

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Annual reestablishment
of authorized range of returns
on common equity for water and
wastewater utilities, pursuant
to Section 367.081(4)(f), F.S.

DOCKET NO. 980006-WS
ORDER NO. PSC-98-0903-FOF-WS
ISSUED: July 6, 1998

The following Commissioners participated in the disposition of this matter:

JULIA L. JOHNSON, Chairman
J. TERRY DEASON
SUSAN F. CLARK
JOE GARCIA
E. LEON JACOBS, JR.

NOTICE OF PROPOSED AGENCY ACTION
ORDER ESTABLISHING AUTHORIZED RANGE
OF RETURNS ON COMMON EQUITY

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code.

Pursuant to Section 367.081 (4) (f), Florida Statutes, this Commission is authorized to establish, not less than once each year, a leverage formula to calculate a reasonable range of returns on equity for water and wastewater utilities. We last established this range of returns in Order No. PSC-97-0660-FOF-WS issued on June 10, 1997, in Docket No. 970006-WS. By that order, we found it appropriate to establish a range of returns from 9.21 percent to 10.46 percent.

Our calculation of an updated leverage formula results in a range of returns on equity from 8.57 percent to 9.85 percent based on a formula of 7.72 percent + .852/Equity Ratio. The midpoint of the 8.57 percent to 9.85 percent range has decreased by 63 basis points when compared to the existing midpoint.

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FLORIDA PUBLIC SERVICE COMMISSION

In calculating the updated leverage formula, we utilized most of the same methodologies used in the 1995 leverage formula docket. By Order No. PSC-95-0982-FOF-WS, issued August 10, 1995, in Docket No. 950006-WS, we revised the methodology for calculating the leverage formula, following two workshops. We made one refinement in the updated formula regarding calculation of the historical Discounted Cash Flow result, as discussed later in this Order. Otherwise, the difference between the existing leverage formula and the updated formula is the result of changes in underlying market conditions; that is, changes in bond yields and required rates of return.

The basic assumptions, which remain unchanged from the previous three years, are that: business risk is similar for all water and wastewater utilities; the cost of equity is an exponential function of the equity ratio; the marginal weighted average cost of investor capital is constant over the 40 percent to 100 percent equity ratio range; and the cost rate at an assumed Moody's Baa3 bond rating, plus 25 basis points, is representative of the average marginal cost of debt to a Florida water and wastewater utility over a 40 percent to 100 percent equity ratio range.

The 9.85 percent return on common equity is divided into three segments. First, we derived an 8.93 percent return on equity by averaging the results of two Discounted Cash Flow (DCF) analyses, a Risk Premium analysis, and a Capital Asset Pricing Model (CAPM) analysis. We assigned one third weight to the average of the two DCF analyses, one third weight to the Risk Premium analysis, and one third weight to the CAPM analysis.

We applied the DCF models to an index of publicly traded water and wastewater utilities. The difference between the two applications is that one version relies on historic growth rates and the other version relies on projected growth rates. Prior to 1995, only a DCF analysis using historic growth rates was used because of a lack of projected financial information on publicly traded water and wastewater utilities. (See pages 3-4 of Attachment 1)

We made one refinement in calculating the historical DCF result. In the past, the result was the simple average of the calculated returns on equity for the six companies in the index. In calculating the current historical DCF result, we utilized a

weighted average, weighted by market capitalization, which we find provides a result more closely related to the stock market.

We applied the Risk Premium model to an index of publicly traded natural gas utilities. In addition, we added a negative 66 basis point premium to the return indicated by the Risk Premium analysis of natural gas utilities. Using the difference between the average beta of the water and wastewater and natural gas indices (.59 - .70 = -.11) and the prospective market risk premium of 6.04 percent determined in our CAPM analysis, we calculated a natural gas premium of a negative 66 basis points. This adjustment is made to compensate for the perceived difference in risk between the index of natural gas utilities and the index of water and wastewater utilities. We noted in Order No. PSC-95-0982-FOF-WS, that this adjustment could be negative in the future if the average beta for the natural gas index were to rise above the average beta for the water and wastewater index, and once this change was adopted, this adjustment would be made regardless of whether the risk differential adjustment was positive or negative. We used this same application in the determination of the existing leverage formula. (See pages 1, 5, and 8 of Attachment 1)

