

FLORIDA PUBLIC SERVICE COMMISSION
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M E M O R A N D U M

JULY 6, 1995

TO: DIRECTOR, DIVISION OF RECORDS AND REPORTING (BAYO) *APC*
FROM: DIVISION OF AUDITING & FINANCIAL ANALYSIS (MAUREY) *ALM*
DIVISION OF WATER & WASTEWATER (MERCHANT, LOWE) *ll*
DIVISION OF LEGAL SERVICES (VACCARO) *ll*
RE: DOCKET NO. 950006-WS - WATER AND WASTEWATER INDUSTRY -
ANNUAL REESTABLISHMENT OF AUTHORIZED RANGE OF RETURNS ON
COMMON EQUITY OF WATER AND WASTEWATER UTILITIES; PURSUANT
TO SECTION 367.081 (4) (F), FLORIDA STATUTES
AGENDA: 07/18/95 - REGULAR AGENDA - PROPOSED AGENCY ACTION -
INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: FINAL DECISION BY THE END OF 1995

SPECIAL INSTRUCTIONS: I:\PSC\AFA\WP\950006.RCM
ATTACHMENT 1 PAGES 1, 6 AND 7 ATTACHED
R:9500061.WK3 - ATTACHMENT 1 PAGES 2-3
R:9500062.WK3 - ATTACHMENT 1 PAGE 4
R:9500066.WK3 - ATTACHMENT 1 PAGE 5
R:9500063.WK3 - ATTACHMENT 1 PAGE 8-10
R:9500064.WK3 - ATTACHMENT 1 PAGES 11-12
R:9500065.WK3 - ATTACHMENT 1 PAGES 13-14

CASE BACKGROUND

At the August 16, 1994 Agenda Conference, the Commission directed its staff to review the methodology for determining the water and wastewater (WAW) leverage formula used to determine the range of returns on equity (ROE) for WAW utilities. Commission staff held a preliminary workshop on December 1, 1994 in Orlando with representatives from the WAW industry and the Office of Public Counsel (OPC). The Commission then held a formal workshop on February 23, 1995 in Tallahassee. Both workshops were held to solicit input from the industry and other interested parties to assist staff and the Commission in reviewing the existing leverage formula methodology and to determine if changes to the methodology are warranted.

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FPSC-RECORDS/REPORTING

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Staff has reviewed and considered all the suggested changes recommended by the parties at the two workshops and in the written comments. Staff believes that several of the WAW industry's suggestions are reasonable and it has recommended that the leverage formula be amended to reflect these changes. For comparative purposes, staff has also produced a leverage formula that relies on the same methodologies used in prior years updated only for changes in the underlying market conditions.

DISCUSSION OF ISSUES

ISSUE 1: What is the appropriate range of returns on common equity for water and wastewater utilities pursuant to Section 367.081 (4) (f), Florida Statutes?

RECOMMENDATION: Staff recommends the authorized range of returns on common equity for the water and wastewater utilities be based on the following formula:

Return on Common Equity = 9.05% + 1.131/Equity Ratio where the
Equity Ratio = Common Equity / (Common Equity + Preferred
Equity + Long-Term and Short-Term Debt)

Staff further recommends the authorized return on common equity be limited to a maximum of 11.88% for all equity ratios of less than 40%. (MAUREY)

STAFF ANALYSIS: Pursuant to Section 367.081 (4) (f), Florida Statutes, the 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 (WAW) utilities. The Commission last established this range of returns in Order No. PSC-94-1051-FOF-WS issued August 29, 1994.

In developing the recommended leverage formula, staff relied on the same general framework used in prior leverage formula dockets. However, as outlined in the case background, staff is also recommending that a number of changes proposed by representatives of the WAW industry be incorporated in the updated leverage formula. As in the past, part of the difference between the existing leverage formula and the recommended formula is the result of changes in underlying market conditions; that is, changes in bond yields and required rates of return. The additional difference between the formulas is the result of implementing many of the suggestions made during the Commission's WAW Return on Equity (ROE) workshop held February 23, 1995.

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Based on the formula of $9.05\% + 1.131/\text{Equity Ratio}$, the recommended leverage formula produces a range of returns on equity from 10.18% to 11.88%. The midpoint of the 10.18% to 11.88% range represents an increase of 55 basis points over the midpoint of the range indicated by the existing formula.

For comparative purposes, had staff updated the leverage formula only for changes in underlying market conditions, the resulting leverage formula would have been $8.67\% + 1.108/\text{Equity Ratio}$. This formula would have produced a range of returns on equity from 9.78% to 11.44%. The midpoint of this range would have represented a 13 basis point increase over the midpoint of the existing range.

The workshop process began with a staff workshop held on December 1, 1994 in Orlando. Although a few representatives still agree with the leverage formula approach, other representatives were more in favor of replacing the current methodology with other means of determining rates of return. Alternatives suggested by some of the representatives included:

- 1) surveying the small WAW utility owners to find out what rate of return they believe investors require to invest in their systems,
- 2) surveying underwriters to determine what they would require to float an equity issue for a small WAW utility,
- 3) implementing a risk premium approach that is tied to the utility's actual cost of debt, and
- 4) implementing a risk premium approach based on the yield on a readily available market rate, such as the yield on 30 year Treasury bonds, adjusted for a constant risk variable add-on.

Staff has concerns with applying any of these alternatives for determining investors' required return for WAW utility investments. Staff's primary concern with the first two alternatives focuses on the reliability or objectivity of these approaches. In addition, there is no theoretical support for either of these alternatives. Although the risk premium approach tied to the utility's actual cost of debt has intuitive appeal, staff has a concern that such an approach would penalize the utilities that actively pursue industrial revenue financing (IRBs) or other low-cost financing arrangements. In addition, such an approach could prove to be a disincentive to refinancing high cost debt with lower cost debt in a declining capital cost environment.

Although Staff does not recommend implementing the risk premium approach based on the yield on 30 year Treasury bonds with

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a constant risk variable add-on at this time, staff does believe this approach may be useful in the future. This approach is intuitively reasonable and does not suffer the same drawbacks as the approach tied to the utility's cost of debt. This approach is also very similar to the approach the industry's consultant, Dr. Roger Morin, stated was being considered by the National Energy Board (NEB) of Canada for determining the ROE for natural gas pipelines operating in that country. However, a specific risk premium was not provided by the industry representative. In addition, the representative proposed a constant add-on. At the February workshop, Dr. Morin stated that risk premiums vary over time based on the level of interest rates. Staff has recently received a copy of the final order issued by the NEB for determining returns on equity for natural gas pipelines. Staff will study this approach and the model that was adopted by the NEB for consideration in future leverage formula dockets.

For the February 23 workshop held in Tallahassee, the Florida Waterworks Association (FWA) retained Dr. Roger Morin of Georgia State University to make a presentation to the Commission. In his presentation, Dr. Morin offered eight specific suggestions for amending the leverage formula. He suggested that the Commission:

- 1) incorporate a Capital Asset Pricing Model (CAPM) analysis to complement the existing Discounted Cash Flow (DCF) and Risk Premium analyses,
- 2) correct for an averaging error with the historic DCF analysis,
- 3) add a risk premium of 30 to 35 basis points to the results indicated by the Risk Premium analysis,
- 4) recalculate the bond yield differential to measure the difference in returns between Baa3 and A1 bond ratings,
- 5) add a private placement premium of 50 basis points to the average return indicated by the ROE models,
- 6) amend the leverage formula so as to produce the same result as the average from among all the various conceptual frameworks explored in the financial literature,
- 7) allow the cost of debt to vary by plus or minus 50 basis points over the range of equity ratios, and
- 8) relax the constraint of a minimum equity ratio of 40% to 30%.

After reviewing the information presented at the workshop and through follow up discussions with Dr. Morin, staff concludes that many of his suggestions are reasonable and is recommending certain changes be incorporated in the next leverage formula.

