BEFORE THE STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES
OFFICE OF ADMINISTRATIVE LAW

IN THE MATTER OF THE PETITION OF ELIZABETHTOWN WATER COMPANY FOR AN INCREASE IN RATES FOR WATER SERVICE AND OTHER TARIFF MODIFICATIONS	**) BPU Docket No. WR03070510)OAL Docket No. PUCRL 07281-2003N)))**

DIRECT TESTIMONY AND EXHIBITS OF JAMES A. ROTHSCHILD ON BEHALF OF THE NEW JERSEY DIVISION OF THE RATEPAYER ADVOCATE

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I. STATEMENT OF QUALIFICATIONS OF JAMES A. ROTHSCHILD

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is James A. Rothschild and my address is 115 Scarlet Oak Drive, Wilton Connecticut 06897.

Q. WHAT IS YOUR OCCUPATION?

A. I am a financial consultant specializing in utility regulation. I have experience in the regulation of electric, gas, telephone, sewer, and water utilities throughout the United States.

Q. PLEASE SUMMARIZE YOUR UTILITY REGULATORY EXPERIENCE.

A. I am President of Rothschild Financial Consulting and have been a consultant since 1972. From 1979 through January 1985, I was President of Georgetown Consulting Group, Inc. From 1976 to 1979, I was the President of J. Rothschild Associates. Both of these firms specialized in utility regulation. From 1972 through 1976, Touche Ross & Co., a major international accounting firm, employed me as a management consultant. Touche Ross & Co. later merged to form Deloitte Touche. Much of my consulting at Touche Ross was in the area of utility regulation. While associated with the above firms, I have worked for various state utility commissions, attorneys general, and public advocates on

regulatory matters relating to regulatory and financial issues. These have included rate of return, financial issues, and accounting issues. (See Appendix B.)

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received an MBA in Banking and Finance from Case Western University (1971) and a BS in Chemical Engineering from the University of Pittsburgh (1967).

II. PURPOSE

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. The purpose of this testimony is to determine the cost of capital that is appropriate to apply to Elizabethtown Water Company ("EWC" or the "Company"). Additionally, this testimony will provide an evaluation of the testimony of EWC's cost of capital witness, Pauline M. Ahern.

III. CASE OVERVIEW, SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. Case Overview

Q. PLEASE BRIEFLY SUMMARIZE YOUR FINDINGS.

A.. In consideration of the tax law change and other changes in the capital markets, I recommend that EWC be allowed a cost of equity of 9.10%. This 9.10% should be applied to the capital structure containing 41.79% common equity that has been requested by EWC. The Company requested common equity ratio of 41.79% is appropriate. Because of changes in the federal income tax law and the current financial environment the cost of equity to EWC should be lower than has been allowed by the BPU in cases that were decided based upon records developed prior to the mid-2003 passage of the tax law

Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPTIAL PORTION OF THIS CASE.

A. As we generally see in rate cases, there is a dispute as to what the proper cost of equity to allow to EWC. Ms. Ahern has inappropriately used non-constant growth rates in the constant growth form of the DCF model she has presented. These non-constant growth rates take the form of historical growth rates and short-term growth rates when applying her DCF method. Ms. Ahern also has erroneously used the arithmetic mean instead of the geometric mean when applying her risk premium and CAPM analyses. All of these mistakes contribute to a cost of equity that is higher than can be justified.

Q. WHAT HAS EWC REQUESTED?

A. EWC has requested it be allowed a cost of equity of 11.60%. This request is considerably above the 10.00% that was authorized for EWC by the Board in the Order Adopting Initial Decision/Settlement dated April 2, 2001. It is also considerably more than the 9.50% to 9.75% cost of equity the BPU has allowed in recent electric cases and the 9.10% I have recommended in this case. Unlike the cost of equity recommended by Ms. Ahern, my cost of equity recommendation can be reconciled to the returns allowed in these recent New Jersey electric rate cases. An important reconciling factor is the tax law change. The new federal income tax law that was passed in late May, 2003, in-and-of itself justifies a lowering of the cost of equity by at least 0.50%.

B. Summary of Conclusions.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS IN THIS CASE.

A. The overall cost of capital that should be allowed to EWC in this proceeding is 6.96%. This 6.96% overall cost of capital is based upon a cost of equity of 9.10% and the same capital structure the same capital structure being requested by the company. In computing this overall cost of capital, I used the company requested cost of debt of 5.99% for long-term debt, and the company requested cost of preferred stock of 7.37%. However, I recommend using an estimated 2.00% cost for short-term debt instead of the 3.53% requested by the Company.

EWC's cost of short-term debt is simply an amount charged to it by its parent, Thames. Even this 2.00% I have recommended is higher than what is generally being incurred as a cost for short-term debt in the current financial marketplace

IV. CAPITAL STRUCTURE AND EMBEDDED COST RATES

Q. HOW HAVE YOU DETERMINED THE CAPITAL STRUCTURE IN THIS PROCEEDING?

A. I have adopted the capital structure requested by the company, consisting of 47.20% long-term debt, 8.96% short-term debt, 2.05% preferred stock, and 41.79% common equity. See Schedule JAR 1.

Q. HAVE YOU MADE ANY ADJUSTMENTS TO THE COMPANY REQUESTED CAPITAL STRUCTURE?

A. While there is a conceptual flaw in the way Ms. Ahern presented the capital structure, the impact of her error in this case is very small[1]. Therefore, even though her approach is incorrect, I have not proposed an adjustment in this case. Ms. Ahern's decision to violate using the actual capital structure because of debt acquisition is inappropriate because funds are fungible. Just because the company might have issued new debt in a slightly larger quantity because it had to pay a re-acquisition premium does not mean the company's appropriate capital structure changed. Good management manages the entire capital to optimize the cost of capital; therefore even if one debt issuance might be a little bit on the high side, the impact of this is appropriately offset through actions such as changing the amount of earnings retained or the size and timing of the next equity issuance.

[1] Using the correct calculation of capital structure the percentage of common equity is 41.76% instead of the 41.79% presented by Ms. Ahern.

Q. WHAT DID YOU USE FOR THE EMBEDDED COST OF LONG-TERM DEBT, PREFERRED STOCK, AND SHORT-TERM STOCK?

A. I have adopted the cost rates proposed by the company for long-term debt and for preferred stock. However, the 3.53% cost of short-term debt requested by the company is atypically high. In most if not all other utility company proceedings I have reviewed this year, the cost of short-term debt has been below 2.0%, an amount that is considerably lower than the 3.53% short-term debt cost rate requested by EWC. For example, in an interrogatory response, Public Service Electric & Gas stated that its cost of short-term debt as of September 2, 2003 was 1.22%. Similarly, Washington Gas Light has a current cost of short-term debt of 1.894%[2] and Connecticut Light & Power Company's cost of short-term debt is 1.88%.[3]

Q. IS IT PROPER TO VIEW THE CAPITAL STRUCTURE OF ELIZABETHTOWN WATER ON A STAND-ALONE BASIS?

A. No. Now that Elizabethtown Water is owned by RWE Ag, a correct analysis of the capitalization of Elizabethtown Water includes the impact of RWE Ag. The Standard & Poors report provided by the Company in response to RAR-ROR-39 confirms this. The S&P report starts out its bond rating rationale section by stating:

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[2] Washington Gas Light. Formal Case No. 989.

[3] CL&P. Docket No. 03-07-02.

> The ratings of Elizabethtown Water Co. reflect the consolidated credit profile of its ultimate parent, German multiutility RWE Ag. The consolidated credit profile reflects an above average business position offset by consolidated financial profile that is adequate for the rating.

The same S&P report on Elizabethtown Water goes on to say in the first sentence under the section entitled "Liquidity":

> Elizabethtown's liquidity reflects that of the parent company, RWE, which meets all of Elizabethtown's funding requirements.

Finally, S&P begins its section entitled "Outlook" as follows:

> The negative outlook on Elizabethtown Water reflects the outlook of its ultimate parent, RWE. The negative outlook on RWE reflects the limited financial headroom at the current rating level.

In light of the importance the RWE Ag capital structure and business activities has on Elizabethtown Water, it would be improper to automatically adopt the Elizabethtown Water "actual" capital structure for ratemaking purposes. In this case, the "actual" capital structure that was requested is reasonable. In the future, looking to the Elizabethtown capital structure could be inappropriate especially if the financial characteristics of the Elizabethtown Water stand alone capital structure exceed those of its bond rating.

V. COST OF COMMON EQUITY

A. Introduction

Q. HOW DID YOU DETERMINE THE COST OF EQUITY, AND WHAT WERE YOUR FINDINGS?

A. I determined the cost of equity to EWC by applying two different version of the Discounted Cash Flow ("DCF") method and two different version of the Risk Premium/CAPM method. Based upon the analyses I conducted, I find that the cost of equity to EWC and applicable to a capital structure containing 41.79% common equity is 9.10%.

Q. WHAT IS THE COST OF EQUITY?

A. The cost of equity is the rate of return that must be offered to a common equity investor in order for that investor to be willing to buy the common stock. The rate of return is earned in two different ways. One part of the return is from a dividend. The other part of the return is through the change in the stock price. Investors buy stock to benefit from the total return. Total return is the sum of the dividend income and the profit (or loss) obtained from the change in the stock price. While dividends are common in the utility industry, many companies do not pay a dividend at all. Yet, investors are willing to buy the stock if they feel that the likely capital appreciation will offset the lack of any dividend income. Common equity investors do not know with certainty what the stock price will be in the future. Also, investors are not certain at what rate future dividends might be increased or decreased. They also recognize that the possibility exists that

dividends could be totally eliminated. Therefore, common equity investment always entails risk, but the risk can vary greatly from company to company.