Finally, we performed a CAPM analysis. This return is based on the market return for all dividend-paying stocks followed by Value Line, the yield on the 30-year Treasury bond projected by Blue Chip Financial Forecasts, and the average beta of the water and wastewater utilities followed by Value Line. (See page 6 of Attachment 1)

After determining the return on equity for the indices, we added a bond yield differential adjustment of 45 basis points to reflect the difference in risk between the indices of companies used in the DCF and Risk Premium models and an average water and wastewater utility in Florida. Next, we added a private placement premium of 25 basis points to recognize that Florida water and wastewater utilities do not have access to the public debt and equity markets. Finally, we added an adjustment of 22 basis points to reflect the required return on equity at a 40 percent equity ratio. (See page 1 of Attachment 1)

The bond yield differential adjustment of 45 basis points is comprised of the bond yield differential between the yield on A1-rated bonds and the yield on Baa3-rated bonds. (See page 7 of Attachment 1) The A1 rating is the average bond rating for both the natural gas index and water and wastewater index and the Baa3

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rating is the bond rating assumed for the average water and wastewater utility in Florida. Baa3 is the lowest possible rating for investment grade bonds.

We added the private placement premium of 25 basis points to recognize that, because of their small size, lack of institutional interest in their securities, and the lack of liquidity of their issues, Florida water and wastewater utilities must rely on the private placement market to obtain capital. This premium is based on the results of Commission surveys of participants in the private placement market and a review of the financial literature.

The 22 basis point adjustment represents the difference between the required return on equity at a 40.0 percent equity ratio and the required rate of return at the 44.57 percent equity ratio average for the indices of water and wastewater utilities and natural gas utilities. (See pages 9-10 of Attachment 1) Using the most recently available capital structure for the index of publicly traded water and wastewater utilities and the index of natural gas utilities as a proxy for the capital structure of an average water and wastewater utility in Florida, we calculated the marginal cost of investor capital for an average water and wastewater utility in Florida to be 8.57 percent.

In summary, we find it appropriate to base the authorized range of returns on common equity for Florida water and wastewater utilities on the following formula:

$$\text{Return on Common Equity} = 7.72 \text{ percent} + 0.852/\text{Equity Ratio}$$

We further limit the authorized return on common equity to a maximum of 9.85 percent for all equity ratios of less than 40 percent. The approved leverage formula produces a range of returns on common equity from 8.57 percent to 9.85 percent.

Upon expiration of the protest period, this docket shall remain open to allow us to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.

Based on the foregoing, it is

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ORDERED by the Florida Public Service Commission that the provisions of this Order, issued as proposed agency action, shall become final and effective unless an appropriate petition, in the form provided by Rule 25-22.036, Florida Administrative Code, is received by the Director, Division of Records and Reporting, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings or Judicial Review" attached hereto. It is further

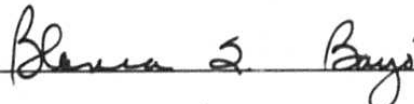
ORDERED that the appropriate formula for measuring returns on common equity for water and wastewater utilities shall be as set forth in the body of this Order. It is further

ORDERED that returns on common equity are hereby capped at 9.85 percent for all water and wastewater utilities with equity ratios of less than 40 percent in order to discourage imprudent financial risk. It is further

ORDERED that all matters contained in Attachment 1 of this Order are incorporated herein by reference. It is further

ORDERED that upon expiration of the protest period, this docket shall remain open to allow this Commission to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.

By ORDER of the Florida Public Service Commission this 6th day of July, 1998.



BLANCA S. BAYÓ, Director
Division of Records and Reporting

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NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature and will not become effective or final, except as provided by Rule 25-22.029, Florida Administrative Code. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, as provided by Rule 25-22.029(4), Florida Administrative Code, in the form provided by Rule 25-22.036(7)(a) and (f), Florida Administrative Code. This petition must be received by the Director, Division of Records and Reporting, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on July 27, 1998.

In the absence of such a petition, this order shall become effective on the day subsequent to the above date as provided by Rule 25-22.029(6), Florida Administrative Code.

Any objection or protest filed in this docket before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

If this order becomes final and effective on the date described above, any party substantially affected may request judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or by the First District Court of Appeal in the case of a water or wastewater utility by filing a notice of appeal with the Director, Division of Records and Reporting and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days of the effective date of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.