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Dr. Morin's first suggestion is to supplement the determination of the cost of equity by adding a CAPM analysis to the array of models currently relied on for determining the leverage formula. He does not recommend the DCF analysis no longer be used, but rather he suggests the Commission rely on three models instead of the two models that have been used in the past. Because realized returns can be substantially different from prospective returns anticipated by investors, staff does not agree with using a CAPM based on historic, earned returns over the past 68 years. However, staff is persuaded by Dr. Morin's argument for supplementing the Commission's determination of the cost of equity by using a prospective CAPM. Based on the framework suggested by Dr. Morin, staff has performed a prospective CAPM and believes the results should be incorporated in the determination of the cost of equity.

Dr. Morin's second suggestion deals with a mathematical error associated with averaging stock prices, yields, and growth rates in the computation of the DCF model. Staff has reviewed the model and has corrected this minor error. It should be noted that this criticism applies only to the DCF model using historic growth rates and does not apply to the DCF model used for the other industries that rely on projected growth rates. While the underlying theory for the DCF model is the same, there are different versions of the model. In the past, the Commission had to use the simple DCF formula with historic growth rates for the WAW industry because projected information was not available. In the other industries where projected information is readily available, the Commission uses a more exact equation that takes into account the timing of future cashflows and is not subject to this averaging error. In addition to correcting this averaging error, staff believes it also would be appropriate to add a prospective DCF analysis to the group of models used to determine the cost of equity now that projected growth rates are available for publicly traded WAW utilities.

The third suggestion by Dr. Morin concerns the use of an index of natural gas utilities in the Risk Premium analysis. Although he does not recommend the removal of this analysis, he does suggest that the index of WAW utilities is more risky than the index of natural gas utilities and therefore an adjustment must be made to compensate for this difference in risk. He cites the comparison of a number of financial and operating statistics for the two indices which he concludes indicates that the WAW industry is more risky than the natural gas industry. To compensate for this difference in risk, he recommends adding a premium of 30 to 35 basis points to the natural gas Risk Premium estimate of the cost of equity. He arrived at the 30 to 35 basis point premium by multiplying the

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difference between the average betas for the two indices by the market risk premium used in his CAPM analysis.

In the past, the averages of the financial and operating statistics for the two indices have been mixed. For that reason, the Commission assumed that the risk for these two indices was similar and that no risk adjustment was necessary. And in certain head-to-head comparisons, staff still believes there are WAW utilities that are less risky than natural gas utilities. However, as demonstrated in Dr. Morin's presentation, the financial statistics for the natural gas and WAW utility indices are diverging. Staff believes the use of beta and the market premium is a reasonable method for quantifying a risk differential. Using the difference between the average beta of the WAW and natural gas indices (.64-.61=.03) and the prospective market risk premium of 5.9% determined in staff's CAPM analysis, staff calculated a natural gas premium of 18 basis points. The difference between staff's calculation and Dr. Morin's recommendation is he used a beta differential of .05 and a market risk premium of 6.0% to 7.0%. It should be noted that this adjustment could be negative in the future if the average beta for the natural gas index rises above the average beta for the WAW index. If this change is adopted by the Commission, staff will make this adjustment regardless of whether the risk differential adjustment is positive or negative.

The next suggestion by Dr. Morin concerns the assumption in the leverage formula that a Moody's Baa2 bond rating and the corresponding cost rate is representative of the average marginal cost of debt for a Florida WAW utility over a 40% to 100% equity ratio range. During his presentation he stated that because of their financial profile and the general lack of liquidity of their debt issues, an assumed bond rating of Baa3 plus a private placement premium of 50 basis points would be more reflective of the marginal cost of debt for these companies.

The Commission began using the Baa2 rating and the corresponding cost rate because it is readily available and because any rating below Baa is considered speculative with respect to the payment of interest and the repayment of principal. Although a Baa3 rate is not readily available, staff can interpolate an approximate rate using its bond yield differential study. Staff recommends this adjustment be made and has measured the bond yield differential based on the difference in yields between A1 and Baa3 rather than Baa2 as has been Commission practice.

In addition to adjusting the bond yield differential, Dr. Morin believes it is also necessary to consider a private placement premium to recognize that Florida WAW utilities do not have access

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to the public debt and equity markets. Because of their small size, lack of institutional interest in their securities, and the lack of liquidity of their issues, Florida WAW utilities must rely on the private placement market to obtain capital. In his presentation, he recommended a premium for private placements over public issues of approximately 50 basis points based on the results of empirical studies conducted several years ago. However, he has subsequently done research that indicates a private placement premium in the current market environment of approximately 25 basis points. The results of staff's survey of participants in the private placement market and its review of more recent financial literature support Dr. Morin's more recent finding of a 25 basis point premium. As a result, in addition to adjusting the bond yield differential to recognize an assumed bond rating of Baa3, staff recommends a private placement premium of 25 basis points be incorporated in the derivation of the leverage formula.

The next suggestion deals with the specific conceptual framework used to derive the leverage formula. During his presentation, Dr. Morin stated that there are a number of frameworks in financial theory to document the relationship between the cost of equity and leverage. He noted that the framework used by the Commission produced results below the average of all the various frameworks available. At that time, he recommended the leverage formula be amended so as to produce the same result as the average from all the various frameworks. However, since the time of the February workshop, Dr. Morin has reconsidered his position on this issue and he now endorses the framework used by the Commission to derive the leverage formula.

Another suggestion by Dr. Morin concerns the assumption in the leverage formula that the cost of debt remains constant over the 40% to 100% equity ratio range. He states that this assumption is unrealistic and he suggests that the leverage formula should allow for the rising cost of debt as leverage rises. He recommends that once a cost of debt is determined, the leverage formula should allow the cost to vary plus or minus 50 basis points depending on the level of common equity in the capital structure.

Staff does not agree with incorporating this suggestion in the determination of the leverage formula for three reasons. First, from a practical standpoint staff believes it would be administratively burdensome to recalibrate the leverage formula every time it is used. Second, from a theoretical standpoint staff believes such a change is not necessary. The theories underlying the leverage formula, as used in Florida, are based on the works of Modigliani and Miller (1958) and Miller (1977). According to Modigliani and Miller, the risk of financial leverage falls

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entirely on equity and, therefore, the cost of debt remains constant as leverage increases. Although it is reasonable to expect that as the amount of debt in the capital structure becomes excessive the cost of debt and equity will rise, staff believes a debt ratio of 60% for a regulated WAW utility is not excessive. Finally, staff believes if this change is adopted it could produce a disincentive for utilities with below average levels of common equity to increase their level of equity capital.

Dr. Morin's final suggestion concerns the Commission practice of limiting the allowed return to the return indicated at an equity ratio of 40%. While he sympathizes with the Commission's desire to discourage the use of high leverage, he argues that there is nothing imprudent or unusual about higher levels of debt. In addition, because the small WAW utilities in Florida do not have access to equity markets, generate limited internal capital, and must resort to the private debt markets for capital, it is difficult for these companies to increase their equity ratios. To accommodate this situation, he recommends that the 40% equity ratio constraint be relaxed to 30%.

As Dr. Morin explained in his presentation, the Commission has capped the allowed return at the level indicated at a 40% equity ratio to discourage the use of high leverage. Staff continues to believe this approach is reasonable and should not be changed as suggested by Dr. Morin. Given that the average equity ratio for the index of publicly traded WAW utilities is 42.0% and given the consensus opinion that the WAW utilities in Florida are more risky than the utilities in the index, it is only logical to assume the average Florida WAW utility should strive for an equity ratio higher than the average for the index. This being the case, staff believes the Commission should not reward utilities with equity ratios below 40% with a higher allowed ROE. Staff recommends that the cap should remain at the return indicated at a 40% equity ratio.

