 7.16%                                 | May      | 9.50%                               | 5.64%                                      | 3.86%                                    |
| Jun      | 14.10%                              | 6.77%                                      | 7.33%                                 | June     | 9.50%                               | 5.52%                                      | 3.98%                                    |
| Jul      | 14.10%                              | 6.51%                                      | 7.59%                                 | July     | 9.50%                               | 5.38%                                      | 4.12%                                    |
| Aug      | 14.10%                              | 6.58%                                      | 7.52%                                 | Aug      | 9.50%                               | 5.08%                                      | 4.42%                                    |
| Sep      | 14.10%                              | 6.50%                                      | 7.60%                                 | Sept     | 9.50%                               | 4.76%                                      | 4.74%                                    |
| Oct      | 14.10%                              | 6.33%                                      | 7.77%                                 | Oct      | 9.50%                               | 4.93%                                      | 4.57%                                    |
| Nov      | 14.10%                              | 6.11%                                      | 7.99%                                 | Nov      | 9.50%                               | 4.95%                                      | 4.55%                                    |
| Dec      | 14.10%                              | 5.99%                                      | 8.11%                                 | Dec      | 9.50%                               | 4.92%                                      | 4.58%                                    |

#### Summary Information (January 1993 - December 2002)

Average Risk Premium: 4.53%

High Risk Premium: 8.11%

Low Risk Premium: 1.42%

Sources: The Value Line Investment Survey: Ratings & Reports.

St. Louis Federal Reserve Website: <http://www.stls.frb.org/fred/data/irates/g30>

Yahoo Finance at:

<http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=5ETX&d=1y>

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

| Middlesex's<br>Actual | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | Middlesex's<br>Risk<br>Premium | Middlesex's<br>Actual | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | Middlesex's<br>Risk<br>Premium |
|-----------------------|--|--------------------------------|-----------------------|--|--------------------------------|
| Mo/Year               | ROE  |                                | Mo/Year               | ROE  |                                |
| Jan 1993              | 11.70%                                     | 7.34%                          | Jan 1998              | 9.10%                                      | 5.81%                          |
| Feb                   | 11.70%                                     | 7.09%                          | Feb                   | 9.10%                                      | 5.89%                          |
| Mar                   | 11.70%                                     | 6.82%                          | Mar                   | 9.10%                                      | 5.95%                          |
| Apr                   | 11.70%                                     | 6.85%                          | Apr                   | 9.10%                                      | 5.92%                          |
| May                   | 11.70%                                     | 6.92%                          | May                   | 9.10%                                      | 5.93%                          |
| Jun                   | 11.70%                                     | 6.81%                          | Jun                   | 9.10%                                      | 5.70%                          |
| Jul                   | 11.70%                                     | 6.63%                          | Jul                   | 9.10%                                      | 5.68%                          |
| Aug                   | 11.70%                                     | 6.32%                          | Aug                   | 9.10%                                      | 5.54%                          |
| Sep                   | 11.70%                                     | 6.00%                          | Sep                   | 9.10%                                      | 5.20%                          |
| Oct                   | 11.70%                                     | 5.94%                          | Oct                   | 9.10%                                      | 5.01%                          |
| Nov                   | 11.70%                                     | 6.21%                          | Nov                   | 9.10%                                      | 5.25%                          |
| Dec                   | 11.70%                                     | 6.25%                          | Dec                   | 9.10%                                      | 5.06%                          |
| Jan 1994              | 11.50%                                     | 6.29%                          | Jan 1999              | 10.60%                                     | 5.16%                          |
| Feb                   | 11.50%                                     | 6.49%                          | Feb                   | 10.60%                                     | 5.37%                          |
| Mar                   | 11.50%                                     | 6.91%                          | Mar                   | 10.60%                                     | 5.58%                          |
| Apr                   | 11.50%                                     | 7.27%                          | Apr                   | 10.60%                                     | 5.55%                          |
| May                   | 11.50%                                     | 7.41%                          | May                   | 10.60%                                     | 5.81%                          |
| Jun                   | 11.50%                                     | 7.40%                          | June                  | 10.60%                                     | 6.04%                          |
| Jul                   | 11.50%                                     | 7.58%                          | July                  | 10.60%                                     | 5.98%                          |
| Aug                   | 11.50%                                     | 7.49%                          | Aug                   | 10.60%                                     | 6.07%                          |
| Sep                   | 11.50%                                     | 7.71%                          | Sept                  | 10.60%                                     | 6.07%                          |
| Oct                   | 11.50%                                     | 7.94%                          | Oct                   | 10.60%                                     | 6.26%                          |
| Nov                   | 11.50%                                     | 8.08%                          | Nov                   | 10.60%                                     | 6.15%                          |
| Dec                   | 11.50%                                     | 7.87%                          | Dec                   | 10.60%                                     | 6.35%                          |
| Jan 1995              | 11.30%                                     | 7.85%                          | Jan 2000              | 7.10%                                      | 6.63%                          |
| Feb                   | 11.30%                                     | 7.61%                          | Feb                   | 7.10%                                      | 6.23%                          |
| Mar                   | 11.30%                                     | 7.45%                          | March                 | 7.10%                                      | 6.05%                          |
| Apr                   | 11.30%                                     | 7.36%                          | Apr                   | 7.10%                                      | 5.85%                          |
| May                   | 11.30%                                     | 6.95%                          | May                   | 7.10%                                      | 6.15%                          |