The above description of the cost of equity might sound to some like a description of the DCF method because it talks about dividend yield and stock price appreciation. Perhaps a major part of the reason that the DCF method has been so commonly used over the years is because, more than any other method, it directly examines these factors that provide the incentive for investors to buy common stock in the first place. The DCF method starts with the current dividend yield, and adds to that dividend yield an estimate of growth to arrive at the estimated cost of capital. This growth is really the estimate of the future capital appreciation that investors are expecting. Dividend growth, book value growth, and earnings growth, to the extent they may be used, are only relevant to the degree they can help estimate stock price appreciation.

The risk premium method, which in a generic sense includes the CAPM method, is also commonly used by witnesses in rate proceedings. The risk premium/CAPM method is really measuring the very same thing as the DCF method --- the total return expected by a common stock investor. However, rather than determining this total return by directly estimating future dividends and capital appreciation, the method is looking either to interest rates or the inflation rate to help estimate what total return common stock investors want.

The return an investor cares about is best measured as the return on market price. An investor who buys a common stock at $10.00 per share and sells it a year later for $10.90 will have received a 9% return (plus dividends, if any)

irrespective of whether or not the company earned any money, and irrespective of the return on book value. However, utility commissions have the responsibility of balancing the interests of investors and ratepayers. Therefore, if it can be determined that investors are willing to buy stock with the EXPECTATION of being able to earn an annual return of 9%, then a commission should set rates so that the return on used and useful rate base is at the level where the future return on book value is expected to be 9%. If the market price should happen to be below book value, this would NOT be justification for providing a lower return than the cost of equity demanded by investors. If the market price should happen to be above book value, this would NOT be justification for providing a higher return than the cost of equity demanded by investors. As the U. S. Supreme Court found in its decision in the Federal Power Commission v. Hope Natural Gas case (320 US 591-660), p. 602 the stock price is "… the end product of the process of rate-making not the starting point…" and that "… the fact that the value is reduced does not mean that the regulation is invalid."

B. Summary of Conclusions on Cost of Equity

Q. WHAT IS THE COST OF EQUITY TO APPLY TO EWC?

A. Using the capital structure requested by the company witness Ms. Ahern, the cost of equity to EWC currently is 9.10%. If we use the average capital structure of all the Water companies covered by Value Line EWC's cost of equity is still 9.10% because Ms. Ahern's requested capital structure is very similar to the average water companies covered by Value Line. This is based upon the results of both the DCF method and the risk premium/CAPM method. See Schedule JAR 2.

Q. HOW DID YOU ARRIVE AT YOUR RECOMMENDED COST OF EQUITY?

A. I reviewed the results of the methods shown on Schedule JAR 2. The results shown on Schedule JAR 2 were developed from the DCF method and the risk premium/CAPM method. I applied both the constant growth version of the DCF method and the complex DCF method.

The DCF cost of equity for comparative water companies is indicated to be 8.22% to 9.36% depending upon whether average or spot stock prices are used, the group of companies used, or whether the single-stage or multi-stage approach to the DCF method is applied.

As also shown on the bottom of Schedule JAR 2, the risk premium/CAPM method is indicating a cost of equity range of 8.42% based upon historical returns

and applicable to the water utility risk category to 9.70% based upon a study of inflation premiums and applicable to an equity investment of average risk. I have analyzed the results, which indicate a cost of equity of 9.00% for the average water company.

Q. IS YOUR RECOMMENDATION CONSERVATIVELY HIGH?

A. Yes. I did not adjust my cost of equity down even though I recognized that in the current marketplace the DCF method generally overstates the cost of equity. This is because:

> There is a general tendency for analysts' forecasts to be overly optimistic about future earnings prospects.

Recognizing that analysts' habitual optimism causes the DCF method to overstate the cost of equity, I noted that the constant growth version of the DCF method as applied to the comparative group of water utilities is 8.89% to 9.23%. I also found that the cost of equity indicated by the multi-stage version of the DCF method applied to the same group of water utilities varied between 8.22% and 9.36% depending upon the company group used and the stock price time period, spot price or average for the year. The cost of equity indicated by the risk premium/CAPM method as applicable to water utility companies varies from 6.37% to 10.00%. See – Schedule JAR 2.

By being conservative and giving more weight to the DCF result even though the DCF result is currently overstating the cost of equity, I find that the proper cost of equity to allow to a water utility of average risk is 9.00%. I

added 0.10% to this cost of equity to allow for the slightly higher financial risk inherent in the capital structure being requested by EWC.

C. Cost of Equity Impact Caused by New Federal Income Tax Law Change

Q. HAVE THE FEDERAL TAX LAW CHANGES RECENLTY ENACTED IMPACTED THE COST OF EQUITY FOR ELIZABETHTOWN WATER COMPANY?

A. Yes. The new U.S. tax cut law results in a large tax savings to equity investors, especially equity investors who own dividend paying utility stocks. Under the old law, dividends were taxed at rates that typically were 30% or more[4]; now dividends are taxed at no more than 15%. Under the old law long-term capital gains were taxed at 20% and now they also will be taxed at no more than 15%[5]. The result of this tax cut is that a greater percentage of dividends and capital gains are kept by investors. Because income taxes are lower, the cost of equity allowed by the BPU in the past, assuming all else equal, needs to be reduced by about 0.50%, or 50 basis points. Reducing the allowed return by 0.50% will result in

[4] Prior to the tax law change, federal income tax rates were 10%, 15%, 27%, 30%, 35%, or 38.6% depending upon the relevant income bracket. Under the newly passed law, the 27% drops to 25%, the 30% to 28%, the 35% to 33% and the 38.6% to 35%. Since the old 27% tax bracket applied to married couples with a combined income of no more than $47,450, it is reasonable to say that the dollar weighted dividends paid to most individual investors were in brackets of between 27% and 38.6%.

[5] Merrill Lynch "President Bush Signs Tax Bill Into Law" May 29, 2003.

the investor receiving the same after-tax return that he or she achieved under the old tax law.

Schedule JAR 11, p.2 shows that under the old tax law, a cost of equity of 8.84% provided the investor with an after tax return of 7.50%. As also shown on Schedule JAR11, p.3 the new tax law provides investors with an after-tax return of 8.11%, 0.61% more than under the old tax law.

The current tax law technically expires after 2008. However, the May 31, 2003, issue of the Economist says, "…the chances of politicians letting the taxes reappear are slim."[6] Since the new tax law could expire at the end of 2008, I used a DCF analysis to calculate the tax effect assuming tax rates return to 20% for long-term capital gains and 30% for dividends in 2009. In the unlikely case that the new tax law should only be temporary, investors who hold the stock for 40 years would still receive a 0.10% greater after tax return on equity compared to the return under the old tax law. Investors with a time horizon shorter than 40 years would receive greater than a 0.10% benefit from the new tax law even under the unlikely assumption that the tax reduction is temporary. See Schedule JAR 11, p.2 .

Q. WHY DOES A REDUCTION IN THE INCOME TAX RATE PAID BY COMMON STOCK INVESTORS LOWER THE COST OF EQUITY THAT THE COMMISSION SHOULD ALLOW TO EWC?

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[6] The Economist, "Disingenuous and Risky" May 31, 2003, page 13.

Investors care about maximizing the return on investment that they keep rather than simply maximizing the before-tax return an investment may return. This is why tax-free bonds pay a lower interest rate than taxable bonds. The cost of equity the Commission allows is the return a company is allowed to earn after paying income taxes. However, the cost of equity allowed by the BPU is the rate earned by the investor before the investor pays income taxes on dividends or capital gains. When there is a change to the tax rate the investor pays on interest and on capital gains, there is a corresponding change in the return the Commission must allow to give the investor the same return.

In the past, when there has been a tax law change in the income tax rate paid by EWC on its income, the income tax expense included an operating expense charge. For that very same reason it is appropriate to alter the tax allowance when the corporate tax rate changes, and it is equally important to change the cost of equity allowance when the individual income tax rate changes.

Q. YOU EXPLAINED EARLIER IN YOUR TESTIMONY THAT WHEN THE BPU IS COMPARING WHAT WAS ALLOWED IN RECENT WATER CASES AND WHAT IT SHOULD NOW ALLOW, IT SHOULD CONSIDER THE IMPACT OF THE NEWLY PASSED TAX LAW. PLEASE QUANTIFY THE IMPACT.

A. While the consensus in the marketplace appears that the tax law will become permanent, there is some chance this tax cut will be temporary. The tax reduction

lowers the cost of equity. The cost of equity impact was quantified by separately examining the following:

1) A present value analysis of cash flows assuming:

A) 40-year holding period with no tax law change;

B) 40-year holding period assuming the old tax law returns after 7 years;

C) A one-year holding period.

2) An examination of AAA corporate bonds versus the AAA tax-free municipal bonds.

Q. WHY DID YOU USE A 40-YEAR HOLDING PERIOD IN YOUR DCF ANALYSIS?

A. I used a 40-year holding period in my DCF analysis because a long-term perspective is appropriate to fairly evaluate the impact on investors. Almost no investors will hold a stock for 40 years but they eventually will sell to another investor who also will be affected by the new tax environment.

Q. IF YOU SHORTEN THE HOLDING PERIOD DOES IT REDUCE THE SAVINGS AVAILABLE FROM THE NEW TAX LAW?

A. No. If it is assumed that an investor sells the stock after only one year, the after-tax return on equity increases by 0.78% or a slightly greater savings than the 0.62% savings shown in the assumed 40-year holding period case. JAR 11, p.5.

Q. ARE THERE ANY EXISTING INVESTMENT PRODUCTS THAT CAN BE USED FOR COMPARISON PURPOSES TO EVALUATE THE IMPACT OF THE NEW TAX BILL?