After careful consideration of all of the suggestions made by the WAW industry, staff prepared its recommendation for the updated leverage formula. The basic assumptions, with one exception, remain unchanged from the previous year and are as follows:

- 1) Business risk is similar for all WAW utilities.
- 2) The cost of equity is an exponential function of the equity ratio.
- 3) The marginal weighted average cost of investor capital is constant over the 40% to 100% equity ratio range.

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The one basic assumption from previous years that has been modified this year concerns the assumed bond rating and average marginal cost of debt to a Florida WAW utility as discussed earlier. At the suggestion of the WAW industry, staff has derived an assumed Baa3 yield based on the bond yield differential. Although it has been suggested that the Baa3 rating may still be too conservative, staff notes that any rating below Baa is considered speculative as to the issuer's ability to pay interest and repay principal. Given adequate management and effective regulation, staff does not believe it is appropriate to consider the average Florida WAW utility's ability to pay interest and repay principal as speculative. Therefore, while staff believes it is reasonable to adopt the suggestion to use an assumed Baa3 rating and cost rate, staff does not believe it is appropriate to assume a bond rating below investment grade.

In addition to adjusting the bond yield differential to recognize an assumed Baa3 rating, staff has recommended the cost of debt used in the formula be increased by 25 basis points to recognize a private placement premium. As discussed earlier, a private placement premium is deemed necessary to recognize that none of the WAW utilities in Florida issue debt or equity through public placements. The industry's consultant quantified the current difference between a public placement and a private placement as approximately 25 basis points on average. The results of staff's survey of participants in the private placement market and its review of the financial literature support the finding of the industry's consultant.

In addition to the comments and suggestions from the various WAW utility industry representatives raised during the workshops, an issue was raised prior to the August 16, 1994 Agenda conference regarding the assumption in the leverage formula that business risk is similar for all Florida WAW utilities. A concern was raised that the publicly traded WAW companies in the index are not representative of Florida utilities. It was noted that many Florida WAW utilities either report net losses on their annual reports or fail to earn their allowed ROE. It was also noted that because of the wide variety of WAW utilities under the Commission's jurisdiction, there is no "average" Florida WAW utility.

It is generally recognized that there is a considerable difference in size between the utilities in the WAW index and Florida utilities. However, recognizing that all WAW utilities must comply with federal water regulations, all face uncertainty regarding future demand, all face uncertainty regarding future supply, and all are exposed to regulatory risk, the argument that the index is not reflective of the business risk inherent in the

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WAW industry is misplaced. The latest leverage formula recommended by staff appropriately compensates for the difference in risk due to differences in size between the companies in the index and Florida WAW utilities.

Regarding the point about certain Florida WAW utilities perennially filing annual reports indicating net losses or rates of return below their allowed returns on equity, staff believes the decisions on the part of utility management and possibly certain rate structure issues are more responsible for this situation than the level of returns indicated by the leverage formula. Staff believes the assumption of similar business risk for all Class A and B utilities is still reasonable. If it is believed that certain Class C utilities can no longer be included in this group then it may be time to explore forms of regulation other than rate of return regulation for these utilities. Pursuant to Section 367.0814(7), Florida Statutes, and Commission rule 25-30.456, the Commission has the authority to employ non-ratebase forms of regulation for small utilities.

In the leverage formula, the 11.88% return on common equity is comprised of four segments. First, a 10.78% return on equity is derived by averaging the results of two DCF analyses, a Risk Premium analysis, and a CAPM analysis. Staff 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.

The DCF models are applied to an index of publicly traded WAW utilities. The difference between the two applications is one relies on historic growth rates and the other relies on projected growth rates. In the past, only a DCF analysis using historic growth rates was used because of a lack of projected financial information on publicly traded WAW utilities.

The Risk Premium model is applied to an index of publicly traded natural gas utilities. This is the same application used in prior leverage formula dockets with one modification. In response to the suggestion by the industry consultant at the workshop, staff has added an 18 basis point premium to the return indicated by the Risk Premium analysis of natural gas companies. This adjustment is made to compensate for the perceived difference in risk between the index of natural gas companies and the index of WAW utilities.

Finally, as suggested by the industry consultant during the workshop, a CAPM analysis has been added to the Commission's group of cost of equity models. Staff has performed a prospective CAPM analysis based on the framework suggested by the WAW consultant.

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Second, a bond yield differential adjustment of 51 basis points is added to reflect the difference in risk between the indices of companies used in the DCF and Risk Premium models and an average WAW utility in Florida. Third, the private placement premium of 25 basis points discussed earlier is added to recognize that Florida WAW utilities do not have access to the public debt and equity markets. Finally, an adjustment of 34 basis points is added to reflect the required return on equity at a 40% equity ratio. (See page 1 of Attachment 1).

The bond yield differential adjustment of 51 basis points is comprised of the bond yield differential between the yield on A1-rated bonds and the assumed yield on Baa3-rated bonds. (See pages 11-12 of Attachment 1). The A1 rating is the average bond rating for both the natural gas index and the WAW index and the Baa3 rating is the bond rating assumed for the average WAW utility in Florida.

The private placement premium of 25 basis points is added to recognize that Florida WAW utilities do not have access to the public debt and equity markets. The premium was based on the results of surveys of participants in the private placement market conducted by staff and the industry's consultant and a review of the financial literature.

The 34 basis point adjustment represents the difference between the required rate of return at a 40.0% equity ratio and the required rate of return at the 45.4% equity ratio average for the indices of WAW utilities and natural gas utilities. (See pages 13-14 of Attachment 1). Using the most recently available capital structure for the index of publicly traded WAW utilities and the index of natural gas utilities as a proxy for the capital structure of an average WAW utility in Florida, staff calculates the marginal cost of investor capital for an average WAW utility in Florida to be 10.18%.

In summary, staff recommends the authorized range of returns on common equity for the Florida WAW utilities be based on the following formula:

$$\text{Return on Common Equity} = 9.05\% + 1.131/\text{Equity Ratio}$$

We further recommend the authorized return on common equity be limited to a maximum of 11.88% for all equity ratios of less than 40% in order to discourage imprudent financial risk. The recommended leverage formula produces a range of returns on equity from 10.18% to 11.88%.

SUMMARY OF RESULTS

Leverage Formula Update

	<u>1994</u>	<u>1995</u>	<u>1995R</u>
DCF ROE for Water Index (Historic)	10.43%	10.92%	10.92%
Risk Premium ROE for Gas Index	<u>10.61%</u>	<u>10.50%</u>	10.50%
Gas Index premium	---	---	.18%
DCF ROE for Water Index (Projected)	---	---	10.37%
CAPM ROE for Water Index	---	---	<u>11.00%</u>
AVERAGE	10.52%	10.71%	10.78%
Bond Yield Differential	.41%	.40%	.51%
Private Placement Premium	---	---	.25%
Adjustment to Reflect Required Equity Return at a 40% Equity Ratio	<u>.33%</u>	<u>.33%</u>	<u>.34%</u>
Cost of Equity for Average Florida Water and Wastewater Utility at a 40% Equity Ratio	<u>11.26%</u>	<u>11.44%</u>	<u>11.88%</u>

Existing Leverage Formula

Return on Common Equity = 8.64% + 1.049/ER
 Range of Returns on Equity = 9.69% - 11.26%

Updated Leverage Formula

Return on Common Equity = 8.67% + 1.108/ER
 Range of Returns on Equity = 9.78% - 11.44%

Recommended Leverage Formula

Return on Common Equity = 9.05% + 1.131/ER
 Range of Returns on Equity = 10.18% - 11.88%

$$\text{Leverage Formula} = 9.05\% + 1.131 / \text{ER}^*$$

Marginal Cost of Investor Capital
 Average Water and Wastewater Utility

<u>Capital Component</u>	<u>Ratio</u>	<u>Marginal Cost Rate</u>	<u>Weighted Marginal Cost Rate</u>
Common Equity	45.43%	11.54%	5.24%
Total Debt	<u>54.57%</u>	9.05% **	<u>4.94%</u>
	100.00%		10.18%