| Jun                   | 11.30%                                     | 6.57%                          | June                  | 7.10%                                      | 5.93%                          |
| Jul                   | 11.30%                                     | 6.72%                          | July                  | 7.10%                                      | 5.85%                          |
| Aug                   | 11.30%                                     | 6.86%                          | Aug                   | 7.10%                                      | 5.72%                          |
| Sep                   | 11.30%                                     | 6.55%                          | Sept                  | 7.10%                                      | 5.83%                          |
| Oct                   | 11.30%                                     | 6.37%                          | Oct                   | 7.10%                                      | 5.80%                          |
| Nov                   | 11.30%                                     | 6.26%                          | Nov                   | 7.10%                                      | 5.78%                          |
| Dec                   | 11.30%                                     | 6.06%                          | Dec                   | 7.10%                                      | 5.49%                          |
| Jan 1996              | 10.00%                                     | 6.05%                          | Jan 2001              | 9.10%                                      | 5.54%                          |
| Feb                   | 10.00%                                     | 6.24%                          | Feb                   | 9.10%                                      | 5.45%                          |
| Mar                   | 10.00%                                     | 6.60%                          | March                 | 9.10%                                      | 5.34%                          |
| Apr                   | 10.00%                                     | 6.79%                          | Apr                   | 9.10%                                      | 5.65%                          |
| May                   | 10.00%                                     | 6.93%                          | May                   | 9.10%                                      | 5.78%                          |
| Jun                   | 10.00%                                     | 7.06%                          | June                  | 9.10%                                      | 5.67%                          |
| Jul                   | 10.00%                                     | 7.03%                          | July                  | 9.10%                                      | 5.61%                          |
| Aug                   | 10.00%                                     | 6.84%                          | Aug                   | 9.10%                                      | 5.48%                          |
| Sep                   | 10.00%                                     | 7.03%                          | Sept                  | 9.10%                                      | 5.48%                          |
| Oct                   | 10.00%                                     | 6.81%                          | Oct                   | 9.10%                                      | 5.32%                          |
| Nov                   | 10.00%                                     | 6.48%                          | Nov                   | 9.10%                                      | 5.12%                          |
| Dec                   | 10.00%                                     | 6.55%                          | Dec                   | 9.10%                                      | 5.48%                          |
| Jan 1997              | 10.40%                                     | 6.83%                          | Jan 2002              | 9.60%                                      | 5.45%                          |
| Feb                   | 10.40%                                     | 6.69%                          | Feb                   | 9.60%                                      | 5.40%                          |
| Mar                   | 10.40%                                     | 6.93%                          | Mar                   | 9.60%                                      | 5.71%                          |
| Apr                   | 10.40%                                     | 7.09%                          | Apr                   | 9.60%                                      | 5.67%                          |
| May                   | 10.40%                                     | 6.94%                          | May                   | 9.60%                                      | 5.64%                          |
| Jun                   | 10.40%                                     | 6.77%                          | June                  | 9.60%                                      | 5.52%                          |
| Jul                   | 10.40%                                     | 6.51%                          | July                  | 9.60%                                      | 5.38%                          |
| Aug                   | 10.40%                                     | 6.58%                          | Aug                   | 9.60%                                      | 5.08%                          |
| Sep                   | 10.40%                                     | 6.50%                          | Sept                  | 9.60%                                      | 4.76%                          |
| Oct                   | 10.40%                                     | 6.33%                          | Oct                   | 9.60%                                      | 4.93%                          |
| Nov                   | 10.40%                                     | 6.11%                          | Nov                   | 9.60%                                      | 4.95%                          |
| Dec                   | 10.40%                                     | 5.99%                          | Dec                   | 9.60%                                      | 4.92%                          |