A. Yes. The AAA 20-year tax-free municipal bond and it provides a return of 4.35%[7]. Unlike the Municipal bonds, interest income from corporate bonds is taxed. AAA Corporate bonds offer a return of 5.65%[8]. The interest rate paid on AAA tax-free municipal bonds is 23.0% less than on AAA taxable corporate bonds. A 23.0% reduction in the 8.84% DCF cost of equity is a reduction of 2.00%. Since the new tax law approximately cuts the income tax rate in half, not totally eliminating the tax paid by an equity investor, the interest rate differential between taxable and tax free bonds indicate that the cost of equity will drop by 1.02% (2.03% / 2) as a result of the new tax law. See Schedule JAR 11, p.6. To be conservative, I interpret the results to mean that as a result of the new income tax law, the cost of equity has declined by at least 0.50%.

[7] Yahoo Finance, November 6, 2003
[8] Yahoo Finance, November 6, 2003

VI. EVALUATION OF THE TESTIMONY OF PAULINE M. AHERN

A. Summary

Q. PLEASE SUMMARIZE THE TESTIMONY OF MS. AHERN.

A. Ms. Ahern has recommended that Elizabethtown Water Company be allowed a return on equity of 11.60%, and an overall cost of capital of 8.15%. She arrived at this recommendation from an analysis of the common stock for a proxy group of water companies. The methods that she presented to quantify the cost of equity were the DCF, Risk Premium (RP), Capital Asset Pricing Model (CAPM), and comparable earnings. See Page 5 of Ms. Ahern's direct testimony.

An analysis of Ms. Ahern's testimony shows that her RP and CAPM approaches are basically one method in two different packages. The result obtained from these "two methods" both rely heavily upon historic actual returns being used as a proxy for what investors expect for the future without any evaluation of this assumption, and both quantify the historic return using a method that does not compound the annual returns. Using historic returns overstates the risk premium because, as noted by Federal Reserve Chairman Alan Greenspan and others, risk premiums have declined over the last ten years.[9] Using the arithmetic average instead of the geometric average is yet another error that Ms. Ahern has incorporated in both of her risk premium methods. Because Ms. Ahern's RP and CAPM methods contain the same two basic errors, by treating them as two

[9] As noted in Appendix A of this testimony, the quote from Federal Reserve Board Chairman Greenspan provided earlier in this testimony, and as available on the Federal Reserve Board's website at http//www.bog.frb.fed.us/boarddocs/speeches/1999/10001014.

separate methods, Ms. Ahern's result is all the more influenced by these mistakes. Because of both faulty assumptions in the determination of the growth rate, Ms. Ahern's DCF method also results in an overstatement of the cost of equity.

B. DCF Method

Q. PLEASE SUMMARIZE THE DIFFERENCES BETWEEN THE DCF APPROACHES AS USED BY YOU AND BY MS. AHERN.

A. Ms. Ahern's approach to the DCF method is overly simplistic in the way that it estimates future growth. The overly simplistic approach to growth causes the growth rate to be overstated.

Ms. Ahern estimated the long-term sustainable growth rate for use in her DCF model by examining an array of non-constant growth rate indicators. She did nothing to examine the degree that the indicators she examined are inconsistent with the measurement of the sustainable growth rate that is REQUIRED in the constant growth version of the DCF model. Since accuracy of the constant growth version of the DCF method that she used is highly dependent upon the selection of a growth rate that is realistically sustainable into the future for much more than five years, Ms. Ahern's approach to quantifying growth is improper. Later in this testimony, I will explain in more detail why the growth rate chosen by Ms. Ahern is a very inaccurate proxy for long-term sustainable growth. In contrast to Ms. Ahern, I used a growth rate that determines what return on book equity analysts expect will occur in the future. From that future expected return

on equity, I computed a long-term sustainable growth rate. By doing this, I derived a growth rate that is mathematically consistent with the requirements of the constant growth DCF formula. In addition to using the constant growth version of the DCF formula, I also presented a non-constant growth version of the DCF method. In this non-constant growth approach, I separately discounted each future year's expected cash flow.

Q. DOES YOUR APPLICATION OF THE DCF METHOD IN A MATHEMATICALLY APPROPRIATE WAY MEAN THAT YOUR DCF APPROACH IS ABSOLUTELY PRECISE?

A. There is no way to determine with absolute precision what investors, in aggregate, expect for future cash flows, so some imprecision remains. Properly applied, the DCF model is based upon a forecast of investors' future cash flow expectations. In most situations regarding utility common stocks, a critical determinant of the future levels of cash flow that a utility company will be able to achieve is investors' expectation for the value of the future return on book equity, "r", that either a specific company or the group of comparable companies will be able to earn in the future. This is because the return on book equity is a key determinant of the earnings per share that a company can reasonably expect to achieve in the future. Earnings per share is a critical determinant of future cash flow that an investor can expect to achieve because all of the earnings achieved in the future are either used to pay a dividend to investors, or are reinvested in the business. If paid out as a dividend, then the investor receives an immediate and direct cash

flow. If the earnings are retained in the business, then the investor receives a future cash flow that is derived from the dividends paid from the earnings made possible by the revenue producing assets purchased with the re-invested earnings. However, my approach to the DCF method has likely produced a conservatively high estimate of the cost of equity. I say this because I determined my estimate of the future value of the return on book equity, "r", by examining the forecasts of Value Line and Zacks. Studies conducted by me and others have shown that these analysts' forecasts tend to be overly optimistic. Other things equal, the higher the estimate of the return on book equity expected by investors, the higher the indicated cost of equity

Q. PLEASE PROVIDE A DETAILED DESCRIPTION OF HOW MS. AHERN IMPLEMENTED HER DCF METHOD.

A. Ms. Ahern applies the DCF method by adding her estimated growth rate to the dividend yield that she computed. See Exhibit PT-8A, Schedule 9. In other words, she has decided to use the constant growth version of the DCF model. She arrived at her estimate of future growth by considering:

a) Value Line Historical Five Year Growth Rate in Earnings Per Share;

b) Value Line Historical Five Year Growth Rate in Dividends Per Share;

c) Projected BR+SV (Retention Rate x Future Expected Return on Equity + External Financing Growth);

d) Value Line Projected 1996-98 to 2002-04 Growth Rate in Earnings Per Share;

e) Value Line Projected 2000-02 to 2006-08 Growth Rate in Dividends Per Share; and

f) ThomsonFN/First Call Mean Consensus Projected Five-year Growth Rate In Earnings Per Share.

The growth rates she presented varied from a low of 6.4% for the five-year historic growth in earnings per share, up to 8.3% for the 2000-02 to 2006-08 growth in earnings per share. Her overall conclusion from examining these growth rates was that between 5.8% and 7.3% growth should be used in the DCF model and that the results of the DCF model were therefore 10.0% as the indicated cost of equity. See Exhibit PT-8A, Schedule 9.

Q. WHAT CHARACTERISTICS MUST A GROWTH RATE HAVE IN ORDER FOR IT TO BE A VALID INDICATOR OF THE GROWTH RATE TO USE IN THE CONSTANT GROWTH DCF FORMULA?

A. **The only proper growth rate to use in the simplified version of the DCF model is a growth rate that investors expect is sustainable for many years into the future.** A long-term sustainable growth rate in cash flow is a very special type of growth rate. Short-term, five-year earnings per share growth rates such as those reported by ThomsonFN/First Call are frequently substantially different from future sustainable growth rates.

Q. WHY ARE THOMSONFN/FIRST CALL FIVE-YEAR CONSENSUS GROWTH RATES NOT INDICATIVE OF LONG-TERM SUSTAINABLE GROWTH RATES?

A. ThomsonFN/First Call five–year earnings per share growth rates are earnings per share growth rates that measure earnings growth from the most currently completed fiscal year to projected earnings five years into the future. These growth rates are not indicative of future sustainable growth rates in part because the sources of cash flow to an investor are dividends and stock price appreciation. While both stock price and dividends are impacted in the long-run by the level of earnings a company is capable of achieving, earnings growth over a period as short as five years is rarely in synchronization with the cash flow growth from increases in dividends and stock price. For example, if a company experiences a year in which earnings are temporarily below investor expectations, stock prices generally do not decline at the same percentage that earnings decline, and dividends are usually not cut just because of a temporary decline in a company's earnings. Unless both the stock price and dividends mirror every down swing in earnings, they cannot be expected to recover at the same growth rate that earnings recover. Therefore, growth rates such as five-year projected growth in earnings per share are not indicative of long-term sustainable growth rates in cash flow. As a result, they are inapplicable for direct use in the simplified DCF method.

Q. IS THERE A WAY FOR AN ANALYST TO KNOW WHETHER OR NOT THE EARNINGS FOR ANY PERIOD ARE REFLECTIVE OF NORMAL EARNINGS?

A. Yes. In order for earnings to be reflective of normal conditions, the company has to earn a return on book equity in that year at a level that is equal to the long-term sustainable return on book equity.

Q. HAS FERC RECOGNIZED THAT FIVE-YEAR CONSENSUS EARNINGS GROWTH RATES OF THE TYPE PUBLISHED BY THOMPSON/FIRST CALL ARE AN INAPPROPRIATE PROXY FOR LONG-TERM SUSTAINABLE GROWTH RATES?

A. Yes. In Wyoming Interstate Company, Ltd., 69 FERC 61,259 (1994) ("WIC") and Ozark Gas Transmission System, 68 FERC 61,032 (1994) ("Ozark"), the FERC rejected DCF analyses which relied upon five-year growth forecasts as a proxy for the long-term constant growth rate. The Commission found the use of short-term growth rate projections to be inconsistent with the theory of the constant growth DCF model and emphasized that parties that rely on the DCF method must provide evidence more consistent with the long-term assumption of the model. The Ozark and WIC decisions say that relying on five-year analysts' growth rate projections as a proxy for long-term growth, and for that matter, historic values of "b x r" as a proxy for future sustainable growth are both incorrect because

> "…the DCF model requires a long-term time horizon of more than five years, as the long term constant growth rate… (u)sing only a short-term growth rate projection is inherently inconsistent with the theory of the constant growth DCF model chosen by the parties… Thus, if the parties choose to use the DCF model, they must use it in an internally consistent manner."