SUMMARY OF RESULTS

Leverage Formula Update

	<u>1996</u>	<u>1997</u>	<u>1998</u>
(A) DCF ROE for Water Index (Historical)	10.32%	9.28%	9.96% ¹
(B) DCF ROE for Water Index (Projected)	9.13%	8.66%	8.39%
(C) Risk Premium ROE for Gas Index	9.57%	9.52%	8.80%
(D) Gas Index premium	.44%	(.24)%	(.66)%
(E) CAPM ROE for Water Index	<u>10.17%</u>	<u>10.23%</u>	<u>9.46%</u>
AVERAGE [(((A+B)/2)+(C+D)+E)/3]	9.97%	9.49%	8.93%
Bond Yield Differential	.49%	.49%	.45%
Private Placement Premium	.25%	.25%	.25%
Adjustment to Reflect Required Equity			
Return at a 40% Equity Ratio	<u>.29%</u>	<u>.23%</u>	<u>.22%</u>
Cost of Equity for Average Florida WAW			
Utility at a 40% Equity Ratio	<u>11.00%</u>	<u>10.46%</u>	<u>9.85%</u>

1997 Leverage Formula (Currently in effect)

Return on Common Equity	=	8.38% + .832/ER
Range of Returns on Equity	=	9.21% - 10.46%

1998 Leverage Formula (Updated)

Return on Common Equity	=	7.72% + .852/ER
Range of Returns on Equity	=	8.57% - 9.85%

¹1998 DCF ROE for Water Index calculated using historical data weighted by Market Capitalization amounts listed in Value Line.

Marginal Cost of Investor Capital
Average Water and Wastewater Utility

<u>Capital Component</u>	<u>Ratio</u>	<u>Marginal Cost Rate</u>	Weighted <u>Marginal Cost Rate</u>
Common Equity	44.57%	9.63%	4.29%
Total Debt	<u>55.43%</u>	7.72% *	<u>4.28%</u>
	100.00%		8.57%

A 40% equity ratio is the floor for calculating the required return on common equity. The return on equity at a 40% equity ratio = $7.72\% + 0.852/.40 = 9.85\%$

Marginal Cost of Investor Capital
Average Water & Wastewater Utility at 40% Equity Ratio

<u>Capital Component</u>	<u>Ratio</u>	<u>Marginal Cost Rate</u>	Weighted <u>Marginal Cost Rate</u>
Common Equity	40.00%	9.85%	3.94%
Total Debt	<u>60.00%</u>	7.72% *	<u>4.63%</u>
	100.00%		8.57%

Where: ER = Equity Ratio = Common Equity / (Common Equity + Preferred Equity + Long-Term Debt + Short-Term Debt)

* Assumed Baa3 rate for April 1998 plus a 25 basis point private placement premium.

Source: Moody's Credit Perspectives, 5/04/98

	ANNUAL RATE OF CHANGE	D(1)	CURRENT AVG. STOCK PRICE	REQD. ROE	MARKET CAPITAL (MIL.)	WEIGHTED ROE
American Water Works	9.50%	\$0.90	\$30.66	12.17%	\$2400	6.80%
Aquarion Company	1.50	1.67	32.50	6.55	225	0.34
California Water Ser. Co.	4.00	1.11	27.53	7.89	325	0.60
Consumers Water Co.	3.50	1.26	20.45	9.46	175	0.39
Philadelphia Sub. Corp.	2.50	0.67	21.03	5.59	550	0.72
United Water Resources	2.50	0.94	17.47	7.77	625	1.13
Average	3.92%	\$1.09	\$24.94	8.24%	Total \$4300	9.96%

DCF Analysis:

- K = $D(1)/P(0) + g$ = Investors' required rate of return
 D(1) = Current Dividend 1998 x g
 P(0) = Current stock price = April 1998 average stock price
 g = Historical growth in dividends = Annual Rate of Change - Past 10 years.