**Summary Information (January 1993 - December 2002)**

Average Risk Premium: 3.81%

High Risk Premium: 5.76%

Low Risk Premium: 0.47%

Sources: The Value Line Investment Survey: Ratings & Reports.

St. Louis Federal Reserve Website: <http://www.stls.frb.org/fred/data/irates/g30>

Yahoo Finance at:

<http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETEX&d=1y>



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

| Mo/Year  | Philadelphia's<br>Actual<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | Philadelphia's<br>Risk<br>Premium | Mo/Year  | Philadelphia's<br>Actual<br>ROE | 30-Year<br>U.S. Treasury<br>Bond<br>Yields | Philadelphia's<br>Risk<br>Premium |
|----------|---------------------------------|--|-----------------------------------|----------|---------------------------------|--|-----------------------------------|
| Jan 1993 | 10.20%                          | 7.34%                                      | 2.86%                             | Jan 1998 | 12.40%                          | 5.81%                                      | 6.59%                             |
| Feb      | 10.20%                          | 7.09%                                      | 3.11%                             | Feb      | 12.40%                          | 5.89%                                      | 6.51%                             |
| Mar      | 10.20%                          | 6.82%                                      | 3.38%                             | Mar      | 12.40%                          | 5.95%                                      | 6.45%                             |
| Apr      | 10.20%                          | 6.85%                                      | 3.35%                             | Apr      | 12.40%                          | 5.92%                                      | 6.48%                             |
| May      | 10.20%                          | 6.92%                                      | 3.28%                             | May      | 12.40%                          | 5.93%                                      | 6.47%                             |
| Jun      | 10.20%                          | 6.81%                                      | 3.39%                             | Jun      | 12.40%                          | 5.70%                                      | 6.70%                             |
| Jul      | 10.20%                          | 6.63%                                      | 3.57%                             | Jul      | 12.40%                          | 5.68%                                      | 6.72%                             |
| Aug      | 10.20%                          | 6.32%                                      | 3.88%                             | Aug      | 12.40%                          | 5.54%                                      | 6.86%                             |
| Sep      | 10.20%                          | 6.00%                                      | 4.20%                             | Sep      | 12.40%                          | 5.20%                                      | 7.20%                             |
| Oct      | 10.20%                          | 5.94%                                      | 4.26%                             | Oct      | 12.40%                          | 5.01%                                      | 7.39%                             |
| Nov      | 10.20%                          | 6.21%                                      | 3.99%                             | Nov      | 12.40%                          | 5.25%                                      | 7.15%                             |
| Dec      | 10.20%                          | 6.25%                                      | 3.95%                             | Dec      | 12.40%                          | 5.06%                                      | 7.34%                             |
| Jan 1994 | 10.30%                          | 6.29%                                      | 4.01%                             | Jan 1999 | 12.30%                          | 5.16%                                      | 7.14%                             |
| Feb      | 10.30%                          | 6.49%                                      | 3.81%                             | Feb      | 12.30%                          | 5.37%                                      | 6.93%                             |
| Mar      | 10.30%                          | 6.91%                                      | 3.39%                             | Mar      | 12.30%                          | 5.58%                                      | 6.72%                             |
| Apr      | 10.30%                          | 7.27%                                      | 3.03%                             | Apr      | 12.30%                          | 5.55%                                      | 6.75%                             |
| May      | 10.30%                          | 7.41%                                      | 2.89%                             | May      | 12.30%                          | 5.81%                                      | 6.49%                             |
| Jun      | 10.30%                          | 7.40%                                      | 2.90%                             | June     | 12.30%                          | 6.04%                                      | 6.26%                             |
| Jul      | 10.30%                          | 7.58%                                      | 2.72%                             | July     | 12.30%                          | 5.98%                                      | 6.32%                             |
| Aug      | 10.30%                          | 7.49%                                      | 2.81%                             | Aug      | 12.30%                          | 6.07%                                      | 6.23%                             |
| Sep      | 10.30%                          | 7.71%                                      | 2.59%                             | Sept     | 12.30%                          | 6.07%                                      | 6.23%                             |
| Oct      | 10.30%                          | 7.94%                                      | 2.36%                             | Oct      | 12.30%                          | 6.26%                                      | 6.04%                             |
| Nov      | 10.30%                          | 8.08%                                      | 2.22%                             | Nov      | 12.30%                          | 6.15%                                      | 6.15%                             |
| Dec      | 10.30%                          | 7.87%                                      | 2.43%                             | Dec      | 12.30%                          | 6.35%                                      | 5.95%                             |
| Jan 1995 | 11.70%                          | 7.85%                                      | 3.85%                             | Jan 2000 | 11.70%                          | 6.63%                                      | 5.07%                             |
| Feb      | 11.70%                          | 7.61%                                      | 4.09%                             | Feb      | 11.70%                          | 6.23%                                      | 5.47%                             |
| Mar      | 11.70%                          | 7.45%                                      | 4.25%                             | March    | 11.70%                          | 6.05%                                      | 5.65%                             |
| Apr      | 11.70%                          | 7.36%                                      | 4.34%                             | Apr      | 11.70%                          | 5.85%                                      | 5.85%                             |