A 40% equity ratio is the floor for calculating the required return on common equity.
 The return on equity at a 40% equity ratio = $9.05\% + 1.131 / .40 = 11.88\%$

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>	<u>Weighted Marginal Cost Rate</u>
Common Equity	40.00%	11.88%	4.75%
Total Debt	<u>60.00%</u>	9.05% **	<u>5.43%</u>
	100.00%		10.18%

* Where: $\text{Equity Ratio} = \frac{\text{Common Equity}}{(\text{Common Equity} + \text{Preferred Equity} + \text{Long-Term Debt} + \text{Short-Term Debt})}$

** Assumed Baa3 rate for April 1995 plus 25 basis point private placement premium
 Source: Moody's Bond Survey, 5/22/95

$$\text{Leverage Formula} = 8.67\% + 1.108 / \text{ER}^*$$

Marginal Cost of Investor Capital
Average Water and Wastewater Utility

<u>Capital Component</u>	<u>Ratio</u>	<u>Marginal Cost Rate</u>	<u>Weighted Marginal Cost Rate</u>
Common Equity	45.43%	11.11%	5.05%
Total Debt	<u>54.57%</u>	8.67% **	<u>4.73%</u>
	100.00%		9.78%

A 40% equity ratio is the floor for calculating the required return on common equity.
 The return on equity at a 40% equity ratio = $8.67\% + 1.108 / .40 = 11.44\%$

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>	<u>Weighted Marginal Cost Rate</u>
Common Equity	40.00%	11.44%	4.58%
Total Debt	<u>60.00%</u>	8.67% **	<u>5.20%</u>
	100.00%		9.78%

* Where: $\text{Equity Ratio} = \frac{\text{Common Equity}}{(\text{Common Equity} + \text{Preferred Equity} + \text{Long-Term Debt} + \text{Short-Term Debt})}$

** Average Baa rate for April 1995
 Source: Moody's Bond Survey, 5/22/95

DCF Analysis of Water Index

	Arithmetic Average Growth Rate	Current Dividend	Current Average Stock Price	Required Return On Equity %
American Water Works	8.58%	1.28	28.94	13.38
Aquarion Company	1.95%	1.62	22.75	9.21
California Water Services Co.	4.44%	2.04	31.00	11.32
Consumers Water Company	4.21%	1.18	15.25	12.28
Philadelphia Suburban Corp.	2.42%	1.12	18.06	8.77
United Water Resources	3.55%	0.92	13.63	10.54
Average	4.19%	1.36	21.60	10.92

DCF Analysis

$$K = D(1)/P(0) + g$$

K = Investors' required rate of return

D(1) = Dividend expected next period = Arithmetic growth rate x current dividend

P(0) = Current stock price = April average stock price

g = Projected long-term growth in dividends = Arithmetic growth rate

$$K = 10.92$$

Source: Standard & Poor's Stock Guide, May 1995 Edition

COST OF EQUITY FOR WATER INDEX COMPANIES
 DISCOUNTED CASH FLOW MODEL

COMPANY	DIV1	DIV2	DIV3	DIV4	EPS4	ROE4	Growth Yr 1-4	Growth 4+	HI-Price	LO-Price	April Average Price
AMERICAN WATER WORKS	1.28	1.38	1.49	1.60	2.90	11.00	1.0772	1.0493	29.375	28.500	28.938
AQUARIAN CO.	1.62	1.74	1.86	2.00	2.60	13.50	1.0728	1.0312	23.750	21.750	22.750
CALIFORNIA WATER SVC	2.04	2.10	2.16	2.22	3.00	12.00	1.0286	1.0312	32.250	29.750	31.000
CONSUMERS WATER	1.19	1.21	1.23	1.25	1.45	11.00	1.0165	1.0152	15.750	14.750	15.250
PHILADELPHIA SUBURBAN	1.15	1.18	1.22	1.25	1.60	13.00	1.0282	1.0284	18.375	17.750	18.063
UNITED WATER RESOURCES	0.92	0.96	1.00	1.05	1.55	12.50	1.0450	1.0403	14.125	13.125	13.625
AVERAGE	1.37	1.43	1.49	1.56	2.18	12.17	1.0447	1.0326			21.804

10.37% = Cost of equity required to match the current stock price with the expected cash flows

20.96 = April 1995 average stock price less 3% flotation costs, or $P_0(1-f_c)$

	DIV1	QTR1	QTR2	QTR3	QTR4
20.96 =	DIV1	0.34	0.33	0.32	0.31
	DIV2	0.32	0.31	0.31	0.30
	DIV3	0.30	0.30	0.29	0.28
	DIV4	0.29	0.28	0.27	0.27
	P4=	16.13			
	D1+D2+D3+D4+P4=			20.96	

Data Sources:

1. Stock Prices - S&P Stock Guide, May 1995 Edition
2. DPS, EPS, ROE - Value Line Edition 9, February 10, 1995

DOCKET NO. 950006-WS
DATE: July 6, 1995

Attachment 1
Page 6 of 14

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

Estimated Monthly Risk Premium	3.076 %
Blue Chip Forecast for 30-Year Treasury Bond	<u>7.42 %</u>
	<u>10.496 %</u>

* Blue Chip Financial Forecasts, May 1, 1995

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

CAPM analysis formula

- K = $RF + \text{Beta}(\text{MR} - \text{RF})$
- K = Investor's required rate of return
- RF = Risk-free rate (Blue Chip forecast for 30-year Treasury bond)
- Beta = Measure of industry-specific risk (Average for water utilities followed by Value Line)
- MR = Market return

$$\underline{11.00\%} = 7.42\% + .6417(13.0\% - 7.42\%)$$

Blue Chip Financial Forecasts, May 1, 1995
Value Line Investment Survey, May 12, 1995
ValueScreen, June 1, 1995

ESTIMATED MONTHLY RISK PREMIUMS
 MOODY'S NATURAL GAS DISTRIBUTION INDEX
 JUNE 1985 - MAY 1995

YEAR	MONTH	Quarterly Cost of Equity Gas	Risk Free Rate	Risk Premium	
1985	JUN	14.588	11.08	3.508	
	JUL	14.886	10.48	4.406	
	AUG	15.017	10.62	4.397	
	SEP	15.604	10.70	4.904	
	OCT	15.030	10.78	4.250	
	NOV	15.122	10.66	4.462	
	DEC	14.672	10.19	4.482	
	1986	JAN	13.857	9.68	4.177
		FEB	13.780	9.59	4.190
		MAR	13.644	9.26	4.384
		APR	12.944	8.15	4.794
		MAY	12.684	7.58	5.104
JUN		12.726	8.13	4.596	
JUL		11.818	8.27	3.548	
AUG		11.683	7.88	3.803	
SEP		11.653	7.74	3.913	
OCT		11.408	8.10	3.308	
NOV		11.617	8.06	3.557	
DEC		11.336	7.82	3.516	
1987	JAN	11.847	7.66	4.187	
	FEB	11.642	7.62	4.022	
	MAR	11.563	7.71	3.853	
	APR	11.293	7.64	3.653	
	MAY	11.759	8.35	3.409	
	JUN	11.903	8.85	3.053	
	JUL	11.738	8.67	3.068	
	AUG	11.856	8.77	3.086	
	SEP	11.858	9.06	2.798	
	OCT	12.148	9.67	2.473	
	NOV	12.926	9.73	3.196	
	DEC	13.078	9.10	3.978	
1988	JAN	13.226	9.23	3.996	
	FEB	12.850	8.93	3.920	
	MAR	12.416	8.48	3.936	
	APR	12.396	8.64	3.756	
	MAY	12.398	8.97	3.428	
	JUN	12.378	9.30	3.078	
	JUL	12.049	9.11	2.939	
	AUG	12.027	9.28	2.747	
	SEP	12.314	9.42	2.894	
	OCT	12.070	9.14	2.930	
	NOV	12.036	8.96	3.076	
	DEC	12.088	9.09	2.998	