Source: Standard & Poor's Stock Guide, May 1998; Current Dividend, Stock Price Value Line 5/8/98; Annual Rate of Change, Market Capital

COST OF EQUITY FOR WATER INDEX COMPANIES
 DISCOUNTED CASH FLOW MODEL

COST OF EQUITY

INDEX: VALUE LINE WATER UTILITY INDUSTRY

YEAR: 1998 Quarter: 1st

COMPANY	DIV1	DIV2	DIV3	Value Line Index - Ed. 9 - 2/26/98		ROE4	GR1-4	GR4+	APRIL		
				DIV4	EPS4				HI-PR	LO-PR	AVER-PR
AMERICAN WATER WORKS	0.82	0.90	1.00	1.10	2.20	12.00	1.1029	1.0600	33.188	28.125	30.656
AQUARION CO.	1.65	1.71	1.78	1.85	2.45	12.00	1.0389	1.0294	33.875	31.125	32.500
CALIFORNIA WATER SVC	1.10	1.19	1.29	1.40	2.00	13.50	1.0837	1.0405	30.188	24.875	27.531
CONSUMERS WATER	1.22	1.23	1.23	1.24	1.50	9.50	1.0054	1.0165	21.406	19.500	20.453
PHILADELPHIA SUBURBAN	0.65	0.72	0.81	0.90	1.35	12.00	1.1146	1.0400	22.563	19.500	21.031
UNITED WATER RESOURCES	0.92	0.95	0.97	1.00	1.35	10.50	1.0282	1.0272	18.438	16.500	17.469
AVERAGE	1.0600	1.1179	1.1806	1.2483	1.81	11.5833	1.0623	1.0356			24.940

\$24.19 = April 1998 average stock price less 3% flotation costs, or $P_0(1-fc)$

8.39% = Cost of equity required to match the current stock price with the expected cash flows

Sources:

1. Stock Prices - S&P Stock Guide , May 1998 Edition
2. DPS, EPS, ROE - Value Line Edition 9, February 6, 1998.

Risk Premium Cost of Equity for Moody's Natural Gas
Distribution Index

Estimated Monthly Risk Premium	2.902 % (1)
Blue Chip Forecast for 30-Year Treasury Bond	<u>5.90 % (2)</u>
	<u>8.80 %</u>

Gas Risk Premium Adjustment

Water Industry Beta	.59
Gas Industry Beta	<u>.70</u>
difference	(.11)
Market return Premium (11.94% - 5.90%)	6.04%
(.11) x 6.04% =	(.66)%

Sources:

- (1) Page 8 of Attachment 1
- (2) Blue Chip Financial Forecasts, May 1, 1998

Capital Asset Pricing Model Cost of Equity for
Water and Wastewater Industry

CAPM analysis formula

$$K = RF + \text{Beta}(\text{MR} - \text{RF})$$

$$K = \text{Investor's required rate of return}$$

$$\text{RF} = \text{Risk-free rate (Blue Chip forecast for 30-year Treasury bond)}$$

$$\text{Beta} = \text{Measure of industry-specific risk (Average for water utilities followed by Value Line)}$$

$$\text{MR} = \text{Market return}$$

$$\underline{9.46\%} = 5.90\% + .59(11.94\% - 5.90\%)$$

Source: Blue Chip Financial Forecasts, May 1, 1998
Value Screen, May 1998

BOND YIELD DIFFERENTIALS
 Public Utility Long Term Bond Yield Averages
 Source: Moody's Credit Perspectives
 (All figures are in percent, see page 10)