I agree with all of the quoted statements. Historic data shows no nexus to the future, five-year earnings per share growth rates are too short of a time period, and in order for the DCF model to be accurate, it must be applied in an internally consistent manner. These are principles I have held for years, and are consistent with the approaches that I have always used in all of my prior cost of capital testimonies, including my testimony in this proceeding.

Q. PLEASE ELABORATE ON WHY THE USE OF FIVE-YEAR EARNINGS PER SHARE GROWTH RATES IN THE DCF MODEL IS IMPROPER?

A. A raw, unadjusted, five-year earnings per share growth rate is usually a very poor proxy for either short-term or long-term cash flow growth that an investor expects to receive. When implementing the DCF method, the time value of money is considered by equating the current stock price of a company to the present value of the future cash flows that an investor expects to receive over the entire time that he or she owns the stock. The discount rate required to make the future cash flow stream, on a net present value basis, equal to the current stock price is the cost of equity. The only two sources of cash flow to an investor are dividends and the net proceeds from the sale of stock at whatever time in the future the investor finally sells. Therefore, the DCF method is discounting future

cash flows that investors expect to receive from dividends and from the eventual sale of the stock.

Five-year earnings growth rate forecasts are especially bad indicators of cash flow growth even over the five years being measured by the five-year earnings growth rate number. This is because, for different reasons, the five-year earnings per share growth rate is not indicative of growth in either of the two cash flow sources to an investor.

Q. WHY IS A FIVE-YEAR EARNINGS PER SHARE GROWTH RATE A POOR INDICATOR OF THE FIVE-YEAR CASH FLOW EXPECTATION FROM DIVIDENDS?

A. The board of directors changes dividend rates based upon long-term earnings expectations combined with the capital needs of a company. Most companies do not cut the dividend simply because a company has a year in which earnings were below sustainable trends, and similarly they do not increase dividends simply because earnings for one year happened to be above long-term sustainable trends. Therefore, over any given five-year period, earnings growth is frequently very different than dividend growth. In order for earnings growth to equal dividend growth, at a minimum, earnings per share in the first year of the five-year earnings growth rate period would have to be exactly on whatever long-term earnings trend line is expected by investors. Since earnings in most years are either above or below the trend line, the earnings per share growth rate over most five-year periods is different than what is expected for earnings growth.

Q. WHY IS A FIVE-YEAR EARNINGS PER SHARE GROWTH RATE A POOR INDICATOR OF FUTURE STOCK PRICE GROWTH?

A. If a company happens to experience a year in which earnings decline below what investors believe are consistent with the long-term trend, then the stock price does not drop anywhere near as much as earnings drop. Similarly, if a company happens to experience a year in which earnings are higher than the investor-perceived long-term sustainable trend, then the stock price will not increase as much as earnings. In other words, the P/E (price/earnings) ratio of a company will increase after a year in which investors believe earnings are below sustainable levels, and the P/E ratio will decline in a year in which investors believe earnings are higher than expected. Since it is stock price that is one of the important cash flow sources to an investor, a five-year earnings growth rate is a poor indicator of cash flow both because it is a poor indicator of stock price growth over the five years being examined and is equally a poor predictor of dividend growth over the period.

Q. WAS MS. AHERN ABLE TO PROVIDE ANY SUPPORT FOR HER USE OF FIVE-YEAR EARNINGS PER SHARE GROWTH RATES AS A PROXY FOR LONG-TERM GROWTH RATES?

A. No. In response to RAR-ROR-18, Ms. Ahern said that "… Value Line Investment Survey does not address the Discounted Cash Flow Model (DCF). Nor does Value Line discuss the proper application of any of the cost of common equity

models used in utility ratemaking… " She explained that she used them merely because the DCF model "…as typically used in rate of return regulation, assumes that earnings, stock price, book value, and dividends are all expected to grow, on average, at the same rate indefinitely." What she failed to address was the problem that these "growth" rates are unsuitable for use in a constant growth DCF model because they are non-constant growth rates. Most investors sophisticated enough to use a DCF method to evaluate a stock investment should likewise be sophisticated enough to know that the raw, unadjusted Value Line and ThomsonFN/First Call five year growth rates are not the type of growth rates intended for the constant growth DCF formula.[10]

Contrary to what Ms. Ahern says, the five-year earnings per share growth rate is not based upon the "assumption" of the same growth rate for earnings, stock price, book value, and dividends. For example, the August 1, 2003 issue of Value Line that covers Philadelphia Suburban shows an "Est'd '00-02 to '06-08" growth rate of 10.0% for earnings, 5.5% for dividends, and 6.5% for book value. If this 10.0% earnings per share growth rate was the constant growth rate that Ms. Ahern thought it was, then the growth rate for earnings per share would have been the same as for book value and for dividends. As for stock price, Value Line expects it to grow even more rapidly than either earnings, book value, or dividends.

[10] The August 1, 2003 issue of Value Line forecasts stock price for Philadelphia Suburban of $62.2-62.6 by 2006-2008. The mid-point of this range is $62.40. As of the time of this Value Line report, the price of Philadelphia Suburban common stock was indicated to be $23.67 per share. The compound annual rate of growth from $23.67 to $62.4 is in excess of 27% per year.

Q. MS. AHERN HAS PRESENTED A BR+ SV GROWTH RATE METHOD. PLEASE COMMENT ON HER APPROACH TO THE METHOD.

A. I have used a BR + SV approach to the DCF method as the method for computing growth in the constant growth version of the DCF model I have presented. However, Ms. Ahern failed to make the retention rate she used for computing growth consistent with the retention rate she used to compute the dividend yield. Her analysis built-in a serious mis-match in two ways. First, she used the dividend yield for all of the companies in her group, but computed growth for only three of the seven companies. See her Exhibit PT-8A, Schedule 12, page 6. This is a serious error because the entire premise of the BR +SV growth rate method is that earnings are either paid out as a dividend or retained in the business – causing an interrelationship between earnings and dividends. Therefore, it is wrong to use a BR+SV growth from less than half of the group from which the dividend yield was obtained. Yet another mismatch error is that Ms. Ahern computed the dividend yield based upon dividends from 2003 but computed growth based upon a forecasted retention rate for 2006-2008. Such a mismatch introduces yet another potentially major error in her BR + SV approach.

Q. CAN YOU PLEASE SUMMARIZE WHY A FUTURE ORIENTED "B X R" METHOD IS SUPERIOR TO A FIVE-YEAR EARNINGS PER SHARE GROWTH RATE FORECAST IN PROVIDING A LONG-TERM SUSTAINABLE GROWTH RATE?

A. Yes. The primary cause for earnings growth is the retention of earnings. A company is able to create higher future earnings by retaining a portion of the prior year's earnings in the business and purchasing new business assets with those retained earnings. There are many factors that can cause short-term swings in earnings growth rates, but the long-term sustainable growth is caused by retaining earnings and reinvesting those earnings.

Factors that cause short-term swings include anything that causes a company to earn a return on book equity at a rate different from the long-term sustainable rate. Assume, for example, that a particular utility company is regulated so that it is provided with a reasonable opportunity to earn 10.0% on its equity. If the company should experience an event such as the loss of several key customers, or unfavorable weather conditions which cause it to earn only 6.0% on equity in a given year, the drop from a 10% earned return on equity to a 6% earned return on equity would be concurrent with a very large drop in earnings per share. In fact, if a company did not issue any new shares of stock during the year, a drop from a 10% earned return on book equity to a 6% earned return on book equity would result in a 40% decline in earnings per share over the period.[11] However, such a drop in earnings would not be any indication of what is a long-term sustainable earnings per share growth rate. If the drop were caused by weather conditions, the drop in earnings would be immediately offset once normal weather conditions

[11] By definition, earned return on equity is earnings divided by book value. Therefore, whatever level of earnings is required to produce earnings of 6% of book would have to be 40% lower than the level of earnings required to produce a return on book equity of 10%.

return. If the drop is from the loss of some key customers, the company would replace the lost earnings by filing for a rate increase to bring revenues up to the level required for the company to be given a reasonable opportunity to recover its cost of equity.

For the above reasons, changes in earnings per share growth rates that are caused by non-recurring changes in the earned return on book equity are inconsistent with long-term sustainable growth, but changes in earnings per share because of the reinvestment of additional assets is a cause of sustainable earnings growth. The "b x r" term in the DCF equation computes sustainable growth because it measures only the growth which a company can expect to achieve when its earned return on book equity "r" remains in equilibrium. If analysts have sufficient data to be able to forecast varying values of "r" in future years, then a complex, or multi-stage DCF method must be used to accurately quantify the effect. Averaging growth rates over sub-periods, such as averaging growth over the first five years with a growth rate expected over the subsequent period will not provide an appropriate representation of the cash flows expected by investors in the future and therefore will not provide an acceptable method of quantifying the cost of equity using the DCF method. The choices are either a constant growth DCF, in which one "b x r" derived growth rate should be used, or a complex DCF method in which the cash flow anticipated in each future year is separately estimated.

Q. ARE YOU SAYING THAT THOMSONFN/FIRST CALL AND ZACKS CONSENSUS EARNINGS PER SHARE GROWTH RATES ARE USELESS AS AN AID TO PROJECTING THE FUTURE?

