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February 8, 2011

VIA HAND DELIVERY

filed electronically in docket office on 02/08/11

Chairman Mary W. Freeman
c/o Sharla Dillon
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

Re: Docket No. 10-00189: *Petition Of Tennessee American Water Company To Change And Increase Certain Rates And Charges So As To Permit It To Earn A Fair And Adequate Rate Of Return On Its Property Used And Useful In Furnishing Water Service To Its Customers*

Dear Chairman Freeman:

Enclosed please find an original and five (5) sets of copies of Tennessee American Water Company's Rebuttal Testimony filed on behalf of the following witnesses: Bernard L. Uffelman, James H. Vander Weide, James I. Warren, Sheila A. Miller, Patrick L. Baryenbruch, Paul R. Herbert, Dr. Edward L. Spitznagel, John S. Watson and Michael A. Miller.

Two disks are included with this submission. The first disk, labeled "Docket Manager Disk" contains PDF images of the testimony of each witness. The second disk contains all of the documents submitted in their native formats.

Please file the original and four copies of this Rebuttal Testimony and stamp the additional copy as "filed." Then please return the stamped copy to me by way of our courier.

Should you have any questions concerning this matter, please do not hesitate to contact me at the email address or telephone number listed above.

Sincerely,

David Killion

Enclosures

STATE OF TENNESSEE

BEFORE THE TENNESSEE REGULATORY AUTHORITY

DOCKET NO. 10-00189

REBUTTAL TESTIMONY OF JAMES H. VANDER WEIDE

FEBRUARY 8, 2011

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I. WITNESS IDENTIFICATION

Q. 1 What is your name and business address?

A. 1 My name is James H. Vander Weide. I am Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to business clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina 27705.

Q. 2 Are you the same James Vander Weide who previously filed direct testimony in this proceeding?

A. 2 Yes, I am.

Q. 3 What is the purpose of your rebuttal testimony?

A. 3 I have been asked by Tennessee-American Water Company ("TAWC") to review the direct testimonies of Dr. Christopher C. Klein and Mr. Michael Gorman and to respond to their comments and recommendations regarding the appropriate cost of capital for TAWC. Dr. Klein's testimony is presented on behalf of the Tennessee Attorney General Consumer Advocate and Protection Division and Mr. Gorman's testimony is presented on behalf of the Chattanooga Regional Manufacturers Association.

Q. 4 Is there anything in the testimonies of Dr. Klein or Mr. Gorman that causes you to change your recommended cost of equity range for TAWC?

A. 4 No.

II. REBUTTAL OF DR. KLEIN

Q. 5 What is Dr. Klein's recommended cost of equity for TAWC?

A. 5 Dr. Klein recommends a cost of equity for TAWC equal to 9.0 percent.

Q. 6 How does Dr. Klein arrive at his recommended 9.0 percent cost of equity for TAWC?

A. 6 Dr. Klein arrives at his recommended 9.0 percent cost of equity for TAWC by applying the Discounted Cash Flow ("DCF") model and Capital Asset Pricing Model ("CAPM") to proxy groups of water utilities and local natural gas distribution companies ("LDCs").

Q. 7 What is Dr. Klein's recommended weighted average cost of capital for TAWC?

A. 7 Dr. Klein recommends a weighted average cost of capital for TAWC equal to 6.79 percent.

Q. 8 What capital structure does Dr. Klein recommend for TAWC?

A. 8 Dr. Klein recommends a capital structure containing 6.88 percent short-term debt, 58.16 percent long-term debt, 1.24 percent preferred equity, and 33.72 percent common equity.

Q. 9 How does Dr. Klein arrive at his recommended capital structure for TAWC?

A. 9 Dr. Klein arrives at his recommended capital structure for TAWC by: (1) calculating the historical average capital structure for TAWC's parent; and (2) imputing the parent's average capital structure to the equity portion of TAWC's capital structure (Klein at 8 and Klein Corrected Exhibit page 2 of 19). Economists refer to such an approach as the "double leverage" approach to capital structure calculation.

Q. 10 What conclusions do you reach from your analysis of Dr. Klein's cost of equity studies?

A. 10 I conclude that Dr. Klein's DCF and CAPM analyses produce cost of equity estimates that are well below a reasonable range of cost of equity estimates for his proxy companies. As explained below, Dr. Klein's underestimate of his proxy companies' cost of equity arises from biases in his choices regarding: (1) proxy companies; (2) DCF model; (3) growth estimates; and (4) CAPM studies.

Q. 11 What conclusions do you reach from your analysis of Dr. Klein's recommended capital structure for TAWC?

A. 11 I conclude that Dr. Klein's recommended capital structure for TAWC contains significantly more debt than the average capital structure of his proxy companies. Since highly-leveraged or debt heavy capital structures are more risky than less leveraged capital structures, and investors demand a higher return on investments of greater risk, Dr. Klein should have adjusted his cost of equity estimate for TAWC upward to reflect the greater risk associated with his recommended capital structure. Instead, Dr. Klein inconsistently recommends that TAWC be allowed: (1) a cost of equity equal to his estimate of the cost of equity for his proxy companies; and (2) a capital structure that is more risky than the average capital structure of his proxy companies.

A. Proxy Companies

Q. 12 What proxy companies does Dr. Klein use to estimate TAWC's cost of equity?

A. 12 In addition to American Water Works ("AWK"), Dr. Klein uses a group of three water utilities and a group of nine LDCs followed by Value Line.

Q. 13 What criteria does Dr. Klein use to select his proxy groups of three water utilities and nine LDCs?

A. 13 Dr. Klein selects the water utilities and LDCs that: (1) are covered by Value Line's "Ratings and Reports"; (2) are comparable in size and risk to AWK; and (3) have sufficient earnings and dividend data to estimate TAWC's cost of equity. (Klein at 12)

Q. 14 What is the purpose of proxy company selection criteria?

A. 14 The purpose of proxy company selection criteria is to identify the largest possible group of comparable risk companies that have sufficient data to reliably apply cost of equity methods such as the DCF, risk premium, and CAPM.

Q. 15 Why is it desirable to choose a relatively large group of comparable risk companies?

A. 15 It is desirable to choose a relatively large group of comparable risk companies because the estimate of the cost of equity obtained from applying cost of equity methods to a single company is uncertain. Cost of equity methods such as the DCF, CAPM, and risk premium, require estimates of quantities such as growth rates, betas, and expected risk premiums that necessarily involve a degree of uncertainty. However, the uncertainty in estimating the cost of equity by applying cost of equity methods to a single company can be significantly reduced by applying cost of equity models to a relatively large group of

comparable risk companies. Intuitively, any over- and under-estimate of the cost of equity that arises from the application of cost of equity methods to a single company is averaged out by applying the methods to a larger group of comparable risk companies.