| May      | 11.70%                          | 6.95%                                      | 4.75%                             | May      | 11.70%                          | 6.15%                                      | 5.55%                             |
| Jun      | 11.70%                          | 6.57%                                      | 5.13%                             | June     | 11.70%                          | 5.93%                                      | 5.77%                             |
| Jul      | 11.70%                          | 6.72%                                      | 4.98%                             | July     | 11.70%                          | 5.85%                                      | 5.85%                             |
| Aug      | 11.70%                          | 6.86%                                      | 4.84%                             | Aug      | 11.70%                          | 5.72%                                      | 5.98%                             |
| Sep      | 11.70%                          | 6.55%                                      | 5.15%                             | Sept     | 11.70%                          | 5.83%                                      | 5.87%                             |
| Oct      | 11.70%                          | 6.37%                                      | 5.33%                             | Oct      | 11.70%                          | 5.80%                                      | 5.90%                             |
| Nov      | 11.70%                          | 6.26%                                      | 5.44%                             | Nov      | 11.70%                          | 5.78%                                      | 5.92%                             |
| Dec      | 11.70%                          | 6.06%                                      | 5.64%                             | Dec      | 11.70%                          | 5.49%                                      | 6.21%                             |
| Jan 1996 | 11.20%                          | 6.05%                                      | 5.15%                             | Jan 2001 | 12.40%                          | 5.54%                                      | 6.86%                             |
| Feb      | 11.20%                          | 6.24%                                      | 4.96%                             | Feb      | 12.40%                          | 5.45%                                      | 6.95%                             |
| Mar      | 11.20%                          | 6.60%                                      | 4.60%                             | March    | 12.40%                          | 5.34%                                      | 7.06%                             |
| Apr      | 11.20%                          | 6.79%                                      | 4.41%                             | Apr      | 12.40%                          | 5.65%                                      | 6.75%                             |
| May      | 11.20%                          | 6.93%                                      | 4.27%                             | May      | 12.40%                          | 5.78%                                      | 6.62%                             |
| Jun      | 11.20%                          | 7.06%                                      | 4.14%                             | June     | 12.40%                          | 5.67%                                      | 6.73%                             |
| Jul      | 11.20%                          | 7.03%                                      | 4.17%                             | July     | 12.40%                          | 5.61%                                      | 6.79%                             |
| Aug      | 11.20%                          | 6.84%                                      | 4.36%                             | Aug      | 12.40%                          | 5.48%                                      | 6.92%                             |
| Sep      | 11.20%                          | 7.03%                                      | 4.17%                             | Sept     | 12.40%                          | 5.48%                                      | 6.92%                             |
| Oct      | 11.20%                          | 6.81%                                      | 4.39%                             | Oct      | 12.40%                          | 5.32%                                      | 7.08%                             |
| Nov      | 11.20%                          | 6.48%                                      | 4.72%                             | Nov      | 12.40%                          | 5.12%                                      | 7.28%                             |
| Dec      | 11.20%                          | 6.55%                                      | 4.65%                             | Dec      | 12.40%                          | 5.48%                                      | 6.92%                             |
| Jan 1997 | 12.00%                          | 6.83%                                      | 5.17%                             | Jan 2002 | 12.70%                          | 5.45%                                      | 7.25%                             |
| Feb      | 12.00%                          | 6.69%                                      | 5.31%                             | Feb      | 12.70%                          | 5.40%                                      | 7.30%                             |
| Mar      | 12.00%                          | 6.93%                                      | 5.07%                             | Mar      | 12.70%                          | 5.71%                                      | 6.99%                             |
| Apr      | 12.00%                          | 7.09%                                      | 4.91%                             | Apr      | 12.70%                          | 5.67%                                      | 7.03%                             |
| May      | 12.00%                          | 6.94%                                      | 5.06%                             | May      | 12.70%                          | 5.64%                                      | 7.06%                             |
| Jun      | 12.00%                          | 6.77%                                      | 5.23%                             | June     | 12.70%                          | 5.52%                                      | 7.18%                             |
| Jul      | 12.00%                          | 6.51%                                      | 5.49%                             | July     | 12.70%                          | 5.38%                                      | 7.32%                             |
| Aug      | 12.00%                          | 6.58%                                      | 5.42%                             | Aug      | 12.70%                          | 5.08%                                      | 7.62%                             |
| Sep      | 12.00%                          | 6.50%                                      | 5.50%                             | Sept     | 12.70%                          | 4.76%                                      | 7.94%                             |
| Oct      | 12.00%                          | 6.33%                                      | 5.67%                             | Oct      | 12.70%                          | 4.93%                                      | 7.77%                             |
| Nov      | 12.00%                          | 6.11%                                      | 5.89%                             | Nov      | 12.70%                          | 4.95%                                      | 7.75%                             |
| Dec      | 12.00%                          | 5.99%                                      | 6.01%                             | Dec      | 12.70%                          | 4.92%                                      | 7.78%                             |