A. No. **They are, however, very dangerous if used in a simplified DCF without proper interpretation.** While they are not useful if used in their "raw" form, they can be useful in computing estimates of what earned return on equity investors expect will be sustained in the future, and as such, are useful in developing long-term sustainable growth rates. But, the growth rate from an arbitrary starting year is, in-and-of-itself, as useless as attempting to measure the average slope of a mountain based upon the slope encountered over the last five minutes of hiking on a jagged trail up the mountain. In my implementation of the simplified DCF method, I use the Zacks five-year earnings per share growth only to help determine what earned return on book equity investors anticipate will be achieved in five years. Then, I consider the resultant earned return on book equity as one of the inputs to determine the value of "r" that I use in the "b x r" growth rate computation. In this way, I give consideration to analysts' consensus growth rate, but do so in a way that results in a long-term sustainable cash flow growth rate rather than making the erroneous assumption that a five-year earnings per share growth rate is somehow an indicator of cash flow growth. Remember, cash flow received by an investor is either dividends or stock price appreciation.

Q. ONE OF THE GROWTH RATES THAT MS. AHERN RELIES UPON IS VALUE LINE FORECASTED EARNINGS PER SHARE GROWTH

RATES. IS THE VALUE LINE EARNINGS PER SHARE GROWTH RATE SUFFICIENTLY NORMALIZED TO MAKE IT AN ACCURATE INDICATOR OF LONG-TERM SUSTAINABLE GROWTH RATES?

A. No, because Value Line's method results in only a very incomplete normalization of the base period earnings it uses in its earnings per share five-year forecast. The Value Line earnings per share forecast of the type presented by Ms. Ahern is defined by Value Line as the earnings per share growth from "Est'd '00-'02 to "06-'08". The procedure used by Value Line is to average the earnings per share from the 2000-02 base period and relate that three-year average to the earnings per share it expects will be achieved, on average, over the future 2006-2008 time period. The method used by Value Line does not assure the appropriate normalization of earnings per share in the base period, because there is not even an attempt by Value Line to make the average earned return on book equity in the base period reflective of the normal expected return on book equity. In fact, in the case of all the Water companies covered by Value Line, the average earned return on book equity from 2000-2002 is lower than Value Line expects in the 2006-2008 period.

Q. ON PAGE 24 OF HER TESTIMONY, MS. AHERN CLAIMS THAT THE DCF METHOD UNDERSTATES THE COST OF EQUITY WHEN THE MARKET-TO-BOOK RATIO IS ABOVE 1.0. IS THIS CORRECT?

A. No. As noted by FERC, the U.S. Supreme Court also disagrees with Ms. Ahern's reason for believing that the DCF method understates the cost of equity when market-to-book ratios are above 1.0. As FERC has accurately stated:

> Specifically, they claim that when a utility's market-to-book ratio is above one, applying a DCF-based allowed rate of return to a book value rate base results in earnings that are too low. Conversely, when a utility's market-to-book ratio is below one, applying a DCF-based allowed rate of return to a book value rate base results in earnings that are too high. Both commenters argue that the allowed rate of return should be applied to a market value rate based rather than to book value.
>
> The following example demonstrates the circularity of their claim. Equity capital costs generally rise as interest rates rise. Conversely, equity capital cost rates generally fall as interest rates fall. During periods of rising equity costs, utilities generally file for rate increases to cover these higher costs. This action protects utility shareholders from declines in the value of the stock. The result is a tendency to maintain a utility's existing market-to-book ratio during periods of rising equity costs.
>
> During periods of falling capital costs, the revenue required to meet shareholder capital costs requirements also declines. Until a utility files for new rates at the lower capital cost, it continues to charge rates based on the higher equity capital costs that existed when the current rates were set. The result is a tendency for the utility to earn more than its shareholders currently require and a concomitant increase in the price of the utility's common stock and market-to-book ratio.
>
> When capital costs are below those of the previous filing, applying the allowed rate of return to a market value rate base would perpetuate the unnecessarily high revenues at the expense of utility's customers. **Applying the allowed rate of return to a book value rate base would reduce revenue to the level required by shareholders at the new lower cost of equity. These revenues will provide the utility with an opportunity to recover all costs including the cost of capital.**

> The argument over the application of an allowed rate of return to a market value rate base is an old one and the problem of circularity inherent in that approach has been long and widely recognized. **The Supreme Court's statement in Federal Power Commission v. Hope Natural Gas Co. that "rates cannot be dependent upon 'fair value' when the value of the going enterprise depends on earnings under whatever rates may be anticipated" reflects its recognition of that problem. The market value of an enterprise or its common stock depends upon its earnings or anticipated earnings, which in turn depends upon the rates allowed. Thus, market value is a result of the ratemaking process and may not properly be the beginning of the process as well.**
> Docket RM87-35-000, P. 3348 of the Federal Register/ Vol. 53, No. 24, Friday Feb. 5, 1988. Emphasis added.

Similarly, the Federal Communications Commission (FCC) responded to an argument made by Ameritech which suggested that the FCC was "... obligated to prescribe a rate of return that will ensure continuation of the carriers' current market-to-book ratios."[12] The FCC rejected Ameritech's argument for several reasons. The reasons stated were:

> ... market-to-book ratios greater than one have been viewed traditionally as possible indicators that the company's return is greater than its required return.
>
> ...Ameritech places great reliance on its perception that unless this Commission applies the market-derived rate of return to its equity base, stockholders will see a massive decline in the value of their stock. It is true that prescription of a rate of return based on market data could lead to a decrease in the value of the stock if investors have been expecting continuation of a previously-authorized higher rate of return. On the other hand, a reduced rate of

[12]Page 15 of decision FCC 90-315 dated September 19, 1990, in CC Docket No. 89-624.

return might have no impact on stock price if, as often happens, the reduction had already been anticipated and discounted by the market. In any case, the requirement that we balance ratepayer and investor interests does not allow us to insulate investors from a diminution in the value of their stock (if in fact we could do so). **In any event, if we prescribed a rate of return above that which market data showed to be reasonable, investors would increase their expectations as to the carrier's rate of return, market value would increase, and the carrier would seek a higher rate of return authorization so that these higher expectations are not thwarted. We would be remiss in our responsibilities to balance ratepayers' and investors' interests if we implemented procedures that effectively insulated a carrier from experiencing a decrease in its authorized return. Thus, our current market-based rate of return procedures meet the Bluefield/Hope criteria notwithstanding that their application herein may adversely impact carriers' high market-to-book stock ratios.**

Moreover, market-to-book ratios greater than one have been viewed traditionally as possible indicators that the company's return is greater than its required return. (Emphasis added) (FCC-90-315, P. 15.)

Q. DO ARTICLES IN BUSINESS LITERATURE DEFINITIVELY SHOW THAT INVESTORS ARE AWARE OF THE SERIOUS BIASES CONTAINED IN THE RECOMMENDATIONS OF MANY ANALYSTS' REPORTS?

A. Yes. There have been countless articles that appeared in both business publications and the popular press throughout the last year that show these biases. Business Week, a widely read and important business publication, contained numerous articles that reported on the problems with securities analysts. These include:

1. A cover story entitled "How Corrupt is Wall Street" appeared in the May 13, 2002 issue of *Business Week*.

   a) The article mentions that Merrill Lynch, Solomon Smith Barney, Morgan Stanley Dean Witter along with 10 other firms are being investigated by the US Securities and Exchange Commission for unethical practices.[13]

   b) According to the article, New York State Attorney General Eliot Spitzer made public e-mail exchanges at Merrill where, e-mail messages uncovered by Dr. Spitzer showed that "…analysts disparage stocks as 'crap' and 'junk' that they were pushing at the time. The e-mails are so incendiary that they threaten to thrust Wall Street into the sort of public-relations nightmare that Philip Morris, Ford, Firestone, and Arthur Andersen have endured in recent years."[14]

   c) The article features the following quote from David Komansky, the CEO of Merrill Lynch, by placing it in bold letters and large print:

> We have failed to live up to the high standards that are our tradition, and I want to take this opportunity to publicly apologize to our clients, our shareholders, and our employees[15].

[13] May 13, 2002 Business Week, page 37.

[14] Business Week, May 13, 2002, page 39.

[15] Business Week "How Corrupt is Wall Street" May 13, 2002, page 42.

In the above quote, Dr. Komansky was responding to what *Business Week* describes as "…the analyst debacle…"[16]

2. The cover of the July 29, 2002 issue of Business Week features the article entitled "THE ANGRY MARKET." The Cover summarizes the article by saying "THE BLUNT MESSAGE: Investors are repricing stocks to reflect a more honest picture of earnings, options, and the future." In a discussion about the inaccurate and misleading earnings reporting done by many companies, Business Week says:

> Brokerage-house analysts aren't much help either. They tend to do what companies want. For example, only six of the 21 analysts that have given First Call their estimates for AOL Time Warner Inc.'s 2003 earnings actually provided GAAP figures.

3. A cover article in the August 5, 2002 issue of *Business Week* is entitled "INSIDE THE TELECOM GAME. How a small group of insiders made billions as the industry collapsed." The article discusses the buy recommendations consistently made by Dr. Grubman on these companies, and says on page 34:

> Now, investors are questioning whether Grubman was motivated by his true opinions – or by the millions of dollars he received from supporting his telecom clique.

4. "HOW TO FIX CORPORATE GOVERNANCE" is the cover article in the May 6, 2002 issue of Business Week. Page 76 of this article says:

[16] *Ibid*, page 42.

> If investors have learned anything from this crisis, it's that Wall Street's analysts are often loath to put a bad spin on a stock. Historically, "sell" ratings have constituted fewer than 1% of analysts' recommendations, according to Thompson Financial/First Call…It's more a case of an inherently conflicted system, that is now the focus of a Justice Department investigation.
>
> 'Investors need to realize that the free research they're getting is often just a marketing tool', says Kent Womack, a professor at Dartmouth College's Amos Tuck school of business.