Q. 16 Do Dr. Klein's selection criteria identify the largest possible group of water utilities that have sufficient data to reliably estimate TAWC's cost of equity?

A. 16 No. Dr. Klein's criteria identify only three of eight water utilities that have sufficient data to reliably estimate TAWC's cost of equity. As discussed below, the average cost of equity estimate for the three water utilities in Dr. Klein's proxy group is significantly below the average cost of equity estimate for the larger group of eight water utilities.

Q. 17 What proxy companies do you use to estimate TAWC's cost of equity?

A. 17 I use a proxy group of water utilities and a proxy group of natural gas distribution companies followed by Value Line. At the time of my direct testimony, my proxy group of water utilities included American States Water, American Water Works, Aqua American, Artesian Resources, California Water Services, Connecticut Water, Middlesex Water, and York Water.

Q. 18 What criteria do you use to select your proxy group of water utilities?

A. 18 As discussed in my direct testimony, I select all water utilities in Value Line's Standard and Extended editions that: (1) pay dividends; (2) did not decrease dividends during any quarter of the past two years; (3) have at least one analyst's long-term growth forecast; and (4) have not announced a merger. In

addition, all of the companies included in my group, with the exception of Southwest Water, have a Value Line Safety Rank of 3, where 3 is the average Safety Rank of the Value Line universe of companies.

Q. 19 Do you have any evidence that your proxy group of water utilities is a reasonable proxy for the risk of investing in TAWC and its parent, AWK?

A. 19 Yes. Based on data from Standard & Poor's and Value Line, my proxy group of water utilities has an average Standard & Poor's bond rating of "A" and a Value Line Safety Rank in the range 2 to 3.[1] AWK has a Standard & Poor's bond rating of "BBB+" and a Value Line Safety Rank of 3. Thus, my proxy group is slightly less risky than AWK (see Vander Weide Rebuttal Schedule 1.)

Q. 20 Have you compared the average risk of Dr. Klein's proxy group of three water utilities to the average risk of the larger group of water utilities?

A. 20 Yes. As noted above, the large group of water utilities has an average S&P bond rating of "A," and an average Safety Rank in the range 2 to 3. Dr. Klein's smaller group of water utilities has an average S&P bond rating of "A+" and a Value Line Safety Rank of 3.

Q. 21 Since the large group of water utilities and Dr. Klein's small proxy group of three water utilities have approximately the same risk as shown by bond ratings and Value Line Safety Rank, why do you recommend that the Regulatory Authority accept your larger proxy group of water utilities?

A. 21 I recommend that the Regulatory Authority accept my larger proxy group of water utilities because, for the reasons discussed above, the cost of equity

[1] Value Line describes its Safety Rank as "a measurement of potential risk associated with individual common stocks." Safety Ranks range from 1 to 5, with the most safe rating being a 1.

results based on a larger proxy group are more reliable than the results based on a small proxy group like Dr. Klein's.

Q. 22 Have you calculated DCF results for the large proxy group of water utilities that currently meet your selection criteria?

A. 22 Yes. Using data through December 31, 2010, I obtain an average DCF result for a larger water utility group equal to 11.6 percent. (See Rebuttal Schedule 2.)

B. DCF Model

Q. 23 What midpoint cost of equity results does Dr. Klein report from his application of his DCF model to his proxy companies?

A. 23 Dr. Klein reports midpoint DCF results of 9.1 percent for his proxy group of three water utilities and 8.65 percent for his proxy group of nine LDCs (Klein at 13).

Q. 24 What DCF Model does Dr. Klein use to estimate TAWC's cost of equity?

A. 24 Dr. Klein uses an annual DCF model of the form, $k = D_0/P_0 + g$, where k is the cost of equity, D_0 is the most recent annualized dividend, P_0 is the current stock price, and g is the average expected future growth in the company's earnings and dividends.

Q. 25 What are the basic assumptions of the annual DCF model?

A. 25 The annual DCF model is based on the assumptions that: (1) a company's stock price is equal to the present value of the future dividends investors expect to receive from their investment in the company; (2) dividends are paid annually; (3) dividends, earnings, and book values are expected to grow at the

same constant rate forever; and (4) the first dividend is received one year from the date of the analysis.

Q. 26 Do you agree with Dr. Klein's use of an annual DCF model to estimate TAWC's cost of equity?

A. 26 No. Dr. Klein's annual DCF model is based on the assumption that companies pay dividends only at the end of each year. Since Dr. Klein's proxy companies all pay dividends quarterly, Dr. Klein should have used the quarterly DCF model to estimate TAWC's cost of equity.

Q. 27 Why is it unreasonable to use an annual DCF model to estimate the cost of equity for companies that pay dividends quarterly?

A. 27 It is unreasonable to apply an annual DCF model to companies that pay dividends quarterly because: (1) the DCF model is based on the assumption that a company's stock price is equal to the present value of the expected future dividends associated with investing in the company's stock; and (2) the annual DCF model cannot be derived from this assumption when dividends are paid quarterly.

Q. 28 Recognizing your disagreement with Dr. Klein's use of an annual DCF model, did Dr. Klein apply the annual DCF model correctly?

A. 28 No. The annual DCF model is based on the assumption that dividends will grow at the same constant rate forever. Under the assumption that dividends will grow at the same constant rate forever, the cost of equity is given by the equation, $k = D_0 (1 + g) / P_0 + g$, where D_0 is the current annualized dividend, P_0 is the stock price, and g is the expected constant annual growth rate. Thus, the

correct first period dividend in the annual DCF model is the current annualized dividend multiplied by the factor, (1 + growth rate). Instead, Dr. Klein simply uses the current dividend in his DCF model. Dr. Klein's incorrect first-period dividend, apart from other errors in his methods, causes him to underestimate TAWC's cost of equity by approximately 25 basis points.

C. Estimate of Investors' Growth Expectations

Q. 29 The DCF model requires an estimate of investors' growth expectations. How does Dr. Klein estimate investors' growth expectations in his DCF analysis?

A. 29 Dr. Klein relies on Value Line dividend and earnings per share growth forecasts to estimate investors' growth expectations for his proxy companies, and historical dividend growth to estimate investors' growth expectations for AWK.

1. Value Line's Dividend Growth Forecasts

Q. 30 Do you agree with Dr. Klein's use of Value Line's DPS growth forecasts to estimate the growth component of his DCF model?

A. 30 No. I believe that analysts' EPS growth forecasts are the best proxy for investors' growth expectations in the DCF model.

Q. 31 Does Value Line expect the water utilities' dividends and earnings to grow at the same rate over the Value Line forecast period?

A. 31 No. The Value Line average earnings growth forecast for the water utilities is 8.33 percent, while the Value Line average dividend growth forecast for the water utilities is only 3.67 percent (Klein Exhibit page 5 of 19). Thus, Value Line expects that the water utilities' dividends will grow by 467 basis points less than their earnings over the Value Line forecast period.