YEAR MONTH	120 Month Average - 0 0908	0 0908	0 0851	0 0851	0 0851	0 0897	0 0897	0 0897	0 0897	0 0897	0 0897								
	As2 SPREAD	As1 SPREAD	As2 SPREAD	As3 SPREAD	A1 SPREAD	A2 SPREAD	A3 SPREAD	Ba1 SPREAD	Ba2 SPREAD	Ba3 SPREAD	Ba3								
1998 APR	6.94	0.04	6.98	0.04	7.02	0.05	7.07	0.05	7.11	0.05	7.16	0.07	7.23	0.07	7.30	0.07	7.37	0.07	7.44
MAR	6.91	0.04	6.95	0.04	6.99	0.04	7.03	0.04	7.08	0.04	7.12	0.06	7.17	0.06	7.20	0.06	7.28	0.06	7.34
FEB	6.85	0.08	6.90	0.05	6.94	0.04	6.98	0.04	7.01	0.04	7.05	0.08	7.13	0.08	7.20	0.08	7.28	0.08	7.38
JAN	6.89	0.04	6.93	0.04	6.97	0.03	7.01	0.03	7.13	0.03	7.16	0.08	7.24	0.08	7.33	0.08	7.41	0.08	7.49
NOV	7.09	0.03	7.12	0.03	7.15	0.03	7.18	0.03	7.22	0.03	7.25	0.08	7.33	0.08	7.41	0.08	7.49	0.08	7.57
OCT	7.18	0.05	7.23	0.06	7.28	0.02	7.30	0.02	7.33	0.02	7.35	0.11	7.48	0.11	7.56	0.11	7.67	0.11	7.78
SEP	7.45	0.05	7.50	0.05	7.54	0.02	7.58	0.02	7.61	0.02	7.64	0.09	7.67	0.09	7.75	0.09	7.84	0.09	7.93
AUG	7.39	0.04	7.43	0.04	7.48	0.02	7.48	0.02	7.51	0.02	7.51	0.14	7.65	0.14	7.79	0.14	7.93	0.14	8.07
JUL	7.29	0.07	7.36	0.07	7.43	0.02	7.45	0.02	7.48	0.02	7.48	0.13	7.61	0.13	7.74	0.13	7.87	0.13	8.00
JUN	7.55	0.06	7.62	0.06	7.68	0.01	7.69	0.01	7.71	0.01	7.72	0.13	7.85	0.13	7.99	0.13	8.12	0.13	8.25
MAY	7.72	0.07	7.79	0.07	7.85	0.01	7.86	0.01	7.88	0.01	7.88	0.13	8.02	0.13	8.15	0.13	8.28	0.13	8.41
APR	7.87	0.07	7.94	0.07	8.00	0.01	8.01	0.01	8.02	0.01	8.03	0.13	8.18	0.13	8.29	0.13	8.42	0.13	8.55
MAR	7.70	0.07	7.77	0.07	7.84	0.01	7.85	0.01	7.86	0.01	7.87	0.13	8.00	0.13	8.13	0.13	8.26	0.13	8.39
FEB	7.47	0.07	7.54	0.07	7.60	0.01	7.61	0.01	7.63	0.01	7.64	0.13	7.77	0.13	7.89	0.13	8.02	0.13	8.15
JAN	7.53	0.07	7.61	0.07	7.68	0.03	7.71	0.03	7.74	0.03	7.77	0.14	7.91	0.14	8.04	0.14	8.18	0.14	8.32
NOV	7.33	0.08	7.39	0.08	7.44	0.05	7.49	0.05	7.54	0.05	7.59	0.13	7.72	0.13	7.85	0.13	7.98	0.13	8.11
OCT	7.50	0.05	7.55	0.05	7.60	0.06	7.66	0.06	7.71	0.06	7.77	0.13	7.90	0.13	8.02	0.13	8.15	0.13	8.28
SEP	7.76	0.04	7.80	0.04	7.84	0.06	7.90	0.06	7.95	0.06	8.01	0.13	8.14	0.13	8.28	0.13	8.41	0.13	8.54
AUG	7.59	0.03	7.63	0.03	7.68	0.08	7.72	0.08	7.78	0.08	7.84	0.14	7.98	0.14	8.11	0.14	8.25	0.14	8.39
JULY	7.76	0.02	7.81	0.02	7.83	0.08	7.89	0.08	7.96	0.08	8.02	0.14	8.16	0.14	8.30	0.14	8.44	0.14	8.58
JUNE	7.63	0.02	7.65	0.02	7.67	0.08	7.73	0.08	7.80	0.08	7.86	0.15	8.21	0.15	8.38	0.15	8.51	0.15	8.66
MAY	7.73	0.02	7.76	0.02	7.79	0.03	7.83	0.03	7.88	0.03	7.93	0.14	8.08	0.14	8.23	0.14	8.38	0.14	8.53
APR	7.60	0.05	7.65	0.05	7.70	0.06	7.78	0.06	7.83	0.06	7.89	0.14	8.03	0.14	8.18	0.14	8.34	0.14	8.49
MAR	7.45	0.05	7.50	0.05	7.55	0.06	7.61	0.06	7.67	0.06	7.73	0.14	7.87	0.14	8.01	0.14	8.15	0.14	8.29
FEB	7.11	0.04	7.16	0.04	7.20	0.03	7.25	0.03	7.30	0.03	7.37	0.14	7.51	0.14	7.64	0.14	7.78	0.14	7.92
JAN	6.92	0.05	6.97	0.05	7.02	0.07	7.09	0.07	7.15	0.07	7.22	0.14	7.36	0.14	7.50	0.14	7.64	0.14	7.78
NOV	6.84	0.05	6.89	0.05	6.93	0.07	7.00	0.07	7.06	0.07	7.13	0.13	7.27	0.13	7.41	0.13	7.55	0.13	7.69
OCT	7.23	0.04	7.27	0.04	7.30	0.05	7.35	0.05	7.41	0.05	7.48	0.12	7.58	0.12	7.68	0.12	7.78	0.12	7.88