5. A June 10, 2002 issue of *Fortune* had an article entitled "In Search of the Last Honest Analyst". The *Fortune* article noted:

> In fact, stock research sank so low during the bubble that it actually became a contrary indicator of a stock's performance. Researchers at the University of California and Stanford reviewed almost 40,000 stock recommendations from 213 brokerages during the year 2000. The most highly rated stocks had a –31% return for the year, according to the study. Meanwhile, the stocks least favorably recommended (that is, the sells) soared an annualized 49% -- a differential of 80 percentage points[17].

6. A September 24, 2002, *Wall Street Journal* article entitled "Will Grubman Case Tone Down the Exaggeration by Analysts?" states the following:

> During the 1980s and 1990s, analysts often served as quasiadvocates for companies that hired their firms for investment-banking work, accompanying them on road shows to sell their stock, setting up one-on-one meetings between management and institutional investors, and proffering their access to

[17] Fortune.com, "In Search of the Last Honest Analyst" June 2002, page 1 of 2.

management to give an unofficial version of the companies' view of business developments[18].

7. On October 22, 2002, a Wall Street Journal article entitled "Massachusetts Claims CSFB Stock Reports Led Investors Astray" appeared on pages C-1 and C-10. Following are some highlights from this article:

> The complaint [by the Secretary of the Commonwealth of Massachusetts] alleges CSFB misled investors by allowing its investment-banking division – in particular, star Frank Quattrone – to exert undue influence on the firm's research department.
>
> The complaint which echoes one filed earlier this year by Elliott Spitzer against Merrill Lynch & Co. will no doubt add to investor concern that Wall Street peddled research it didn't believe only to get its hands on the much more lucrative investment-banking fees.
>
> 'The presumption that every firm engaged in this behavior is fair,' says Roy Smith, a professor of finance at New York University and a former partner at Goldman Sachs Group, Inc. 'It reminds me of how we used to talk in the locker room after a football game. That talk happens all the time, but it would sure be embarrassing if anyone ever recorded it.'[19]

Q. HAS ALL THE UNFAVORABLE PRESS REGARDING EQUITY ANALYSISTS RESULTED IN ANY POSITIVE REFORM IN THE INDUSTRY?

[18] Wall Street Journal "Will Grubman Case Tone Down The Exaggeration by Analysts?" September 24, 2002, starting on pages C-1 and C-3.

[19] Wall Street Journal, October 22, 2002, page C-1 and C-10.

No. A Business Week editorial published on September 8, 2003 called "The Myth of Independence" states that the new independent research firms also have conflicts of interest to deal with and "Many hire analysts with little or no track record, raising questions about the quality of their research."

C. Capital Asset Pricing Model (CAPM) Method.

Q. HOW HAS MS. AHERN IMPLEMENTED THE CAPM METHOD?

A. Ms. Ahern has implemented the CAPM method for the determination of the cost of equity of Elizabethtown Water Company. In her empirical CAPM model Ms. Ahern adds an "average company-specific market premium" to a 7.3% "…risk free rate…" Her definition of a risk-free rate is the interest rate from the "average forecast based upon six quarterly estimates of long-term Treasury Bond yields…" (Ms. Ahern's Exhibit PT-8A, Schedule 14, p. 3 Note 2). She determined the "average company-specific market premium" by averaging the 12-month, 6-month, 3-month and spot forecast from Value Line with the long-term historical return calculated by Ibbotson Associates. Based upon this Value Line spot forecast , she concluded that the equity risk premium should be 13.0% over the cost of long-term treasury bonds. Based upon the historical return calculated by Ibbotson Associates, she concluded that the equity risk premium should be 7.0% over the cost of long-term U.S. Treasury bonds. See page 3 of Exhibit PT-8A, Schedule 14. The average of these two risk premiums is 10% (13% + 7%)/2. Then, Ms. Ahern multiplied each of the risk premiums by the beta of each company she evaluated. She then averaged the results of the companies in the proxy group to arrive at an average risk premium of 7.3% in her Empirical CAPM Model. (See Exhibit PT-8A, Schedule 14, Page 2. Finally, Ms. Ahern adds the risk free rate to this 7.3% risk premium figure to get a "Capital Asset Pricing Model Derived Company Equity Cost Rate" of 12.3%. Her conclusion is an 11.8% cost rate.

Q. IN RESPONSE TO RAR-ROR-26, MS. AHERN SAYS THAT A FLAW IN THE CAPM MODEL IS THAT IT "ASSUMES THAT NON-DIVERSIFIABLE RISK IS THE ONLY RISK WHICH IS RELEVANT TO INVESTORS." IS THIS A FLAW IN THE CAPM MODEL?

A. No. The CAPM model does not "assume" that only the non-diversified risk is relevant. To use the word assume implies it could easily be viewed in a different way. We are not dealing with an assumption here. It is a basic financial principle that non-diversifiable risk is the only risk factor that impacts the cost of equity. Diversifiable risk goes away because many billions of dollars are invested in diversified portfolios. Because such diversification is so widely used, any risk that can be diversified away, is. The competition for investments caused by this diversification process ensures that it is only the non-diversified risk that remains to provide a return to investors.

Q. PLEASE COMMENT ON MS. AHERN'S IMPLEMENTATION OF THE CAPM METHOD.

A. Ms. Ahern has essentially made the following errors in her CAPM method:

1) SELECTION OF RISK FREE SECURITY. She has incorrectly treated an investment in a long-term U.S. treasury bond as if it is a zero risk, or zero beta. In fact, long-term U.S. treasury bonds do have interest volatility risk, have a beta considerably higher than zero, and therefore are NOT risk free securities. By treating long-term treasuries as if they had a zero beta, Ms. Ahern has used too small of an adjustment to lower the risk premium.

2) USE OF ARITHMETIC MEAN RETURNS RATHER THAN GEOMETRIC MEAN RETURNS. Ms. Ahern substantially overstated the return that investors received on common stocks from 1926 through 2002 because she used an arithmetic mean return rather than a geometric mean return.

3) DECLINING RISK PREMIUMS. She ignored the fact that historic data shows there has been a major decline in the risk premium differential between bonds and stocks.

Q. PLEASE EXPLAIN WHY LONG-TERM TREASURY BONDS ARE THE INAPPROPRIATE SELECTION FOR A RISK-FREE RETURN.

A. Long-term U.S. treasury bonds are only risk free regarding whether or not interest and principal payments will be made at the contractually agreed levels. They are NOT risk free regarding market price movements over the thirty-year holding period of the bonds. Anyone who doubts that long-term treasury bonds can and do vary substantially in price only needs to ask Orange County, California about what can happen to the price of long-term treasury bonds when interest rates increase.

Q. CAN IT BE REASONABLE TO EXAMINE THE RISK PREMIUM DIFFERENCE BETWEEN LONG-TERM TREASURY BONDS AND COMMON STOCK EVEN THOUGH LONG-TERM TREASURY BONDS DO CONTAIN INTEREST RATE RISK?

A. Yes, but not if it is used in a CAPM model in the way that Ms. Ahern has done. One of the elements of Ms. Ahern's CAPM computation is that she uses the risk premium between the cost of long-term bonds and common stock as the amount she multiplies by beta. This is wrong. In order to properly quantify the risk differential that is measured by beta, it is essential to use a risk premium factor that is fully reflective of the difference between the two securities being compared.

For example, Ms. Ahern's CAPM computation is based upon a long-term treasury bond interest rate of 5.0%, and a risk premium of 10.0% between the cost of long-term treasury bonds and a common stock with average risk (i.e., beta of 1.0).[20] She then modifies the 10.0% risk premium for a stock of average risk by multiplying it by the beta of each of her proxy group water companies. However, her decision to multiply the 10.0% risk premium would only be the correct modification to the 10.0% risk premium IF the beta of the long-term treasury bond were zero. Since it is not zero, the 10.0% risk premium (even if it were correct) would be reflective of the risk premium change associated with the difference in risk of an investment with a beta of 1.0 and an investment with a beta equal to that of a long-term treasury bond. Since Ms. Ahern's invalid assumption that the beta of a long-term treasury bond is zero leads her to conclude that the risk premium should be 6.3%, to 7.3%, Ms. Ahern's use of a "risk free rate" that is not really free in her CAPM method has caused her to further overstate the CAPM indicated cost of equity.

[20] Exhibit PT-5, Schedule 13, page 3.

Q. PLEASE COMMENT ON MS. AHERN'S USE OF THE ARITHMETIC AVERAGE RATHER THAN THE GEOMETRIC AVERAGE TO MEASURE HISTORIC ACTUAL RETURNS.

A. As will be explained in detail later in this testimony, textbooks, the U.S. Securities and Exchange Commission (SEC), and Value Line have all recognized that the only proper way to measure long-term historic actual earned returns is to use the geometric mean. The arithmetic mean is specifically identified by several sources as a method that will specifically result in an answer that is upwardly biased.

Q. IS THERE A MATHEMATICAL RELATIONSHIP BETWEEN THE GEOMETRIC AVERAGE AND THE ARITHMETIC AVERAGE?

A. Yes. Page 24 of the third edition of *Stocks for the Long Run* by Professor Jeremy J. Siegel © 2002 contains the following:

> The geometric return is approximately equal to the arithmetic return minus one-half of the variance σ^2 of yearly returns $r_G=r_A-1/2\ \sigma^2$.
>
> Investors can be expected to realize geometric returns only over long periods of time. The average geometric return is always less than the average arithmetic return except when all yearly returns are exactly equal. This difference is related to the volatility of yearly returns.

As correctly explained above, the only reason the arithmetic average is higher than the geometric average is because of the volatility of yearly returns. Therefore, from the perspective of the cost of equity to allow a regulated utility,

the correct return is the geometric return. The geometric return, if allowed, will be the return the utility company is given a reasonable opportunity to earn. If there is a difference between the geometric return and the arithmetic return, for a regulated utility this difference will occur simply because a utility company's stock price will fluctuate up and down even though the allowed return on equity remains fixed at least until the next rate case.