Q. 32 Does Value Line's significantly lower dividend growth forecast compared to its earnings growth forecast for the water utilities' indicate that Value Line is forecasting that the water utilities' average dividend payout ratio will decline?

A. 32 Yes. A company's dividend payout ratio is equal to the percentage of earnings that are paid out as dividends. If forecasted dividend growth is expected to be less than forecasted earnings growth, then the forecasted dividend payout ratio is necessarily expected to decline.

Q. 33 Do different dividend and earnings growth rates cause any problems in the application of the DCF Model?

A. 33 Yes. The DCF model is based on the assumption that dividends and earnings will grow at the same rate. If earnings and dividends are expected to grow at diverging rates in the short run, an analyst must decide whether the dividend or earnings growth forecast is the best indicator of long-run future growth.

Q. 34 Is Value Line's forecasted dividend growth rate an important indicator of long-run future growth for water utilities?

A. 34 No. Dividend growth forecasts are, in general, less accurate indicators of long-run future growth than are earnings growth forecasts. When analysts forecast dividend growth, they first must estimate earnings growth and then forecast the percentage of earnings that will be paid out as dividends. Since the percentage of earnings that are paid out as dividends is uncertain, there is an additional element of error present in dividend growth forecasts than is present in earnings growth forecasts.

In addition, Value Line's current average dividend growth forecast for the water utilities is based on its assumption that water utilities are in the process of adjusting to a lower target dividend payout ratio. As shown below, dividends must grow at the same rate as earnings once these companies have achieved their new target dividend payout ratio. Thus, Value Line's forecasted earnings growth rate is a better estimate of long-run dividend growth than its current forecasted dividend growth rate.

Q. 35 Suppose that analysts expect a company's dividends to grow by less than its earnings over the next several years because of the company's transition to a new, lower target dividend payout ratio. Does this situation imply that analysts' earnings growth projections for this company cannot be used to estimate the "g" term in the DCF model?

A. 35 No. To illustrate, suppose that a company's current dividend payout ratio is approximately 75 percent and that the company intends to adjust its dividend payout ratio to 60 percent. Once the company achieves its new dividend payout target, dividends will grow at the same rate as earnings. As long as the transition is relatively short, the earnings growth forecast would still be a good estimate of long-term dividend growth in the DCF Model.[2]

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[2] For any one-year period of time, a company's earnings growth rate is given by the equation:

$$g_E = \frac{E_t}{E_{t-1}}$$

Assuming that the company has achieved its new dividend payout ratio of 60%, its dividend growth rate is given by the equation:

$$g_D = \frac{D_t}{D_{t-1}} = \frac{.6\,E_t}{.6\,E_{t-1}} = \frac{E_t}{E_{t-1}}$$

Q. 36 What DCF result would Dr. Klein have obtained for his water utility group if he had properly excluded the DPS growth forecast from his calculations?

A. 36 Dr. Klein would have obtained an average DCF result equal to 11.4 percent rather than 9.1 percent (Klein Exhibit page 5 of 19).

Q. 37 How do you recommend estimating the future growth component in the DCF model?

A. 37 As described in my written evidence, I recommend using the analysts' forecasts published by I/B/E/S Thomson Reuters.

Q. 38 Why do you believe that the analysts' forecasts of earnings growth are more accurate indicators of investors' growth expectations than the historical growth data provided by Dr. Klein?

A. 38 Security analysts analyze the prospects of companies and forecast earnings. They take into account all available historical and current data plus any additional information that is available, such as changes in projected capital expenditures, regulatory climate, industry restructuring, regulatory rulings, or changes in the competitive environment. The performance of security analysts is measured against their ability to weigh the above factors, to predict earnings growth, and to communicate their views to investors. Financial research indicates that securities analysts are influential, their forecasts are more accurate than simple extrapolation of past growth, and, most importantly, the consensus of their forecasts is impounded in the current structure of market

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Thus, once the company achieves its new dividend payout ratio, dividends must grow at the same rate as earnings.

prices. This is a key result, since a proper application of the DCF model requires the matching of stock prices and investors' growth expectations.

Q. 39 Are analysts' forecasts readily available?

A. 39 Yes. An important part of the analysts' job is getting their views across to investors. Major investment firms send out monthly reports with their earnings forecasts, and institutional investors have direct access to analysts. Individual investors can get the same forecasts through their investment advisors or online. Studies reported in the academic literature indicate that recommendations based on these forecasts are relied on by investors. Indeed, because analysts' forecasts are perceived by investors as being useful, there are services which offer analysts' forecasts on all major stocks. I/B/E/S and Zack's are some of the providers of these data. I recommend use of the I/B/E/S growth rates because they have been: (1) shown to be highly correlated with stock prices; (2) widely studied in the finance literature; and (3) widely available to investors for many years.

Q. 40 Is it your contention that analysts make perfectly accurate predictions of future earnings growth?

A. 40 No. Forecasting earnings growth, for either the short-term or long-term, is very difficult. This statement is consistent with the fact that stocks, unlike high-quality bonds, are risky investments whose returns are highly uncertain. Though analysts' forecasts are not perfectly accurate, they are better than either retention growth rates or historical growth in predicting stock prices. One would expect this result, given that analysts have all the past data plus current

information. The important consideration is: what growth rates do investors use to value a stock? Financial research suggests that the analysts' growth forecasts are used by investors and therefore most related to stock prices.

Q. 41 Does the observation that analysts' growth forecasts are inherently uncertain imply that investors should ignore analysts' growth forecasts in making stock buy and sell decisions?

A. 41 No. Because growth forecasts have a significant influence on a company's stock price, investors have a great incentive to use the best available forecasts of a company's growth prospects, even if these growth forecasts are inherently uncertain. In this regard, the investor's situation is similar to the situation of a pilot who is flying across the country. Although the pilot recognizes that weather forecasts are inherently uncertain, he or she has a strong incentive to obtain the best available forecasts of cross-country weather patterns before taking off.

Q. 42 Have you done research on the appropriate use of analysts' forecasts in the DCF model?

A. 42 Yes. As described in my direct testimony, I prepared a study in conjunction with Willard T. Carleton, Professor of Finance Emeritus at the University of Arizona, on why analysts' forecasts are the best estimate of investors' expectations of future long-term growth. This study is described in a paper entitled "Investor Growth Expectations and Stock Prices: the Analysts versus History," published in the Spring 1988 edition of *The Journal of Portfolio Management*. My studies indicate that the analysts' forecasts of future growth are superior to historically-

oriented growth measures and retention growth measures in predicting a firm's stock price.