ESTIMATED MONTHLY RISK PREMIUMS (continued)

YEAR	MONTH	Quarterly Cost of Equity Gas	Risk Free Rate	Risk Premium
1989	JAN	12.028	9.10	2.928
	FEB	12.050	9.05	3.000
	MAR	12.060	9.15	2.910
	APR	12.580	9.31	3.270
	MAY	12.480	9.17	3.310
	JUN	12.312	8.93	3.382
	JUL	12.071	8.37	3.701
	AUG	11.882	8.13	3.752
	SEP	11.788	8.23	3.558
	OCT	11.450	8.29	3.160
	NOV	11.462	8.12	3.342
	DEC	11.320	8.00	3.320
1990	JAN	10.978	8.00	2.978
	FEB	11.130	8.37	2.760
	MAR	11.252	8.63	2.622
	APR	11.416	8.73	2.686
	MAY	11.620	8.92	2.700
	JUN	11.710	8.87	2.840
	JUL	11.468	8.60	2.868
	AUG	11.550	8.62	2.930
	SEP	11.830	8.93	2.900
	OCT	11.160	9.08	2.080
	NOV	11.340	8.89	2.450
	DEC	11.070	8.58	2.490
1991	JAN	11.031	8.27	2.761
	FEB	11.186	8.31	2.876
	MAR	11.171	8.09	3.081
	APR	10.864	8.36	2.504
	MAY	10.810	8.26	2.550
	JUN	10.820	8.31	2.510
	JUL	10.797	8.52	2.277
	AUG	10.783	8.47	2.313
	SEP	10.680	8.15	2.530
	OCT	10.988	7.95	3.038
	NOV	10.742	7.86	2.882
	DEC	10.719	7.80	2.919
1992	JAN	10.580	7.55	3.030
	FEB	10.640	7.46	3.180
	MAR	10.698	7.76	2.938
	APR	10.684	7.90	2.784
	MAY	10.810	7.85	2.960
	JUN	10.740	7.77	2.970
	JUL	10.525	7.70	2.825
	AUG	10.351	7.37	2.981
	SEP	10.170	7.15	3.020
	OCT	9.812	7.05	2.762
	NOV	10.032	7.24	2.792
	DEC	10.113	7.40	2.713

ESTIMATED MONTHLY RISK PREMIUMS (continued)

YEAR	MONTH	Quarterly Cost of Equity Gas	Risk Free Rate	Risk Premium
1993	JAN	9.653	7.29	2.363
	FEB	9.518	7.16	2.358
	MAR	9.306	6.87	2.436
	APR	9.086	6.63	2.456
	MAY	9.222	6.63	2.592
	JUN	9.338	6.67	2.668
	JUL	9.547	6.54	3.007
	AUG	8.769	6.33	2.439
	SEP	8.774	6.16	2.614
	OCT	8.813	5.93	2.883
	NOV	8.843	5.89	2.953
	DEC	9.136	6.23	2.906
1994	JAN	9.133	6.26	2.873
	FEB	8.805	6.23	2.575
	MAR	8.885	6.44	2.445
	APR	9.126	6.89	2.236
	MAY	9.431	7.30	2.131
	JUN	9.550	7.47	2.080
	JUL	9.737	7.42	2.317
	AUG	9.723	7.60	2.123
	SEP	9.802	7.540	2.262
	OCT	9.921	7.770	2.151
	NOV	9.813	8.010	1.803
	DEC	10.198	8.150	2.048
1995	JAN	10.342	7.950	2.392
	FEB	10.071	7.920	2.151
	MAR	9.891	7.670	2.221
	APR	9.865	7.500	2.365
	MAY	9.747	7.380	2.367
AVERAGE				8.076

SOURCES: Value Line Investment Survey
 S&P Stock Guide
 Moody's Bond Survey

BOND YIELD DIFFERENTIALS
 Public Utility Bond Yield Averages
 Source: Moody's Bond Survey