Q. HAVE YOU SEEN WITNESSES CLAIM THAT THE GEOMETRIC AVERAGE IS THE CORRECT AVERAGE TO USE WHEN MEASURING HISTORIC RETURNS, BUT THE ARITHMETIC AVERAGE IS SOMEHOW CORRECT FOR FORECASTING FUTURE RETURNS?

A. Yes, I have seen this argument. But, given that the difference between the geometric return and the arithmetic return is due to volatility and not the true return actually being achieved, such an argument that claims a different measurement technique applies to historic data than to forecasted data is incorrect. Consider the following: Assume that the U.S. Government issued a 30-year treasury bond 15 years ago that pays an annual interest rate of 5.0% on the face amount of the bond. Further assume that although interest rates fluctuated over the last 15 years, the current interest rate demanded by investors happens to be 5% today. Under these assumptions, over the last 15 years, the price of the bond has gone up in some years and gone down in other years. But, if the current interest rate demanded by investors on this bond is still the same 5%

as was demanded by investors at the time of the original issuance, the bond will be selling for the same price as it did when originally issued 15 years ago. Because of this fluctuation, if the total return (price appreciation or price depreciation plus the 5% interest income) is measured using the arithmetic average, then the measured return will include the 5% real return actually obtained by investors plus an additional illusory return cause by volatility rather than an actual return received by the investor. From the perspective of the investor who is forecasting the return on this 5% government bond with 15 years remaining, we know with certainty that the accurate forecasted future return will be 5% per year. We also can be confident that interest rates will fluctuate over the next 15 years. Therefore, this fluctuation will cause the arithmetic return measurement to be higher than the 5% annual return even though the 5% return is the only possible return an investor who holds this bond to maturity could get.

Q. IS IT THE 5% RETURN ON THE TREASURY BOND OR IS IT THE ARITHMETIC AVERAGE RETURN THAT IS ANALAGOUS TO THE ALLOWED RETURN ON EQUITY TO A REGULATED UTILITY COMPANY?

A. The 5% coupon return is the return that is analogous to the allowed return. Therefore, even if we were to attempt to satisfy the investor who was incorrectly led to believe that he or she would achieve the arithmetic average and not the geometric average, the return based upon the geometric average should form the return allowed. Then, an investor who wishes to be fooled into achieving a higher

return than is achieved by the geometric average will continue to be under the misconception that he or she is earning more than the geometric average. This can happen because the stock price fluctuation will still produce annual returns that, under the arithmetic average method, will appear to be higher than the allowed geometric return.

Consider the problem that would develop if allowed returns were errantly set based upon the arithmetic average rather than the geometric average. If a utility company is allowed to earn a return on rate base equal to the arithmetic average, then the normal stock price fluctuations would cause the new arithmetic average measured result to continue to exceed the old allowed arithmetic average. A repetition of the error caused by using the arithmetic average, if repeated in the next rate case, would cause yet a further ratcheting up of the allowed return in each future rate case where this mistake to use the arithmetic average is repeated.

Q. CAN YOU PROVIDE A MATHEMATICAL EXAMPLE THAT SHOWS WHY RISK PREMIUMS BASED UPON HISTORIC ARITHMETIC RETURNS ARE IMPROPER?

A. Yes. As previously stated, arithmetic average returns overstate the actual returns received by investors because arithmetic returns measure volatility, not actual returns earned by investors. The more variable historic growth rates have been, the more Ms. Ahern's method exaggerates actual growth rates. Arithmetic average returns ignore the impact of compound interest. For example, if a company were to have a stock price of $10.00 in the beginning of the first year of

the measurement period and a $5.00 stock price at the end of the first year, an arithmetic average approach would conclude that the return earned by the investor would be a loss of 50% [($5-$10)/($10)]. If, in the second year, the stock price returned to $10.00, then the arithmetic average would compute a gain of 100% in the second year [($10-$5)/($5)]. The arithmetic average approach would naively average the 50% loss in the first year with the 100% gain in the second year to arrive at the conclusion that the total return received by the investor over this two year period would be 25% per year [(-50% +100%)/2 years]. In other words, the arithmetic average approach is so inaccurate that it would conclude the average annual return over this two year period was 25% per year even though the stock price started at $10.00 and ended at $10.00. The geometric average would not make such an error. It would only consider the compound annual return from the beginning $10.00 to the ending $10.00, and correctly determine that the annual average of the total returns was not 25%, but was zero.

In order to protect investors from misleading data, the SEC requires mutual funds to report historic returns by using the geometric average only. The arithmetic average is not permitted. The geometric average, or SEC method, has the compelling advantage of providing a true representation of the performance that would have actually been achieved by an investor who made an investment at the beginning of a period and re-invested dividends at market prices prevailing at the time the dividends were paid.

Q. DOES THE FINANCIAL COMMUNITY COMPUTE HISTORIC ACTUAL ACHIEVED RETURNS BASED UPON ARITHMETIC MEANS OR GEOMETRIC MEANS?

A. As shown earlier in this testimony, the financial community (as represented by articles from *The Wall Street Journal* and from *Business Week*) refers to geometric averages when evaluating historic returns. Additionally, page 92 of the August 16, 1999 issue of *Fortune* magazine refers to the return that is equal to the geometric mean from Ibbotson Associates as "…the oft-quoted calculation…" of historic actual returns on common stocks. The article does not even mention the number that is equal to the historic arithmetic return.

Q. DO FINANCIAL TEXTBOOKS SUPPORT THE USE OF THE GEOMETRIC AVERAGE FOR COMPUTING HISTORIC ACTUAL RETURNS?

A. Yes. For example, the textbook *Valuation. Measuring and Managing the Value of Companies*, by Copeland, Koller, and Murrin of McKinsey & Co. , John Wiley & Sons, 1994, in a description of how to use the Ibbotson Associates data states the following on pages 261-262:

> We use a geometric average of rates of return because arithmetic averages are biased by the measurement period. An arithmetic average estimates the rates of return by taking a simple average of the single period rates of return. Suppose you buy a share of a nondividend-paying stock for $50. After one year the stock is worth $100. After two years the stock falls to $50 once again. The first period return is 100 percent; the second period return is -50 percent. The arithmetic average return is 25 percent [(100

percent - 50 percent)/2]. The geometric average is zero. (The geometric average is the compound rate of return that equates the beginning and ending value.) **We believe that the geometric average represents a better estimate of investors' expected returns over long periods of time.** (Emphasis added)

Similarly, in another textbook discussion that specifically addresses the use of the Ibbotson data, *Financial Market Rates & Flows*, by James C. Van Horne, Prentice Hall, 1990, states the following on page 80:

> The geometric mean is a geometric average of annual returns, whereas the arithmetic mean is an arithmetic average. For cumulative wealth changes over long sweeps of time, the geometric mean is the appropriate measure.

The textbook *Investments* by Nancy L. Jacob and R. Richardson Pettit, Irwin, 1988, puts it well when it says:

> The existence of uncertainty as reflected in a distribution of possible values makes the **expected value**, or arithmetic average rate of return, a misleading and biased representation of the wealth increments which will be generated from multiperiod investment opportunities.
>
> The average *annual* rate of wealth accumulation over the investment period, termed the **average annual geometric rate of return**, correctly measures the average annual accumulation to wealth when multiple periods are involved.
>
> (Emphasis is contained in the original)

Q. HAS VALUE LINE SAID ANYTHING REGARDING THE USE OF AN ARITHMETIC AVERAGE OR A GEOMETRIC AVERAGE?

A. Yes. On May 9, 1997, Value Line issued a report entitled "The Differences in Averaging". This report was contained on pages 6844-6845 of the "Value Line

Selection & Opinion" portion of its weekly mailings to subscribers. This report says that:

> (t)he arithmetic average has an upward bias, though it is the simplest to calculate. The geometric average does not have any bias, and thus is the best to use when compounding (over a number of years) is involved.

The Value Line report then goes on to provide examples that show why the arithmetic average overstates the achieved returns while the geometric average produces the correct result.

Ibbotson Associates has also said that it is the geometric average that is "… the correct average to compare with a bond yield…"[21]