Q. 43 Please summarize the results of your study.

A. 43 First, we performed a correlation analysis to identify the historically oriented growth rates which best described a firm's stock price. Then we did a regression study comparing the historical and retention growth rates to the consensus analysts' forecasts. In every case, the regression equations containing the average of analysts' forecasts statistically outperformed the regression equations containing the historical and retention growth estimates. These results are consistent with those found by Cragg and Malkiel, the early major research in this area (John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices, University of Chicago Press, 1982). These results are also consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy and sell decisions. They provide overwhelming evidence that the analysts' forecasts of future growth are superior to historically oriented growth measures in predicting a firm's stock price.

Q. 44 Has your study been updated to include more recent data?

A. 44 Yes. Researchers at State Street Financial Advisors updated my study using data through year-end 2003. Their results continue to confirm that analysts' growth forecasts are superior to historical and retention growth measures in predicting a firm's stock price.

Q. 45 Does Dr. Klein agree with your reliance on analysts' growth forecasts to estimate the future growth component of the DCF model?

A. 45 Dr. Klein does not discuss my use of analysts' growth forecasts other than to note that the analysts' growth forecasts are higher than his growth forecasts (Klein at 16).

Q. 46 What is your overall conclusion regarding the use of analysts' growth forecasts as proxies for investors' growth expectations?

A. 46 I find that the research literature provides strong support for the conclusion that analysts' EPS growth forecasts are reasonable proxies for investor growth expectations.

2. Historical Growth Rates

Q. 47 Do you agree with Dr. Klein's use of historical growth rates to estimate investors' growth expectations in the DCF model?

A. 47 No. Historical growth rates are inherently inferior to analysts' forecasts because analysts' forecasts already incorporate all relevant information regarding historical growth rates and also incorporate the analysts' knowledge about current conditions and expectations regarding the future. My studies described in my direct testimony indicate that investors use analysts' earnings growth forecasts in making stock buy and sell decisions rather than historical growth rates such as those presented by Dr. Klein.

D. DCF Estimate for American Water Works ("AWK")

Q. 48 Does Dr. Klein calculate a DCF cost of equity for TAWC's parent, AWK?

A. 48 Yes. However, Dr. Klein notes that his DCF calculation for AWK "may be unreliable" because "Value Line does not provide earnings growth and its dividend growth rate is extremely high at 16%" (Klein at 11).

Q. 49 Although Value Line does not explicitly provide an earnings growth rate forecast for AWK, does Value Line provide sufficient data to calculate a projected earnings growth rate for the period 2010 to 2015?

A. 49 Yes. Value Line projects that AWK will have earnings per share equal to $1.57 in 2010 and $2.00 in 2013-2015. Thus, Value Line implicitly projects an earnings per share growth rate for AWK equal to 6.24 percent.

Q. 50 Do other investment services such as Thomson Reuters or Zacks report earnings per share growth forecasts for AWK?

A. 50 Yes. Thomson Reuters reports an earnings per share growth forecast for AWK equal to 11.57 percent in January 2011. Zacks reports an EPS growth rate forecast equal to 8.8 percent in January 2011. (EPS growth forecast data for AWK are publicly available on Yahoo Finance and Zacks' websites.)

Q. 51 Dr. Klein notes that Value Line does not explicitly report an earnings per share growth forecast for AWK. Does he nonetheless use a Value Line earnings per share growth forecast to calculate a DCF result for AWK?

A. 51 Yes. Dr. Klein assigns a Value Line earnings per share growth forecast equal to zero percent to calculate a DCF result for AWK.

Q. 52 Is Dr. Klein's use of a zero percent earnings per share growth forecast consistent with his statement that Value Line does not provide an explicit earnings per share growth forecast for AWK?

A. 52 No. Dr. Klein fails to recognize that Value Line's failure to provide an explicit growth forecast does not imply that Value Line believes that AWK's expected earnings growth forecast is equal to zero percent.

Q. 53 Does Dr. Klein attempt to refine his DCF cost of equity estimate for AWK based on AWK's historical dividend growth over the last two years?

A. 53 Yes. Based on AWK's historical five percent dividend growth rate over the last two years, Dr. Klein states, "It is reasonable to assume that investors should expect a minimum dividend growth rate for [AWK] in the neighborhood of five percent" (Klein at 12).

Q. 54 Do you agree with Dr. Klein's assumption of a five percent dividend growth rate in his refined DCF calculation?

A. 54 No. As noted above, Value Line explicitly projects a dividend growth forecast equal to 16 percent for AWK, and implicitly projects an earnings per share growth forecast for AWK equal to 6.24 percent. Furthermore, the analysts are forecasting earnings per share growth forecasts in the 8.8 percent to 11.56 percent. Thus, Dr. Klein's five percent assumed growth rate is significantly less than other available growth forecasts for AWK.

E. Capital Asset Pricing Model

Q. 55 What is the CAPM?

A. 55 The CAPM is an equilibrium model of expected returns on risky securities in which the expected or required return on a given risky security is equal to the risk-free rate of interest plus the security's "beta" times the market risk premium:

Expected return = Risk-free rate + (Security beta x Market risk premium).

The risk-free rate in this equation is the expected rate of return on a risk-free government security, the security beta is a measure of the company's risk relative to the market as a whole, and the market risk premium is the premium investors require to invest in the market basket of all securities compared to the risk-free security.

Q. 56 How does Dr. Klein use the CAPM to estimate TAWC's cost of equity?

A. 56 The CAPM requires estimates of the risk-free rate, the company-specific risk factor, or beta, and either the required return on an investment in the market portfolio, or the risk premium on the market portfolio compared to an investment in risk-free government securities. For the risk-free rate, Dr. Klein uses the 2.10 percent yield on five-year Treasury notes at December 23, 2010 (Klein at 14); for the company-specific risk factor or beta, Dr. Klein uses the current Value Line beta for each company; and for the required return or risk premium on the market portfolio, based on data from Ibbotson, Dr. Klein uses the 7.1 percent difference between the return on common stocks and the income return on five-year Treasury notes (Klein at 14-15).

Q. 57 Do you agree with Dr. Klein's use of the yield to maturity on five-year Treasury notes to estimate the risk-free rate component of the CAPM?

A. 57 No. Because utilities have long expected life times, Dr. Klein should have used the yield to maturity on long-term Treasury bonds to estimate the risk-free rate component of the CAPM. The yield to maturity on five-year Treasury notes is not risk free over the life of the typical utility because the return on a five-year note would have to be reinvested at uncertain interest rates over the life of the

utility. As of the third week in January 2011, the yield to maturity on 20-year Treasury bonds is 230 basis points higher than the yield to maturity on five-year notes.