**Summary Information (January 1993 - December 2002)**

**Average Risk Premium: 5.46%**

**High Risk Premium: 7.94%**

**Low Risk Premium: 2.22%**

Sources: The Value Line Investment Survey: Ratings & Reports.

St. Louis Federal Reserve Website: <http://www.stls.frb.org/fred/data/irates/gs30>

Yahoo Finance at:

<http://www.investopedia.com/offsite.asp?URL=http://quote.yahoo.com/q?s=%5ETEX&d=1y>

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

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

**NOTES:**

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

Column 2 = The equity premium represents the average positive difference between the Company's actual return on common equity as reported in The Value Line Investment Survey: Ratings & Report and the average yield on 30-year U.S. Treasury Bonds from January 1993 through December 2002.  
See Schedules 15-1 through 15-4.

Column 3 = Column 1 + Column 2.

**OSAGE WATER COMPANY**  
**CASE NOS. ST-2003-0562 and WT-2003-0563**

**Selected Financial Ratios for the Four Comparable Water Utility Companies**

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

Sources: The Value Line Investment Survey: Ratings and Reports, May 2, 2003 for columns (1), (2), (3), and (5).

\*Middlesex's pretax interest coverage ratio was calculated manually from financial information in Middlesex Water Company's 2002 SEC 10K Filing.

C.A. Turner Utility Reports, May 2003 for column (4).

Standard & Poor's Utilities & Perspectives, September 8, 2003 for Column (6)

**Pro Forma Pretax Interest Coverage Ratios  
for Osage Water Company**

|   | <u>7.93%</u>   | <u>8.43%</u>   | <u>8.93%</u>   |
|---|----------------|----------------|----------------|
| 1. Common Equity<br>( Schedule 9 )                                    | \$324,614      | \$324,614      | \$324,614      |
| 2. Earnings Allowed<br>( ROE * [ 1 ] )                                | \$25,742       | \$27,365       | \$28,988       |
| 3. Preferred Dividends  | \$0            | \$0            | \$0            |
| 4. Net Income Available<br>( [ 2 ] + [ 3 ] )                          | \$25,742       | \$27,365       | \$28,988       |
| 5. Tax Multiplier<br>( 1 / { 1 - Tax Rate } )                         | 1.6231         | 1.6231         | 1.6231         |
| 6. Pretax Earnings<br>( [ 4 ] * [ 5 ] )                               | \$41,782       | \$44,416       | \$47,050       |
| 7. Annual Interest Costs  | \$2,674        | \$2,674        | \$2,674        |
| 8. Avail. for Coverage<br>( [ 6 ] + [ 7 ] )                           | \$44,456       | \$47,090       | \$49,724       |
| 9. <b>Pro Forma Pretax<br/>Interest Coverage</b><br>( [ 8 ] / [ 7 ] ) | <b>16.63 x</b> | <b>17.61 x</b> | <b>18.60 x</b> |

**Water Utility Financial Medians - Pretax Interest Coverage (x)**

Standard & Poor's RatingsDirect

Research: Utility Financial Targets are Revised  
June 18, 1999 - Water Utilities

Based on a Business Position of 3

|           |           |            |
|-----------|-----------|------------|
| <u>AA</u> | <u>A</u>  | <u>BBB</u> |
| 3.4 - 4.0 | 2.8 - 3.4 | 1.8 - 2.8  |

## Public Utility Revenue Requirement

or

## Cost of Service

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

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

or

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

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

|          |   |   |
|----------|---|---|
| RR       | = | 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        | = | $iL + dP + kE$ or Overall Rate of Return (%)              |
| i        | = | Embedded Cost of Debt                                     |
| L        | = | Proportion of Debt in the Capital Structure               |
| d        | = | Embedded Cost of Preferred Stock                          |
| P        | = | Proportion of Preferred Stock in the Capital Structure    |
| k        | = | Required Return on Common Equity (ROE)                    |
| E        | = | Proportion of Common Equity in the Capital Structure      |

## Weighted Average Cost of Capital as of June 30, 2003 for Osage Water Company

| Capital Component   | Percentage<br>of Capital | Embedded<br>Cost | Weighted Cost of Capital Using<br>Common Equity Return of: |                     |                     |
|---------------------|--------------------------|------------------|--|---------------------|---------------------|
|                     |                          |                  | <b>7.93%</b>   | <b>8.43%</b>        | <b>8.93%</b>        |
| Common Stock Equity | 87.58%                   | -----            | 6.94%  | 7.38%               | 7.82%               |
| Preferred Stock     | 0.00%                    | 0.00%            | 0.00%  | 0.00%               | 0.00%               |
| Long-Term Debt      | 12.42%                   | 6.00%            | 0.75%  | 0.75%               | 0.75%               |
| Short-Term Debt     | 0.00%                    | 0.00%            | 0.00%  | 0.00%               | 0.00%               |
| Total               | <b><u>100.00%</u></b>    |                  | <b><u>7.69%</u></b>  | <b><u>8.13%</u></b> | <b><u>8.57%</u></b> |