120 Month Average - 0.1243		0.1243		0.0748		0.0748		0.0748		0.1092		0.1092		0.1092		0.1092				
YEAR	MON	Aaa SPREAD	Aa1 SPREAD	Aa2 SPREAD	Aa3 SPREAD	A1 SPREAD	A2 SPREAD	A3 SPREAD	Baa1 SPREAD	Baa2 SPREAD	Baa3									
1995	APR	8.08	0.05	8.13	0.05	8.17	0.03	8.20	0.03	8.24	0.03	8.27	0.13	8.40	0.13	8.54	0.13	8.67	0.13	8.80
	MAR	8.18	0.05	8.24	0.05	8.29	0.03	8.32	0.03	8.34	0.03	8.37	0.13	8.50	0.13	8.63	0.13	8.76	0.13	8.89
	FEB	8.33	0.06	8.39	0.06	8.45	0.02	8.47	0.02	8.50	0.02	8.52	0.14	8.66	0.14	8.79	0.14	8.93	0.14	9.07
	JAN	8.53	0.07	8.60	0.07	8.66	0.02	8.68	0.02	8.71	0.02	8.73	0.14	8.87	0.14	9.01	0.14	9.15	0.14	9.29
	DEC	8.55	0.07	8.62	0.07	8.69	0.02	8.71	0.02	8.74	0.02	8.76	0.13	8.89	0.13	9.03	0.13	9.16	0.13	9.29
	NOV	8.77	0.06	8.84	0.06	8.90	0.03	8.93	0.03	8.95	0.03	8.98	0.12	9.10	0.12	9.23	0.12	9.35	0.12	9.47
	OCT	8.65	0.07	8.72	0.07	8.78	0.03	8.81	0.03	8.83	0.03	8.86	0.13	8.99	0.13	9.11	0.13	9.24	0.13	9.37
	SEP	8.41	0.08	8.49	0.08	8.56	0.03	8.59	0.03	8.61	0.03	8.64	0.11	8.75	0.11	8.87	0.11	8.98	0.11	9.09
	AUG	8.15	0.09	8.24	0.09	8.32	0.03	8.35	0.03	8.38	0.03	8.41	0.11	8.52	0.11	8.63	0.11	8.74	0.11	8.85
	JUL	8.21	0.09	8.30	0.09	8.38	0.03	8.41	0.03	8.44	0.03	8.47	0.11	8.58	0.11	8.69	0.11	8.80	0.11	8.91
	JUN	8.07	0.07	8.14	0.07	8.21	0.03	8.24	0.03	8.28	0.03	8.31	0.11	8.42	0.11	8.53	0.11	8.64	0.11	8.75
	MAY	8.11	0.07	8.18	0.07	8.24	0.03	8.27	0.03	8.30	0.03	8.33	0.09	8.42	0.09	8.52	0.09	8.61	0.09	8.70
	APR	8.00	0.06	8.06	0.06	8.12	0.03	8.15	0.03	8.19	0.03	8.22	0.08	8.30	0.08	8.39	0.08	8.47	0.08	8.55
	MAR	7.80	0.07	7.87	0.07	7.74	0.04	7.78	0.04	7.81	0.04	7.85	0.09	7.94	0.09	8.02	0.09	8.11	0.09	8.20
1994	FEB	7.19	0.08	7.27	0.08	7.34	0.04	7.38	0.04	7.43	0.04	7.47	0.10	7.57	0.10	7.66	0.10	7.76	0.10	7.86
	JAN	7.05	0.06	7.12	0.06	7.18	0.05	7.23	0.05	7.28	0.05	7.33	0.11	7.44	0.11	7.55	0.11	7.66	0.11	7.77
	DEC	7.06	0.06	7.12	0.06	7.18	0.05	7.23	0.05	7.29	0.05	7.34	0.13	7.47	0.13	7.60	0.13	7.73	0.13	7.86
	NOV	7.06	0.06	7.12	0.06	7.17	0.04	7.21	0.04	7.26	0.04	7.30	0.13	7.43	0.13	7.56	0.13	7.69	0.13	7.82
	OCT	6.75	0.07	6.82	0.07	6.89	0.05	6.94	0.05	6.98	0.05	7.03	0.08	7.11	0.08	7.19	0.08	7.27	0.08	7.35
	SEP	6.76	0.06	6.83	0.06	6.89	0.05	6.94	0.05	6.99	0.05	7.04	0.10	7.14	0.10	7.25	0.10	7.35	0.10	7.45
	AUG	6.94	0.07	7.01	0.07	7.07	0.06	7.13	0.06	7.19	0.06	7.25	0.11	7.36	0.11	7.48	0.11	7.59	0.11	7.70
	JUL	7.25	0.07	7.32	0.07	7.38	0.05	7.43	0.05	7.49	0.05	7.54	0.13	7.67	0.13	7.80	0.13	7.93	0.13	8.06
	JUN	7.37	0.09	7.46	0.09	7.54	0.07	7.61	0.07	7.68	0.07	7.75	0.10	7.85	0.10	7.95	0.10	8.05	0.10	8.15
	MAY	7.44	0.10	7.54	0.10	7.64	0.07	7.71	0.07	7.79	0.07	7.86	0.11	7.97	0.11	8.07	0.11	8.18	0.11	8.29
	APR	7.50	0.07	7.57	0.07	7.64	0.06	7.70	0.06	7.75	0.06	7.81	0.10	7.91	0.10	8.01	0.10	8.11	0.10	8.21
	MAR	7.64	0.06	7.70	0.06	7.76	0.05	7.81	0.05	7.85	0.05	7.90	0.07	7.97	0.07	8.03	0.07	8.10	0.07	8.17
	FEB	7.75	0.09	7.84	0.09	7.92	0.04	7.96	0.04	8.00	0.04	8.04	0.09	8.13	0.09	8.22	0.09	8.31	0.09	8.40
993	JAN	7.94	0.10	8.04	0.10	8.14	0.04	8.18	0.04	8.23	0.04	8.27	0.10	8.37	0.10	8.47	0.10	8.57	0.10	8.67
	DEC	8.01	0.15	8.17	0.15	8.32	0.04	8.36	0.04	8.39	0.04	8.43	0.09	8.52	0.09	8.60	0.09	8.69	0.09	8.78
	NOV	8.11	0.20	8.31	0.20	8.51	0.04	8.55	0.04	8.59	0.04	8.63	0.08	8.71	0.08	8.78	0.08	8.86	0.08	8.94
	OCT	8.06	0.18	8.24	0.18	8.42	0.04	8.46	0.04	8.50	0.04	8.54	0.07	8.61	0.07	8.69	0.07	8.76	0.07	8.83
	SEP	8.04	0.12	8.16	0.12	8.28	0.04	8.32	0.04	8.36	0.04	8.40	0.05	8.45	0.05	8.49	0.05	8.54	0.05	8.59
	AUG	8.04	0.13	8.17	0.13	8.30	0.05	8.35	0.05	8.39	0.05	8.44	0.05	8.49	0.05	8.53	0.05	8.58	0.05	8.63
	JUL	8.12	0.16	8.29	0.16	8.45	0.04	8.49	0.04	8.53	0.04	8.57	0.04	8.61	0.04	8.65	0.04	8.69	0.04	8.73
	JUN	8.26	0.18	8.45	0.18	8.63	0.05	8.68	0.05	8.73	0.05	8.78	0.04	8.82	0.04	8.86	0.04	8.90	0.04	8.94
	MAY	8.32	0.18	8.51	0.18	8.69	0.06	8.75	0.06	8.81	0.06	8.87	0.05	8.92	0.05	8.96	0.05	9.01	0.05	9.06
	APR	8.36	0.20	8.56	0.20	8.76	0.06	8.82	0.06	8.87	0.06	8.93	0.06	8.99	0.06	9.05	0.06	9.11	0.06	9.17
	MAR	8.39	0.21	8.61	0.21	8.82	0.05	8.87	0.05	8.92	0.05	8.97	0.06	9.03	0.06	9.10	0.06	9.16	0.06	9.22
	FEB	8.30	0.23	8.53	0.23	8.76	0.06	8.82	0.06	8.87	0.06	8.93	0.05	8.98	0.05	9.04	0.05	9.09	0.05	9.14
1992	JAN	8.22	0.20	8.43	0.20	8.63	0.07	8.70	0.07	8.77	0.07	8.84	0.05	8.89	0.05	8.93	0.05	8.98	0.05	9.03
	DEC	8.38	0.16	8.55	0.16	8.71	0.06	8.77	0.06	8.82	0.06	8.88	0.06	8.94	0.06	9.01	0.06	9.07	0.06	9.13
	NOV	8.52	0.17	8.70	0.17	8.87	0.06	8.93	0.06	8.99	0.06	9.05	0.08	9.13	0.08	9.20	0.08	9.28	0.08	9.36
	OCT	8.57	0.18	8.75	0.18	8.92	0.07	8.99	0.07	9.05	0.07	9.12	0.07	9.19	0.07	9.25	0.07	9.32	0.07	9.39
	SEP	8.65	0.15	8.80	0.15	8.95	0.07	9.02	0.07	9.09	0.07	9.16	0.06	9.22	0.06	9.28	0.06	9.34	0.06	9.40
	AUG	8.61	0.13	8.84	0.13	9.06	0.08	9.14	0.08	9.21	0.08	9.29	0.06	9.35	0.06	9.41	0.06	9.47	0.06	9.53
	JUL	9.10	0.08	9.18	0.08	9.26	0.10	9.36	0.10	9.45	0.10	9.55	0.05	9.60	0.05	9.64	0.05	9.69	0.05	9.74
	JUN	9.10	0.09	9.19	0.09	9.28	0.10	9.38	0.10	9.49	0.10	9.59	0.07	9.68	0.07	9.72	0.07	9.79	0.07	9.86
	MAY	8.93	0.11	9.05	0.11	9.15	0.09	9.25	0.09	9.35	0.09	9.44	0.07	9.51	0.07	9.57	0.07	9.64	0.07	9.71
	APR	8.95	0.10	9.05	0.10	9.14	0.11	9.25	0.11	9.35	0.11	9.46	0.06	9.52	0.06	9.58	0.06	9.64	0.06	9.70
	MAR	9.04	0.09	9.14	0.09	9.23	0.11	9.34	0.11	9.44	0.11	9.55	0.06	9.61	0.06	9.68	0.06	9.74	0.06	9.80
	FEB	8.92	0.12	9.04	0.12	9.16	0.10	9.26	0.10	9.37	0.10	9.47	0.07	9.54	0.07	9.61	0.07	9.68	0.07	9.75
1991	JAN	9.17	0.11	9.28	0.11	9.39	0.11	9.50	0.11	9.60	0.11	9.71	0.08	9.79	0.08	9.88	0.08	9.96	0.08	10.04
	DEC	9.18	0.12	9.30	0.12	9.42	0.10	9.52	0.10	9.63	0.10	9.73	0.08	9.81	0.08	9.88	0.08	9.96	0.08	10.04
	NOV	9.43	0.08	9.51	0.08	9.59	0.10	9.69	0.10	9.80	0.10	9.90	0.07	9.97	0.07	10.05	0.07	10.12	0.07	10.19
	OCT	9.66	0.06	9.72	0.06	9.77	0.09	9.86	0.09	9.96	0.09	10.05	0.08	10.13	0.08	10.20	0.08	10.28	0.08	10.36
	SEP	9.73	0.07	9.80	0.07	9.87	0.08	9.95	0.05	10.04	0.08	10.12	0.07	10.19	0.07	10.25	0.07	10.32	0.07	10.39
	AUG	9.54	0.12	9.66	0.12	9.78	0.05	9.83	0.05	9.87	0.05	9.92	0.07	9.99	0.07	10.05	0.07	10.12	0.07	10.19
	JUL	9.36	0.13	9.49	0.13	9.61	0.05	9.66	0.05	9.70	0.05	9.75	0.06	9.81	0.06	9.86	0.06	9.92	0.06	9.98
	JUN	9.38	0.11	9.49	0.11	9.60	0.07	9.67	0.07	9.73	0.07	9.80	0.05	9.85	0.05	9.91	0.05	9.96	0.05	10.01
	MAY	9.58	0.13	9.71	0.13	9.83	0.06	9.89	0.06	9.94	0.06	10.00	0.05	10.05	0.05	10.11	0.05	10.16	0.05	10.21