SEP	7.42	0.03	7.45	0.03	7.48	0.05	7.53	0.05	7.57	0.05	7.62	0.12	7.74	0.12	7.86	0.12	7.98	0.12	8.10
AUG	7.69	0.03	7.72	0.03	7.75	0.04	7.80	0.04	7.85	0.04	7.90	0.14	8.04	0.14	8.18	0.14	8.32	0.14	8.46
JULY	7.51	0.04	7.56	0.04	7.60	0.03	7.63	0.03	7.67	0.03	7.70	0.14	7.84	0.14	8.00	0.14	8.14	0.14	8.28
JUNE	7.39	0.05	7.44	0.05	7.49	0.04	7.53	0.04	7.58	0.04	7.60	0.14	7.74	0.14	7.87	0.14	8.01	0.14	8.15
MAY	7.13	0.04	7.18	0.04	7.23	0.03	7.28	0.03	7.33	0.03	7.38	0.14	7.52	0.14	7.66	0.14	7.80	0.14	7.94
APR	6.98	0.05	7.03	0.05	7.08	0.03	7.13	0.03	7.18	0.03	7.23	0.14	7.37	0.14	7.51	0.14	7.65	0.14	7.79
MAR	6.83	0.06	6.89	0.06	6.94	0.03	6.99	0.03	7.04	0.03	7.09	0.13	7.23	0.13	7.37	0.13	7.51	0.13	7.65
FEB	6.68	0.05	6.74	0.05	6.79	0.03	6.84	0.03	6.89	0.03	6.94	0.13	7.08	0.13	7.22	0.13	7.36	0.13	7.50
JAN	6.53	0.07	6.60	0.07	6.68	0.02	6.76	0.02	6.84	0.02	6.92	0.14	7.06	0.14	7.20	0.14	7.34	0.14	7.48
NOV	6.55	0.07	6.62	0.07	6.68	0.02	6.74	0.02	6.80	0.02	6.86	0.13	7.00	0.13	7.14	0.13	7.28	0.13	7.42
OCT	6.66	0.07	6.72	0.07	6.78	0.03	6.84	0.03	6.90	0.03	6.96	0.13	7.10	0.13	7.24	0.13	7.38	0.13	7.52
SEP	6.41	0.08	6.48	0.08	6.56	0.03	6.63	0.03	6.71	0.03	6.78	0.14	6.92	0.14	7.06	0.14	7.20	0.14	7.34
AUG	6.59	0.08	6.67	0.08	6.75	0.03	6.83	0.03	6.91	0.03	6.99	0.14	7.13	0.14	7.27	0.14	7.41	0.14	7.55
JUL	6.21	0.09	6.30	0.09	6.38	0.03	6.47	0.03	6.55	0.03	6.63	0.14	6.77	0.14	6.91	0.14	7.05	0.14	7.19
JUN	6.07	0.07	6.14	0.07	6.21	0.03	6.28	0.03	6.35	0.03	6.41	0.11	6.48	0.11	6.55	0.11	6.64	0.11	6.78
MAY	6.13	0.07	6.18	0.07	6.24	0.03	6.30	0.03	6.36	0.03	6.42	0.08	6.48	0.08	6.54	0.08	6.60	0.08	6.70
APR	6.00	0.08	6.08	0.08	6.17	0.03	6.25	0.03	6.33	0.03	6.41	0.08	6.49	0.08	6.57	0.08	6.65	0.08	6.75
MAR	5.90	0.07	5.97	0.07	6.04	0.04	6.11	0.04	6.18	0.04	6.25	0.08	6.32	0.08	6.39	0.08	6.46	0.08	6.55
FEB	5.84	0.08	5.92	0.08	6.00	0.03	6.08	0.03	6.16	0.03	6.24	0.08	6.32	0.08	6.40	0.08	6.48	0.08	6.58
JAN	5.78	0.08	5.86	0.08	5.94	0.03	6.02	0.03	6.10	0.03	6.18	0.08	6.26	0.08	6.34	0.08	6.42	0.08	6.52
NOV	5.64	0.09	5.72	0.09	5.80	0.03	5.88	0.03	5.96	0.03	6.04	0.08	6.12	0.08	6.20	0.08	6.28	0.08	6.38
OCT	5.51	0.08	5.59	0.08	5.67	0.03	5.75	0.03	5.83	0.03	5.91	0.08	5.99	0.08	6.07	0.08	6.15	0.08	6.25
SEP	5.41	0.08	5.49	0.08	5.57	0.03	5.65	0.03	5.73	0.03	5.81	0.08	5.89	0.08	5.97	0.08	6.05	0.08	6.15
AUG	5.32	0.08	5.40	0.08	5.48	0.03	5.56	0.03	5.64	0.03	5.72	0.08	5.80	0.08	5.88	0.08	5.96	0.08	6.04
JUL	5.21	0.09	5.29	0.09	5.37	0.03	5.45	0.03	5.53	0.03	5.61	0.08	5.69	0.08	5.77	0.08	5.85	0.08	5.93
JUN	5.07	0.07	5.14	0.07	5.21	0.03	5.28	0.03	5.35	0.03	5.41	0.08	5.49	0.08	5.57	0.08	5.65	0.08	5.73
MAY	5.00	0.08	5.08	0.08	5.16	0.03	5.24	0.03	5.32	0.03	5.40	0.08	5.48	0.08	5.56	0.08	5.64	0.08	5.72
APR	4.90	0.07	4.97	0.07	5.04	0.04	5.11	0.04	5.18	0.04	5.25	0.08	5.32	0.08	5.39	0.08	5.46	0.08	5.54
MAR	4.84	0.08	4.92	0.08	5.00	0.03	5.08	0.03	5.16	0.03	5.24	0.08	5.32	0.08	5.40	0.08	5.48	0.08	5.56
FEB	4.78	0.08	4.86	0.08	4.94	0.03	5.02	0.03	5.10	0.03	5.18	0.08	5.26	0.08	5.34	0.08	5.42	0.08	5.50