Q. 58 What CAPM result does Dr. Klein report for his proxy companies?

A. 58 Dr. Klein reports CAPM results in the range 6.36 percent to 7.78 percent (Klein at 15).

Q. 59 Does Dr. Klein's CAPM analysis produce a reasonable estimate of TAWC's cost of equity at this time?

A. 59 No. I believe there are several reasons why the CAPM produces unreasonably low cost of equity results for water and natural gas utilities at this time. First, as a result of the economic crisis, the U.S. Treasury has kept interest rates on Treasury securities low as part of its effort to stimulate the economy. In addition, the betas of utilities are currently approximately 0.70, and the CAPM tends to underestimate the cost of equity for companies whose equity beta is less than 1.0 and to overestimate the cost of equity for companies whose equity beta is greater than 1.0.

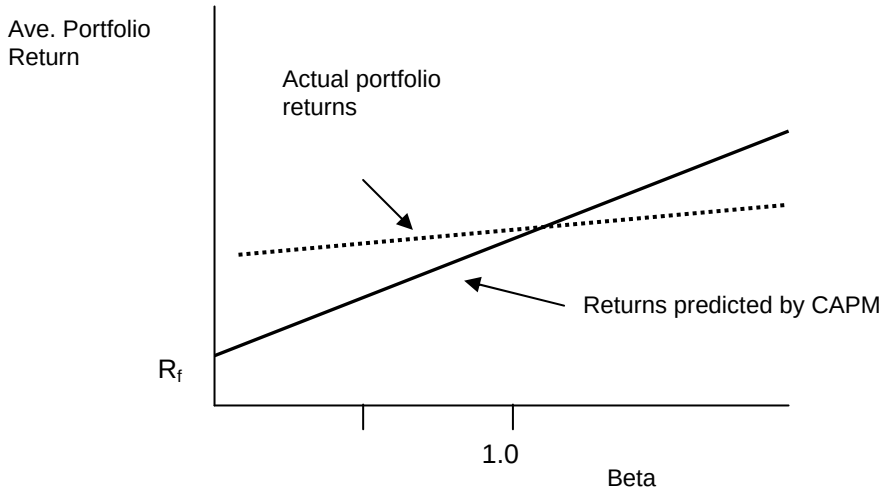
Q. 60 Can you briefly summarize the evidence that the CAPM underestimates the required returns for securities or portfolios with betas less than 1.0 and overestimates required returns for securities or portfolios with betas greater than 1.0?

A. 60 Yes. The CAPM conjectures that security returns increase with increases in security betas in line with the equation

$$ER_i = R_f + \beta_i \left[ER_m - R_f \right],$$

where ER_i is the expected return on security or portfolio *i,* R_f is the risk-free rate, $ER_m - R_f$ is the expected risk premium on the market portfolio, and β_i is a measure of the risk of investing in security or portfolio *i*. If the CAPM correctly predicts the relationship between risk and return in the marketplace, then the realized returns on portfolios of securities and the corresponding portfolio betas should lie on the solid straight line with intercept R_f and slope [$R_m - R_f$] shown below.

Figure 1
Average Returns Compared to Beta
for Portfolios Formed on Prior



Financial scholars have found that the relationship between realized returns and betas is inconsistent with the relationship posited by the CAPM. As described in Fama and French (1992) and Fama and French (2004), the actual relationship between portfolio betas and returns is shown by the dotted line in the figure above. Although financial scholars disagree on the reasons why the return/beta relationship looks more like the dotted line in the figure than the solid line, they generally agree that the dotted line lies above the solid line for

portfolios with betas less than 1.0 and below the solid line for portfolios with betas greater than 1.0. Thus, in practice, scholars generally agree that the CAPM underestimates portfolio returns for companies with betas less than 1.0, and overestimates portfolio returns for portfolios with betas greater than 1.0.

Q. 61 What conclusions do you reach from your review of the literature on the CAPM to predict the relationship between risk and return in the marketplace?

A. 61 I conclude that the financial literature strongly supports the proposition that the CAPM underestimates the cost of equity for companies such as public utilities with betas less than 1.0. Since the CAPM significantly underestimates the cost of equity for companies with betas less than 1.0, and both Dr. Klein's and my proxy companies have betas that are significantly less than 1.0, I further conclude that the Regulatory Authority should give little or no weight to the results of the CAPM at this time.

F. Capital Structure

Q. 62 What capital structure does Dr. Klein recommend for TAWC?

A. 62 As noted above, Dr. Klein recommends a capital structure containing 6.88 percent short-term debt, 58.16 percent long-term debt, 1.24 percent preferred equity, and 33.72 percent common equity.

Q. 63 How does Dr. Klein's recommended capital structure for TAWC compare to the average capital structures of his proxy water utilities and LDCs?

A. 63 Dr. Klein's proxy water utilities and LDCs have average capital structures containing approximately 48 percent to 49 percent common equity (see Vander Weide Rebuttal Schedule 3), whereas his recommended capital structure for

TAWC contains only 33.72 percent common equity (see Correction to Klein Exhibit filed January 21, 2011, page 2 of 19).

Q. 64 Does the risk of investing in a company's stock depend on its capital structure?

A. 64 Yes. The risk of investing in a company's stock depends on the percentage of debt in the company's capital structure. The greater the percentage of debt in the capital structure, the greater the risk of investing in the company's stock.

Q. 65 You note that Dr. Klein estimates TAWC's cost of equity by applying the DCF model and CAPM to proxy groups of water utilities and LDCs. Does Dr. Klein adjust the cost of equity estimates obtained from applying his cost of equity models to his proxy utilities for the differences in the risk of investing in TAWC compared to the risk of investing in the proxy companies?

A. 65 No. Dr. Klein recommends that his estimate of the cost of equity for the proxy companies be applied to TAWC.

Q. 66 Is Dr. Klein's recommendation to apply his estimate of the proxy companies' cost of equity to TAWC consistent with his capital structure recommendation for TAWC?

A. 66 No. Dr. Klein's recommended capital structure for TAWC contains significantly more debt than the average capital structure of his proxy companies. Since highly-leveraged or debt heavy capital structures are more risky than less leveraged capital structures, and investors demand a higher return on investments of greater risk, Dr. Klein should have adjusted his cost of equity

estimate for TAWC upward to reflect the greater risk associated with his recommended capital structure. Instead, Dr. Klein inconsistently recommends that TAWC be allowed: (1) a cost of equity equal to his estimate of the cost of equity for his proxy companies; and (2) a capital structure that is more risky than the average capital structure of his proxy companies.

Q. 67 What conclusion do you reach from your analysis of Dr. Klein's capital structure recommendation?

A. 67 I conclude that Dr. Klein's capital structure recommendation is fundamentally inconsistent with his return on equity recommendation. To be consistent, Dr. Klein must either recommend a higher return on equity that compensates investors for the higher risk of his recommended capital structure, or recommend a capital structure with the same percentages of debt and equity as his proxy companies.