BOND YIELD DIFFERENTIALS
 Public Utility Bond Yield Averages
 Source: Moody's Bond Survey

120 Month Average - 0.1243		0.1243		0.0748		0.0748		0.0748		0.1092		0.1092		0.1092		0.1092				
YEAR	MON	Aaa SPREAD	Aa1 SPREAD	Aa2 SPREAD	Aa3 SPREAD	A1 SPREAD	A2 SPREAD	A3 SPREAD	Baa1 SPREAD	Baa2 SPREAD	Baa3									
1990	APR	9.60	0.11	9.71	0.11	9.81	0.04	9.85	0.04	9.88	0.04	9.92	0.07	9.99	0.07	10.06	0.07	10.13	0.07	10.20
	MAR	9.48	0.06	9.54	0.06	9.60	0.08	9.68	0.08	9.77	0.08	9.85	0.07	9.92	0.07	9.99	0.07	10.06	0.07	10.13
	FEB	9.35	0.11	9.46	0.11	9.57	0.06	9.63	0.06	9.70	0.06	9.78	0.07	9.83	0.07	9.89	0.07	9.96	0.07	10.03
	JAN	9.08	0.16	9.24	0.16	9.39	0.06	9.45	0.06	9.50	0.06	9.56	0.06	9.62	0.06	9.68	0.06	9.74	0.06	9.80
	DEC	8.92	0.17	9.09	0.17	9.26	0.06	9.32	0.06	9.38	0.06	9.44	0.05	9.49	0.05	9.55	0.05	9.60	0.05	9.65
	NOV	8.92	0.16	9.09	0.16	9.25	0.09	9.34	0.09	9.42	0.09	9.51	0.04	9.55	0.04	9.60	0.04	9.64	0.04	9.68
	OCT	9.01	0.13	9.15	0.13	9.28	0.09	9.37	0.09	9.45	0.09	9.54	0.03	9.57	0.03	9.61	0.03	9.64	0.03	9.67
	SEP	9.10	0.13	9.25	0.13	9.35	0.08	9.43	0.08	9.50	0.08	9.58	0.04	9.62	0.04	9.66	0.04	9.70	0.04	9.74
	AUG	9.02	0.13	9.15	0.13	9.27	0.08	9.35	0.08	9.44	0.08	9.52	0.04	9.56	0.04	9.60	0.04	9.64	0.04	9.68
	JUL	8.98	0.13	9.11	0.13	9.23	0.09	9.32	0.09	9.41	0.09	9.50	0.05	9.55	0.05	9.59	0.05	9.64	0.05	9.69
	JUN	9.13	0.12	9.25	0.12	9.37	0.09	9.46	0.09	9.55	0.09	9.64	0.05	9.69	0.05	9.75	0.05	9.80	0.05	9.85
	MAY	9.60	0.09	9.70	0.09	9.79	0.07	9.86	0.07	9.92	0.07	9.99	0.10	10.09	0.10	10.19	0.10	10.29	0.10	10.39
	APR	9.88	0.07	9.95	0.07	10.02	0.05	10.07	0.05	10.13	0.05	10.18	0.10	10.28	0.10	10.39	0.10	10.49	0.10	10.59
	MAR	9.87	0.09	9.96	0.09	10.05	0.06	10.11	0.06	10.17	0.06	10.23	0.09	10.32	0.09	10.41	0.09	10.50	0.09	10.59
1989	FEB	9.71	0.11	9.82	0.11	9.93	0.05	9.98	0.05	10.02	0.05	10.07	0.10	10.17	0.10	10.28	0.10	10.38	0.10	10.48
	JAN	9.72	0.09	9.81	0.09	9.89	0.06	9.95	0.06	10.02	0.06	10.08	0.10	10.18	0.10	10.28	0.10	10.38	0.10	10.48
	DEC	9.67	0.11	9.79	0.11	9.90	0.05	9.95	0.05	10.01	0.05	10.06	0.13	10.19	0.13	10.31	0.13	10.44	0.13	10.57
	NOV	9.62	0.09	9.71	0.09	9.79	0.06	9.85	0.06	9.91	0.06	9.97	0.11	10.08	0.11	10.20	0.11	10.31	0.11	10.42
	OCT	9.52	0.14	9.66	0.14	9.80	0.03	9.83	0.03	9.87	0.03	9.90	0.15	10.05	0.15	10.20	0.15	10.35	0.15	10.50
	SEP	10.15	0.10	10.25	0.10	10.34	0.09	10.43	0.09	10.52	0.09	10.61	0.17	10.78	0.17	10.96	0.17	11.13	0.17	11.30
	AUG	10.66	0.10	10.76	0.10	10.85	0.11	10.96	0.11	11.06	0.11	11.17	0.17	11.34	0.17	11.52	0.17	11.69	0.17	11.86
	JUL	10.50	0.13	10.63	0.13	10.76	0.09	10.85	0.09	10.95	0.09	11.04	0.16	11.20	0.16	11.36	0.16	11.52	0.16	11.68
	JUN	10.27	0.13	10.40	0.13	10.52	0.09	10.61	0.09	10.70	0.09	10.79	0.16	10.95	0.16	11.11	0.16	11.27	0.16	11.43
	MAY	10.29	0.12	10.41	0.12	10.53	0.09	10.62	0.09	10.72	0.09	10.81	0.19	11.00	0.19	11.19	0.19	11.38	0.19	11.57
	APR	10.07	0.11	10.18	0.11	10.29	0.08	10.37	0.08	10.46	0.08	10.54	0.23	10.77	0.23	11.00	0.23	11.23	0.23	11.46
	MAR	9.72	0.10	9.82	0.10	9.92	0.06	9.98	0.06	10.03	0.06	10.09	0.20	10.29	0.20	10.49	0.20	10.69	0.20	10.89
1988	FEB	9.77	0.07	9.84	0.07	9.91	0.06	9.97	0.06	10.04	0.06	10.10	0.18	10.28	0.18	10.47	0.18	10.65	0.18	10.83
	JAN	10.39	0.07	10.46	0.07	10.52	0.08	10.60	0.08	10.68	0.08	10.76	0.19	10.95	0.19	11.15	0.19	11.34	0.19	11.53
	DEC	10.64	0.07	10.71	0.07	10.78	0.07	10.85	0.07	10.91	0.07	10.98	0.19	11.17	0.19	11.36	0.19	11.55	0.19	11.74
	NOV	10.43	0.09	10.53	0.09	10.62	0.07	10.69	0.07	10.75	0.07	10.82	0.19	11.01	0.19	11.21	0.19	11.40	0.19	11.59
	OCT	10.92	0.09	11.02	0.09	11.11	0.08	11.19	0.08	11.26	0.08	11.34	0.19	11.53	0.19	11.72	0.19	11.91	0.19	12.10
	SEP	10.53	0.07	10.60	0.07	10.66	0.19	10.85	0.19	11.03	0.19	11.22	0.12	11.34	0.12	11.46	0.12	11.58	0.12	11.70
	AUG	9.92	0.07	9.99	0.07	10.05	0.13	10.18	0.13	10.32	0.13	10.45	0.15	10.60	0.15	10.75	0.15	10.90	0.15	11.05
	JUL	9.56	0.07	9.63	0.07	9.70	0.15	9.85	0.15	10.00	0.15	10.15	0.16	10.31	0.16	10.46	0.16	10.62	0.16	10.78
	JUN	9.37	0.12	9.49	0.12	9.61	0.14	9.75	0.14	9.88	0.14	10.02	0.15	10.17	0.15	10.31	0.15	10.46	0.15	10.61
	MAY	9.34	0.14	9.49	0.14	9.63	0.09	9.72	0.09	9.82	0.09	9.91	0.16	10.07	0.16	10.24	0.16	10.40	0.16	10.56
	APR	8.83	0.16	8.99	0.16	9.15	0.08	9.23	0.08	9.30	0.08	9.38	0.16	9.54	0.16	9.69	0.16	9.85	0.16	10.01
	MAR	8.21	0.22	8.43	0.22	8.64	0.10	8.74	0.10	8.83	0.10	8.93	0.09	9.02	0.09	9.10	0.09	9.19	0.09	9.28
1987	FEB	8.29	0.20	8.49	0.20	8.69	0.10	8.79	0.10	8.90	0.10	9.00	0.08	9.08	0.08	9.16	0.08	9.24	0.08	9.32
	JAN	8.23	0.20	8.43	0.20	8.62	0.11	8.73	0.11	8.84	0.11	8.95	0.11	9.06	0.11	9.16	0.11	9.27	0.11	9.38
	DEC	8.41	0.20	8.61	0.20	8.81	0.10	8.91	0.10	9.02	0.10	9.12	0.12	9.24	0.12	9.37	0.12	9.49	0.12	9.61
	NOV	8.59	0.21	8.80	0.21	9.01	0.09	9.10	0.09	9.19	0.09	9.28	0.14	9.42	0.14	9.55	0.14	9.69	0.14	9.83
	OCT	8.64	0.20	9.04	0.20	9.24	0.09	9.33	0.09	9.43	0.09	9.52	0.14	9.66	0.14	9.81	0.14	9.95	0.14	10.09
	SEP	8.91	0.18	9.10	0.18	9.28	0.08	9.36	0.08	9.44	0.08	9.52	0.15	9.67	0.15	9.81	0.15	9.96	0.15	10.11
	AUG	8.59	0.22	8.81	0.22	9.03	0.09	9.12	0.09	9.20	0.09	9.29	0.14	9.43	0.14	9.56	0.14	9.70	0.14	9.84
	JUL	8.66	0.20	8.86	0.20	9.05	0.11	9.16	0.11	9.26	0.11	9.37	0.11	9.48	0.11	9.58	0.11	9.69	0.11	9.80
	JUN	9.02	0.17	9.19	0.17	9.36	0.09	9.45	0.09	9.53	0.09	9.62	0.14	9.76	0.14	9.89	0.14	10.03	0.14	10.17
	MAY	9.07	0.16	9.23	0.16	9.38	0.07	9.45	0.07	9.52	0.07	9.59	0.14	9.73	0.14	9.88	0.14	10.02	0.14	10.16
	APR	8.45	0.21	8.66	0.21	8.87	0.09	8.96	0.09	9.05	0.09	9.14	0.16	9.30	0.16	9.47	0.16	9.63	0.16	9.79
	MAR	8.75	0.20	8.96	0.20	9.16	0.11	9.27	0.11	9.37	0.11	9.48	0.14	9.62	0.14	9.77	0.14	9.91	0.14	10.05
1986	FEB	9.65	0.16	9.82	0.16	9.98	0.09	10.07	0.09	10.17	0.09	10.26	0.16	10.42	0.16	10.58	0.16	10.74	0.16	10.90
	JAN	10.14	0.15	10.29	0.15	10.44	0.12	10.56	0.12	10.67	0.12	10.79	0.15	10.94	0.15	11.09	0.15	11.24	0.15	11.39
	DEC	10.24	0.16	10.41	0.16	10.57	0.13	10.70	0.13	10.84	0.13	10.97	0.17	11.14	0.17	11.31	0.17	11.48	0.17	11.65
	NOV	10.71	0.20	10.91	0.20	11.10	0.13	11.23	0.13	11.36	0.13	11.49	0.18	11.67	0.18	11.86	0.18	12.04	0.18	12.22
	OCT	11.23	0.19	11.42	0.19	11.61	0.13	11.74	0.13	11.88	0.13	12.01	0.17	12.18	0.17	12.35	0.17	12.52	0.17	12.69
	SEP	11.27	0.20	11.48	0.20	11.68	0.15	11.83	0.15	11.98	0.15	12.13	0.20	12.33	0.20	12.52	0.20	12.72	0.20	12.92
	AUG	11.23	0.21	11.44	0.21	11.65	0.16	11.81	0.16	11.97	0.16	12.13	0.20	12.33	0.20	12.53	0.20	12.73	0.20	12.93
	JUL	11.18	0.18	11.37	0.18	11.55	0.17	11.72	0.17	11.90	0.17	12.07	0.21	12.26	0.21	12.49	0.21	12.70	0.21	12.91
	JUN	11.17	0.26	11.43	0.26	11.68	0.15	11.83	0.15	11.98	0.15	12.13	0.18	12.31	0.18	12.48	0.18	12.66	0.18	12.84
	MAY	12.18	0.23	12.42	0.23	12.65	0.16	12.81	0.16	12.96	0.16	13.12	0.17	13.29	0.17	13.45	0.17	13.62	0.17	13.79
	APR	12.77	0.20	12.97	0.20	13.17	0.15	13.32	0.15	13.46	0.15	13.61	0.17	13.78	0.17	13.94	0.17	14.11	0.17	14.28