**ESTIMATED MONTHLY RISK PREMIUMS
MOODY'S NAT'L GAS DISTRIBUTION INDEX
1979 - 1998**

YEAR	MONTH	Quarterly Cost of Equity Gas	Annual Cost of Equity Gas	Risk Free Rate	Risk Premium Quarterly	Risk Premium Annual
	OCT	8.813	8.675	5.99	2.823	2.685
	NOV	8.843	8.693	5.93	2.913	2.763
	DEC	9.136	8.968	6.21	2.926	2.758
1994	JAN	9.133	8.960	6.24	2.893	2.720
	FEB	8.805	8.632	6.28	2.525	2.352
	MAR	8.885	8.721	6.49	2.395	2.231
	APR	9.126	8.965	6.90	2.226	2.065
	MAY	9.431	9.232	7.25	2.181	1.982
	JUN	9.550	9.361	7.40	2.150	1.961
	JUL	9.737	9.553	7.39	2.347	2.163
	AUG	9.723	9.514	7.57	2.153	1.944
	SEP	9.802	9.599	7.48	2.322	2.119
	OCT	9.921	9.727	7.69	2.231	2.037
	NOV	9.813	9.618	7.93	1.883	1.688
	DEC	10.198	9.972	8.07	2.128	1.902
1995	JAN	10.342	10.124	7.86	2.482	2.264
	FEB	10.071	9.831	7.83	2.241	2.001
	MAR	9.891	9.677	7.60	2.291	2.077
	APR	9.865	9.669	7.44	2.425	2.229
	MAY	9.226	9.038	7.35	1.876	1.686
	JUNE	9.888	9.679	6.93	2.958	2.749
	JULY	9.858	9.667	6.57	3.288	3.097
	AUGUST	9.885	9.656	6.71	3.175	2.946
	SEPT	9.956	9.738	6.85	3.106	2.888
	OCT	9.502	9.323	6.55	2.952	2.773
	NOV	9.573	9.393	6.37	3.203	3.023
	DEC	9.622	9.431	6.25	3.372	3.181
1996	JAN	9.788	9.603	6.06	3.728	3.543
	FEB	9.216	9.032	6.05	3.162	2.982
	MAR	9.255	9.085	6.24	3.015	2.845
	APR	9.389	9.227	6.60	2.789	2.627
	MAY	9.748	9.555	6.79	2.958	2.765
	JUN	9.816	9.636	6.92	2.896	2.716
	JUL	9.710	9.552	7.05	2.660	2.502
	AUG	10.158	9.957	7.03	3.128	2.927
	SEP	9.984	9.810	6.84	3.144	2.970
	OCT	10.241	10.072	7.02	3.221	3.052
	NOV	9.930	9.760	6.80	3.130	2.960
	DEC	9.781	9.616	6.48	3.301	3.136
1997	JAN	9.894	9.741	6.55	3.344	3.191
	FEB	9.768	9.575	6.82	2.948	2.755
	MAR	9.838	9.658	6.68	3.158	2.978
	APR	9.932	9.766	6.83	3.102	2.936
	MAY	10.357	10.148	7.08	3.277	3.067
	JUN	10.199	10.018	6.93	3.269	3.068
	JUL	10.056	9.901	6.77	3.286	3.131
	AUG	10.107	9.920	6.51	3.597	3.410
	SEP	10.124	9.955	6.57	3.554	3.385
	OCT	10.010	9.865	6.49	3.520	3.375
	NOV	10.032	9.869	6.32	3.712	3.549
	DEC	9.725	9.576	6.10	3.625	3.476
1998	JAN	9.693	9.563	5.98	3.713	3.583
	FEB	9.529	9.371	5.81	3.719	3.561
	MAR	9.638	9.493	5.88	3.758	3.613
	APR	9.662	9.533	5.95	3.712	3.583
	MAY	9.600	9.443	5.92	3.680	3.523
AVERAGE RISK PREMIUM					2.864	2.637