G. Double Leverage

Q. 68 You note that Dr. Klein uses the double leverage approach to estimate TAWC's weighted average cost of capital. What is double leverage?

A. 68 Economists use the term "double leverage" to refer to a situation in which a parent company uses debt, in addition to equity, to finance its investment in the equity of a subsidiary.

Q. 69 What is the double-leverage approach to utility rate making?

A. 69 Advocates of the double-leverage approach argue that leverage at the parent level should be considered in calculating the required rate of return on equity for a utility subsidiary. Specifically, proponents of the double-leverage approach argue that the required rate of return on equity for the subsidiary should be

determined by first calculating the parent company's weighted average cost of capital and then equating the utility subsidiary's cost of equity to the parent's weighted average cost of capital. In other words, double-leverage advocates argue that, somehow, the use by a utility's parent of debt to finance a portion of its equity investment in a utility changes the underlying equity return requirement of the utility. In the context of this proceeding, TAWC is the subsidiary, and AWK is the parent.

Q. 70 Do you have any objections to the double-leverage approach to utility rate making?

A. 70 Yes. I object to the double-leverage approach to utility rate making because it generally violates three fundamental principles of financial economics:

1. The expected or required rate of return on any investment is equal to the expected or required rate of return on other investments of the same risk.
2. The required rate of return on an investment or project depends only on the risk of that investment or project, not on the risk of the owner's other business activities.
3. The required rate of return on an equity investment depends only on the business and financial risks of that investment, not on how the owner finances its equity investment.

In addition, the double-leverage approach is significantly more complex than the straightforward stand-alone approach to setting a utility company's allowed return on equity, and hence is subject to misinterpretation and incorrect application.

Q. 71 Can you illustrate how the double-leverage approach to utility rate making violates the basic financial principle that the required rate of return on an equity investment must equal the required rate of return on other equity investments of the same risk?

A. 71 Yes. Consider an investment in two regulated utilities, Company A and Company B, that face identical business and financial risks. Company A is a stand-alone electric utility with a 50 percent debt and 50 percent equity capital structure, a cost of debt of 6 percent, a cost of equity of 12 percent, and a weighted average cost of capital of 9 percent (9.0 = 0.5 x 6 + 0.5 x 12). Company B is an identical regulated electric utility that has a 50 percent debt and 50 percent equity capital structure and a cost of debt of 6 percent. The only difference between Companies A and B is that Company B is owned by a parent company with an unconsolidated capital structure made up of 30 percent debt and 70 percent equity. Assuming, as do most proponents of the double-leverage approach, that the parent's costs of debt and equity are the same as those of the subsidiary, that is, 6 percent and 12 percent, Company B's parent has a weighted average cost of capital of 10.2 percent (10.2 = 0.3 x 6 + 0.7 x 12).

Because Companies A and B face identical business and financial risks, financial theory mandates that both companies should have the same required rate of return on equity, 12 percent. In contrast, the double-leverage approach generally determines that Companies A and B have different required rates of return on equity: The stand-alone utility Company A has a required rate of

return on equity equal to 12 percent, whereas the utility subsidiary Company B—if the double-leverage approach is applied—appears to have a required rate of return on equity equal to 10.2 percent—the weighted average cost of capital of its parent. Since Companies A and B were assumed to have identical business and financial risks, the double-leverage approach, as traditionally applied, violates the basic principle that the required rate of return on an equity investment in projects of equal risk must be identical.

Q. 72 Why does the application of the double-leverage approach produce the incorrect result that the utility subsidiary, Company B, has a lower required rate of return on equity than the stand-alone utility, Company A, even though Company B has the same business and financial risk as Company A?

A. 72 The application of the double-leverage approach produces the incorrect result that subsidiary Company B has a lower required rate of return on equity than the stand-alone utility Company A because the double-leverage approach, as traditionally applied, incorrectly assumes that the parent's costs of debt and equity are the same as the costs of debt and equity for the subsidiary, even though the parent has greater financial risk than the subsidiary. Financial theory mandates that the costs of debt and equity both increase with increases in financial leverage. Thus, the parent's costs of debt and equity should be higher than those of the utility subsidiary.

Q. 73 Would the double-leverage approach produce the same required rate of return on equity for the utility subsidiary, Company B, and the stand-alone

utility Company A, if the parent's costs of debt and equity were properly adjusted to reflect the financial risk associated with the parent's more highly-leveraged capital structure?

A. 73 Yes. As I explain below, if double-leverage advocates properly adjusted the parent's costs of debt and equity to reflect the increased financial risk associated with the parent's greater financial leverage, the double-leverage approach would produce the same required rate of return on equity for the utility, either as a subsidiary or as a stand-alone utility. In other words, the added risk assumed by a parent company that leverages a stock purchase with debt is comparable to the added risk assumed by an individual investor who borrows money to finance a stock purchase.

Q. 74 As you discuss above, you object to the double-leverage approach because it generally violates the basic financial principle that the required rate of return on an investment or project depends only on the risk of that project, not on the business and financial risk of the owner of the project. Is this principle widely recognized in the financial community?

A. 74 Yes. The financial community recommends using a risk-adjusted discount rate, or cost of capital, for each subsidiary or project when the subsidiary or project risk differs from the risk of the parent. For example, in their widely used text, *Principles of Corporate Finance*, 8th edition, Brealey, Myers, and Allen state at page 234:

> In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is *project risk* that counts.

Likewise, in *Modern Corporate Finance*, 1st edition, Shapiro states at page 276:

> Each project has its own required return, reflecting three basic elements: (1) the real or inflation-adjusted risk-free interest rate; (2) an inflation premium approximately equal to the amount of expected inflation; and (3) a premium for risk. The first two cost elements are shared by all projects and reflect the time value of money, whereas the third component varies according to the risks borne by investors in the different projects. For a project to be acceptable to the firm's shareholders, its return must be sufficient to compensate them for all three cost components. This minimum or *required* return is the *project's cost of capital* and is sometimes referred to as a **hurdle rate**. In discussing how to calculate the project's cost of capital, we begin by assuming the firm is all-equity financed and later relax that assumption.
>
> The preceding paragraph bears a crucial message: *The cost of capital for a project depends on the riskiness of the assets being financed, not on the identity of the firm undertaking the project.* [Original emphasis]

Q. 75 How does the double-leverage approach violate the basic financial principle that the required rate of return on equity depends only on the business and financial risk of the specific investment or project, not on the business and financial risk of the owner of the project?