5/95 Equity Ratios of Water Index Companies

	Book Value Per Share	Common Shares Outstanding	Common Equity	Total Debt	Preferred Equity	Equity Ratio
American Water Works	\$22.18	32.66	\$724.4	\$1,464.40	\$101.7	31.63%
Aquarion Company	\$17.41	6.69	\$116.5	\$115.60	\$0.0	50.19%
California Water Services Co.	\$23.08	6.25	\$144.2	\$135.90	\$3.5	50.84%
Consumers Water Company	\$12.42	8.26	\$102.6	\$159.90	\$1.1	38.92%
Philadelphia Suburban Corp.	\$12.27	11.48	\$140.8	\$153.10	\$7.1	46.78%
United Water Resources	\$11.28	31.39	\$354.1	\$591.50	\$107.2	33.63%
Average						42.00%

Source: Value Line Investment Survey
Edition 9 May 12, 1995
C. A. Turner Utility Reports May 1995

5/95 Equity Ratios of Natural Gas Index Companies

	Book Value Per Share	Common Shares Outstanding	Common Equity	Total Debt	Preferred Equity	Equity Ratio
Atlanta Gas & Light	\$21.24	25.60	\$543.8	\$718.10	\$58.5	41.18%
Bay State Gas	\$17.06	13.34	\$227.6	\$246.60	\$5.3	47.46%
Brooklyn Union Gas	\$16.99	48.08	\$816.9	\$717.50	\$7.2	52.99%
Indiana Energy	\$12.50	22.56	\$282.0	\$203.30	\$0.0	58.11%
Laclede Gas	\$13.09	15.71	\$205.6	\$244.20	\$2.0	45.51%
Northwest Natural Gas	\$20.32	13.30	\$270.2	\$332.70	\$42.5	41.86%
Peoples Energy	\$19.29	34.90	\$673.2	\$636.10	\$0.0	51.42%
Washington Gas & Light	\$24.22	21.21	\$513.7	\$439.40	\$28.5	52.34%

Average

48.86%

Source: Value Line Investment Survey
Edition 3 March 31, 1995
C. A. Turner Utility Reports May 1995