UPDATED: 05/18/98

SOURCE: Value Line 1979-1998
Moody's Bond Survey
U.S. Treasuries - 30-Year Bond

Natural Gas Index

12/31/97 Equity Ratios of Water Index Companies

	Book Value Per Share	Common Shares Outstanding (millions)	Common Equity (millions)	Total Debt (millions)	Preferred Equity (millions)	Equity Ratio
American Water Works	\$14.31	\$79.99	\$1,144.70	\$2,030.70	\$98.00	34.97%
Aquarion Company	\$18.26	\$7.33	\$133.90	\$165.40	\$0.00	44.73%
California Water Service Co.	\$13.00	\$12.62	\$164.00	\$151.70	\$3.50	51.39%
Consumers Water Company	\$12.11	\$8.99	\$108.90	\$196.60	\$1.10	35.52%
Philadelphia Suburban Corp.	\$7.39	\$27.50	\$203.20	\$249.60	\$2.80	44.60%
United Water Resource	\$11.53	\$36.29	\$418.50	\$705.60	\$95.60	34.31%
					Average	40.92%

Date Common Shares Outstanding was determined by Value Line

American Water Works	03/08/98
Consumers Water Company	03/11/98
Philadelphia Suburban Corp.	03/02/98
All Others	12/31/97

Source: Value Line Investment Survey, Edition 9 - May 8, 1998

12/31/97 Equity Ratios of Natural Gas Index Companies

	Book Value Per Share	Common Share Outstanding (millions)	Common Equity (millions)	Total Debt (millions)	Preferred Equity (millions)	Equity Ratio
Atlanta Gas & Light	\$10.99	\$56.46	\$620.50	\$810.50	\$118.80	40.04%
Bay State Gas	\$17.35	\$13.52	\$234.60	\$329.00	\$4.90	41.27%
KeySpan Energy Corp.	\$19.09	\$51.16	\$976.60	\$800.40	\$0.00	54.96%
Indiana Energy	\$12.96	\$22.59	\$292.80	\$241.00	\$0.00	54.85%
Laclede Gas	\$14.26	\$17.59	\$250.90	\$306.60	\$2.00	44.84%
Northwest Natural Gas	\$16.00	\$22.78	\$364.50	\$401.30	\$37.40	45.38%
Peoples Energy	\$20.43	\$35.23	\$719.70	\$587.50	\$0.00	55.06%
Washington Gas & Light	\$13.48	\$43.64	\$588.20	\$574.20	\$28.40	49.40%
					Average	48.22%

Date Common Shares Outstanding was determined by Value Line

Laclede Gas	02/11/98
Northwest Natural Gas	11/07/97
Peoples Energy	01/31/98
All Others	12/31/97

Source: Value Line Investment Survey, Edition 9 - May 8, 1998