A. 75 Recall that the double-leverage argument sets the required rate of return on an equity investment in a utility subsidiary equal to the weighted average cost of capital of the parent. However, in general, the after-tax weighted average cost of capital of the parent reflects the business and financial risks of the parent's entire portfolio of business activities. Thus, under the double-leverage approach, if the parent has more operations than a single utility subsidiary, setting the required rate of return on equity for a utility subsidiary equal to the parent's weighted average cost of capital incorrectly ascribes to the utility subsidiary the business and financial risks of the parent's other business

activities. As I earlier pointed out, if we were able to properly remove the impacts of the other business activities, the remaining weighted cost of the parent's capital would be equal to the stand-alone equity cost of the utility subsidiary.

Q. 76 Can you illustrate how the double-leverage approach violates the basic financial principle that the required rate of return on an equity investment does not depend on how the equity investment is financed?

A. 76 Yes. Consider a utility subsidiary that is owned by a parent company that has a capital structure containing 100 percent equity, a single asset consisting of its common equity investment in a utility subsidiary, and a cost of equity of 12 percent. Under the double-leverage approach, the subsidiary's required rate of return on equity will also be 12 percent because the parent's after-tax weighted average cost of capital is 12 percent. Now suppose that the parent sells the utility subsidiary to another parent company that has a capital structure containing 50 percent debt and 50 percent equity, with a cost of debt of 6 percent and a cost of equity of 12 percent. Under the double-leverage approach as traditionally applied, the utility subsidiary's required rate of return on equity would now be 9 percent (9 = .5 x 0.6 + .5 x .12). Thus, according to the double-leverage approach, the transfer of ownership from one parent to another would reduce the utility subsidiary's required rate of return on equity by 300 basis points, even though there has been no change in the subsidiary's business or financial risk.

Q. 77 What conclusions do you reach from your analysis of the double-leverage approach to utility rate making?

A. 77 I conclude that the Tennessee Regulatory Authority should reject the double-leverage approach to determining TAWC's required rate of return on equity because it: (1) violates the three basic principles of financial economics; (2) is significantly more complex than a non-double-leverage approach to utility rate making; and (3) produces the same result as a direct, non-double-leverage approach when it is properly applied.

H. Response to Dr. Klein's Rebuttal Comments

Q. 78 What issues does Dr. Klein have regarding your estimate of TAWC's cost of equity?

A. 78 Dr. Klein disagrees with my: (1) proxy companies; (2) risk premium studies; (3) quarterly DCF model; and (4) allowance for flotation costs [Klein at 17 - 19].

Q. 79 What proxy companies do you use to estimate TAWC's cost of equity?

A. 79 I use the proxy group of Value Line water utilities shown in Schedule 1 of my direct testimony and the proxy group of Value Line natural gas distribution companies shown in Schedule 2 of my direct testimony.

Q. 80 Why does Dr. Klein disagree with your choice of proxy companies?

A. 80 Dr. Klein claims that my proxy group of water and natural gas distribution companies are not comparable in risk to TAWC or AWK because my proxy group of water companies includes several small water companies, and my proxy group of gas companies includes companies that, in his opinion, are not primarily utilities.

Q. 81 Do you discuss the comparability of your proxy company groups to AWK in your discussion of proxy companies above?

A. 81 Yes. I demonstrate above that my proxy groups of water and gas companies are comparable in risk to AWK based on data from Value Line and Standard & Poor's. With regard to the water companies, I demonstrate that my proxy group of water companies has a Value Line Safety Rank in the range 2 to 3, and Standard & Poor's bond rating of A. In my direct testimony, I note that my proxy natural gas utility group has a Value Line Safety Rank of 2. AWK has a Value Line Safety Rank equal to 3 and a Standard & Poor's bond rating of BBB+.

Q. 82 How does the risk of Dr. Klein's proxy group of three water utilities compare to the average risk of your larger group of water utilities?

A. 82 As I discuss above, Dr. Klein's smaller group of water utilities has approximately the same average risk as my larger proxy group of water utilities as measured by Value Line Safety Rank and S&P bond rating.

Q. 83 Do you also discuss above why you recommend that the Regulatory Authority accept your larger group of utilities?

A. 83 Yes. For the reasons discussed above, the cost of equity results based on a larger proxy group are more reliable than the results based on a small proxy group like Dr. Klein's.

Q. 84 What are Dr. Klein's comments on your risk premium analysis?

A. 84 Dr. Klein disagrees with my risk premium approach because I compare the returns on utility stocks to the returns on utility bonds, and, in his opinion,

returns on utility bonds are subject to both inflation and default risk, but returns on utility stocks are not.

Q. 85 Do you agree with Dr. Klein's opinion that returns on utility stocks are not subject to inflation or default risk?

A. 85 No. Returns on utility stocks are subject to the risk of inflation because utility stocks typically decline when inflation expectations increase and increase when inflation expectations decrease. Returns on utility stocks are subject to default risk because equity values are eliminated or virtually eliminated when utilities default on the interest payments on their bonds.

Q. 86 Dr. Klein also criticizes your use of the quarterly DCF model and your inclusion of flotation costs. Have you discussed why it is appropriate to recognize the quarterly timing of dividend payments and the existence of flotation costs in calculating the cost of equity in your direct testimony?

A. 86 Yes. I discuss the importance of recognizing the quarterly timing of dividends in my direct testimony (pp. 14 – 16) and also above in this testimony. I also discuss the importance of recognizing flotation costs in my direct testimony (p. 21).

Q. 87 Dr. Klein claims that adjustments for quarterly dividend payments and flotation costs are not required because the firm will have sufficient funds to pay quarterly dividends when it earns profits evenly over the year, and higher profits are sufficient to offset any adjustment for flotation costs. Do you agree with Dr. Klein's analysis of quarterly dividend payments and flotation costs?

A. 87 No. The DCF cost of equity reflects the timing of dividend payments to investors, not the timing of profits to the firm. Because dividends are paid quarterly, the stock price will reflect the present value of the quarterly payment of dividends. As I discuss above, Dr. Klein's annual DCF model cannot be derived from the assumption that dividends are paid quarterly. Only the quarterly DCF model reflects the fact that dividends are paid quarterly.

III. REBUTTAL OF MR. GORMAN

Q. 88 Does Mr. Gorman perform cost of equity studies or recommend a rate of return for TAWC in his testimony in this proceeding?

A. 88 No. However, Mr. Gorman states his opinion that TAWC's recommended rate of return in this proceeding is not "reasonable" compared to the rate of return that was approved for TAWC in its last rate proceeding (Gorman at 23).

Q. 89 How does Mr. Gorman attempt to support his opinion that TAWC's requested return is not reasonable?

A. 89 Mr. Gorman provides an exhibit which shows average allowed returns for gas and electric utilities, average yields on utility bonds, and average yields on U.S. Treasury debt. Mr. Gorman concludes that the data he presents demonstrates that TAWC's cost of equity has not increased since its last rate proceeding.

Q. 90 Mr. Gorman's exhibit shows interest rate data through the third quarter 2010. How do current interest rates on A-rated and Baa-rated utility bonds and 30-year U.S. Treasury bonds compare to the rates shown on Mr. Gorman's exhibit?

A. 90 As shown in the table below, interest rates have risen significantly since the third quarter 2010: by almost 50 basis points for A-rated utility bonds, by nearly 40 basis points for Baa-rated utility bonds, and by nearly 70 basis points for 30-year Treasury bonds.

TABLE 1
COMPARISON OF INTEREST RATES Q3 2010 TO JANUARY 2011
(MONTH TO DATE AS OF JANUARY 21, 2011)[3]

PERIOD	AVERAGE A-RATED UTILITY BOND YIELD	AVERAGE BAA-RATED UTILITY BOND YIELD	AVERAGE 30-YR. TREASURY BOND YIELD
2010 Q3	5.09%	5.69%	3.85%
January-11	5.55%	6.06%	4.51%
Change	0.46%	0.37%	0.66%

Q. 91 What conclusions do you reach from your analysis of Mr. Gorman's data on allowed returns and interest rates?

A. 91 I believe that it is not appropriate to determine allowed rates of return on equity in this jurisdiction solely by referring to allowed rates of return on equity in other jurisdictions. In my opinion, the allowed rate of return on equity decision should be based on the application of sound economic models to current financial data. At the very least, if the Authority is to refer to information on allowed rates of return and interest rates, it should recognize that Mr. Gorman presents data through the third quarter of 2010 and that interest rates have increased since that time.

[3] 2010 Q3 data are from Mr. Gorman's Exhibit MPG-7, page 1 of 2. Data as of January 21, 2011, are from Mergent and the Federal Reserve.

Q. 92 Does this conclude your rebuttal testimony?

A. 92 Yes, it does.

TENNESSEE AMERICAN WATER COMPANY
REBUTTAL SCHEDULE 1
COMPARISON OF WATER COMPANIES'
VALUE LINE SAFETY RANKS AND STANDARD & POOR'S BOND RATINGS[4]

LINE	COMPANY	SAFETY RANK	S&P BOND RATING	S&P BOND RATING (NUMERICAL)
1	Amer. States Water	3	A	4
2	Amer. Water Works	3	BBB+	6
3	Aqua America	3	A+	3
4	Artesian Res. 'A'	2		
6	California Water	3	A+	3
7	Connecticut Water	2	A	4
8	Middlesex Water	2	A-	5
9	Pennichuck	3	NA	
10	SJW Corp.	3	A	4
11	York Water	2	A-	5
12	**Average**	**2.6**	**A**	**4.3**
13	**Amer.Water Works**	**3**	**BBB+**	**6**

VALUE LINE SAFETY RANK AND STANDARD & POOR'S BOND RATING
FOR KLEIN PROXY WATER COMPANIES

LINE	COMPANY	SAFETY RANK	S&P BOND RATING	S&P BOND RATING (NUMERICAL)
1	Amer. States Water	3	A	4
2	Aqua America	3	A+	3
3	California Water	3	A+	3
4	**Average**	**3**	**A+**	**3.3**
5	**Larger Set Water Cos.**	**2.6**	**A**	**4.3**

[4] Data from Value Line Investment Analyzer, Standard & Poor's, July 2010.

TENNESSEE AMERICAN WATER COMPANY
REBUTTAL SCHEDULE 2
SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS
FOR PROXY WATER COMPANY COMPANIES
UPDATED TO USE DATA THROUGH DECEMBER 2010

LINE NO.	COMPANY	D_4	P_0	I/B/E/S GROWTH	VALUE LINE FORECASTED GROWTH	AVERAGE GROWTH	COST OF EQUITY
1	Amer. States Water	0.260	36.512	7.50%	9.00%	8.25%	11.6%
2	Amer. Water Works	0.220	24.337	11.57%	NA	11.57%	16.0%
3	Aqua America	0.155	21.450	7.00%	7.50%	7.25%	10.5%
4	Artesian Res. 'A'	0.189	19.039	4.00%	NA	4.00%	8.4%
5	California Water	0.298	37.307	8.67%	7.00%	7.84%	11.6%
6	Middlesex Water	0.183	17.903	8.00%	NA	8.00%	12.8%
7	Pennichuck	0.185	25.532	9.00%	NA	9.00%	12.4%
8	York Water	0.131	16.345	6.00%	NA	6.00%	9.6%
9	Average						11.6%

Notes:

d_0 = Most recent quarterly dividend.
d_1,d_2,d_3,d_4 = Next four quarterly dividends, calculated by multiplying the last four quarterly dividends per *Value Line* by the factor (1 + g).
P_0 = Average of the monthly high and low stock prices during the three months ending December 2010 per Thomson Reuters.
FC = Flotation costs expressed as a percent of gross proceeds.
g = Average of analysts' and Value Line forecasts of future earnings growth January 2011.
k = Cost of equity using the quarterly version of the DCF model shown by the formula below:

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0(1-FC)} + g$$

TENNESSEE AMERICAN WATER COMPANY
REBUTTAL SCHEDULE 3
PERCENT EQUITY IN CAPITAL STRUCTURE
KLEIN PROXY COMPANIES

COMPANY	Q3 2010	Q2 2010	Q1 2010	Q4 2009
Amer. States Water	51.0%	52.0%	52.6%	52.6%
Aqua America	42.6%	42.2%	42.8%	42.9%
California Water	49.9%	49.0%	50.2%	51.3%
Average	**47.8%**	**47.8%**	**48.5%**	**48.9%**
AGL Resources	44.9%	46.6%	41.4%	43.3%
Atmos Energy	48.7%	51.6%	51.9%	49.0%
NiSource Inc.	39.7%	41.5%	41.1%	41.9%
Northwest Nat. Gas	45.9%	48.2%	48.6%	47.2%
Piedmont Natural Gas	49.8%	52.0%	55.0%	47.8%
South Jersey Inds.	46.9%	49.5%	53.3%	50.0%
Southwest Gas	51.0%	51.4%	50.8%	46.4%
WGL Holdings Inc.	62.6%	66.5%	60.9%	57.6%
Average	**48.7%**	**50.9%**	**50.4%**	**47.9%**

Source of data: Thomson Reuters

TENNESSEE REGULATORY AUTHORITY

STATE OF NORTH CAROLINA

COUNTY OF DURHAM

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for the State and County aforesaid, personally came and appeared James H. Vander Weide, being by me first duly sworn deposed and said that:

He is appearing as a witness on behalf of Tennessee-American Water Company before the Tennessee Regulatory Authority, and if present before the Authority and duly sworn, his rebuttal testimony would set forth in the annexed transcript consisting of 36 pages.

James H. Vander Weide

James H. Vander Weide

Sworn to and subscribed before me
this 4 day of February 2011.

A. C. Knudsen

Notary Public

My commission expires 2/29/2012.