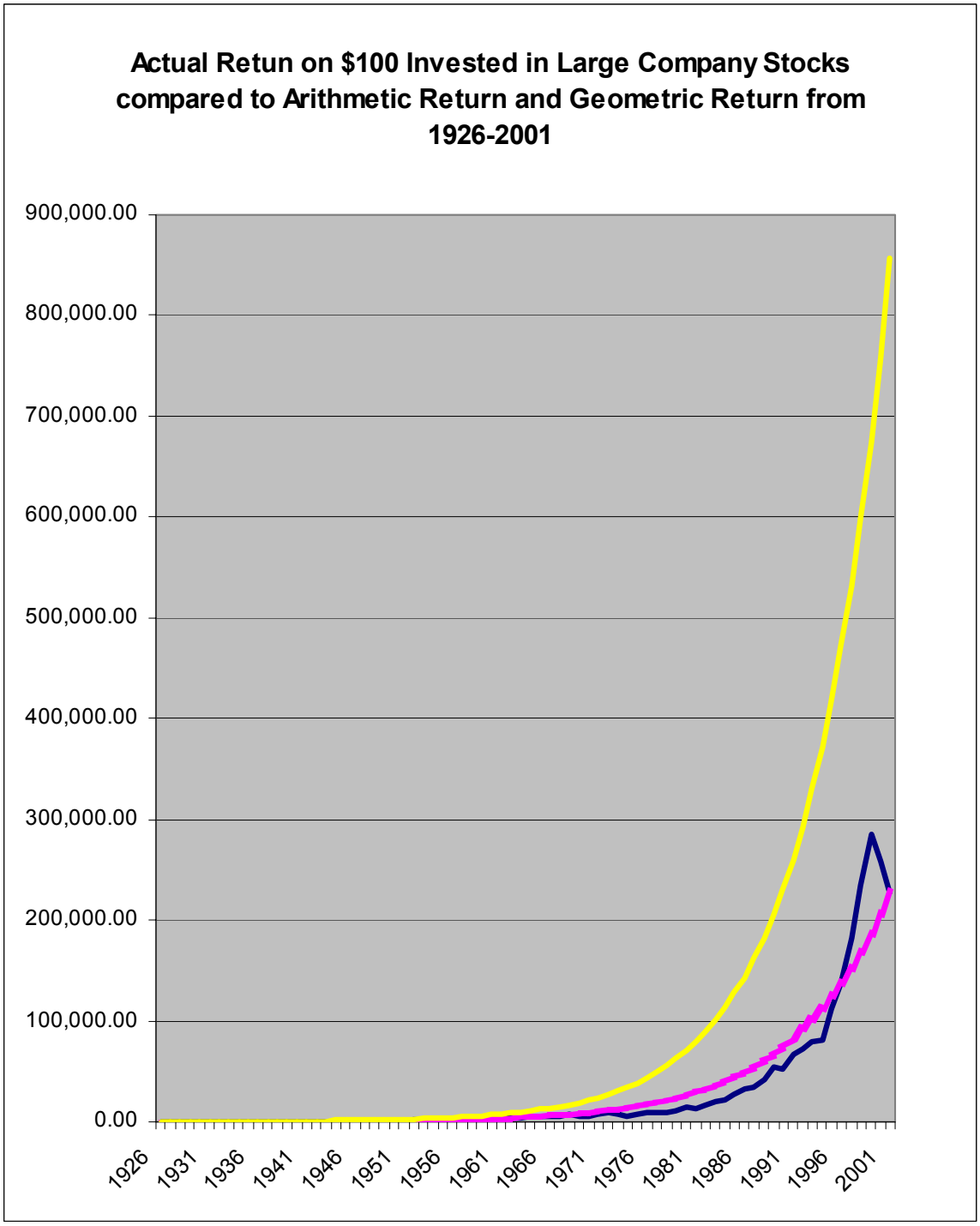
Therefore, when Ms. Ahern chose to give weight to the arithmetic average, she chose a method that both a financial textbook and Value Line have specifically noted to be biased. The more weight that is given to the arithmetic average result, the larger the upward bias in the risk premium method.

Q. HAVE YOU COMPARED GRAPHICALLY THE CAPITAL APPRECIATION GROWTH RATE USING MS. AHERN'S METHOD WITH THE CAPITAL APPRECIATION GROWTH RATE THAT IS OBTAINED USING THE SEC METHOD?

A. Yes. In the following graph I show the actual movement of the S&P Utility index from 1928 through 2001. I also show how the index would have behaved on a

[21] Page 75 of Stocks, Bonds, Bills, and Inflation 1986 Yearbook.

year-by-year basis using the average growth obtained from the SEC method and using Ms. Ahern's historic growth rate methodology. The graph illustrates that Ms. Ahern's calculation of historic actual returns deviates at an ever-increasing rate over time from the actual S&P Utility Index, overstating the total return from 1928-2001 by about 400%. By contrast, the historic actual returns computed using the SEC method is a dramatically more reasonable track of the growth of the S&P utility over time and thus is a better measure of historic actual return rates realized by investors.


Actual Retun on $100 Invested in Large Company Stocks compared to Arithmetic Return and Geometric Return from 1926-2001
900,000.00
800,000.00
700,000.00
600,000.00
500,000.00
400,000.00
300,000.00
200,000.00
100,000.00
0.00
1926
1931
1936
1941
1946
1951
1956
1961
1966
1971
1976
1981
1986
1991
1996
2001

In the above chart, the top line shows that if $100 had been invested in public utility common stocks in 1928 through 2001 and had earned the arithmetic return, the $100 would have grown to about $850,000. The line that starts as the lowest and spikes around 2000 shows what actually would have happened to a real $100 investment if it had been invested in public utility common stocks. As shown on the graph, the $100 investment would have actually grown to about $230,000. While the increase from $100 to $230,000 is a very sizeable return, it is far less than the $855,000 return that would have been achieved if the arithmetic return methodology had been achieved. The smooth line that ends at the same place as the actual return line is the ongoing value of $100 invested in 1928 that grew at the geometric return rate. Note that the $100 invested at the geometric return rate is, by 2001, exactly equal to the actual return. Therefore, the geometric return accurately measures the actual return that was achieved from 1928 through 2001, but the arithmetic average return exaggerates the actual return by over three times.

Q. HOW MUCH HIGHER IS THE RISK PREMIUM DIFFERENCE BASED UPON AN ARITHMETIC AVERAGE THAN IT IS BASED UPON A GEOMETRIC AVERAGE?

A. From 1928 to 2001, the arithmetic average method (to which Ms. Ahern gives weight) produced an indicated risk premium that was about 1.90% higher for public utility stocks versus public utility bonds than the risk premium indicated by using the SEC, or geometric average method. The arithmetic median method used by Ms. Ahern produced a 1.87% higher risk premium than is indicated by using the SEC, or geometric average method.

Q. HAVE RISK PREMIUMS BEEN STABLE OVER THE YEARS?

A. No. This is yet another important problem with Ms. Ahern's approach to the risk premium method. As I have previously stated, Federal Reserve Chairman Alan Greenspan has noted that risk premiums have declined over the last ten years.

D. Risk Premium Method

Q. PLEASE COMMENT ON THE RISK PREMIUM METHODS AS PRESENTED BY MS. AHERN.

A. Ms. Ahern's application of the risk premium method is very similar to her CAPM method. The only substantive difference is that instead of using long-term treasuries as her "risk free" interest rate, she uses corporate bonds instead. Her risk premium computations lead her to show an indicated cost of equity of 11.9%. See Exhibit PT-8A, Schedule 13, Page 1 of 9. However, corporate bonds are closer in risk to common stocks than the risk of 30-year treasuries. Therefore, when she develops a factor to reduce the risk premium in an attempt to make it applicable to water utility common stocks, she understates the risk reduction to a greater degree than in her CAPM model. As a result, it is correct to characterize her risk premium model as her CAPM model with an even greater understatement to the risk reduction attributable to water utilities. This risk reduction understatement in Ms. Ahern's risk premium method is THE reason that her risk premium model results in about a 100 basis point higher estimate for the cost of equity. Since the cause of this extra 100 basis points is Ms. Ahern's poor implementation of financial theory, all that giving any weight to Ms. Ahern's risk premium method accomplishes is to cause further exaggeration of the cost of equity. This exaggeration is on top of all of the equity cost overstatements caused by the errors in Ms. Ahern's implementation of the CAPM method as discussed above.

E. Comparable Earnings Method

Q. PLEASE EXPLAIN THE COMPARABLE EARNINGS METHOD PRESENTED BY MS. AHERN.

A. Ms. Ahern selected a group of non-utility companies that she believes to be of comparable risk to Elizabethtown Water Company. After selecting the companies, she obtained the five-year historic actual return on book equity and the Value Line expected return on book equity for 2005-2007 / 2006-2008. See Ms. Ahern's Exhibit PT-8A, Schedule 15, page 1 of 3.

Q. IS THIS METHOD VALID?

A. No. Ms. Ahern has attempted to determine the cost of equity that would be demanded by investors on the market price of a company comparable to Elizabethtown Water Company by comparing it to the actual and projected returns on book equity of a selection of industrial companies. Leaving aside the serious problems with actually being able to select companies that are comparable, Ms. Ahern's comparable earnings analysis still has the fatal flaw of not addressing the cost of equity at all. It simply considered the returns on book equity that were achieved, and are expected to be achieved by Value Line in the next 3 to 5 years. **The earned return on book equity is an entirely different concept than the cost of equity.** For example, one of the companies selected by Ms. Ahern is Abbott Labs. According to the most recent Value Line report on Abbott Labs, Abbott Labs earned 32.5% on its common equity in 2001, 30.4% in 2002 and is expected to earn 26.5% on its book common equity in 2006-2008. However, the

actual projected 3-5 year total return that Value Line forecasts for Abbott Labs is 15%[22], or much lower than the 26.5% projected return on book equity that Ms. Ahern confuses with a cost of equity amount.

Q. HOW CAN VALUE LINE EXPECT AN ANNUAL RETURN ON INVESTMENT OF 15% FOR ABBOTT LABS AT THE SAME TIME IT EXPECTS ABBOTT LABS TO EARN 26.5% ON ITS BOOK INVESTMENT?

A. To see why there is such a large difference between the earned return on book and the return on the investment achievable by investors, it is first essential to recognize that investors who want to own a share of Abbott Labs must purchase the common stock of Abbott Labs at the market price, not at book value. In the August 8, 2003 issue of Value Line, Value Line shows that the market price of Abbott Labs was $30.66, but the book value was only $10.65. In other words, investors were so desirous of obtaining a piece of these extremely high earnings that the stock price was bid up to the point where it is trading at nearly 300% of book.

[22] Value Line Investment Survey, September 5, 2003, P.179, mid-point of 17% to 13% range.

F. Miscellaneous Comments

Q. MS. AHERN PROVIDED AN ARTICLE BY FRANK HANLEY IN THE RESPONSE SHE PROVIDED TO RAR-ROR-4. WOULD YOU CARE TO RESPOND TO THAT ARTICLE?

A. Yes. Ms. Ahern presents this article as support for her contention that diversification lowers risk and reduces the cost of equity. This statement is false. Diversification will only lower the cost of equity for a company if the companies added in the diversification process have a lower stand-alone risk than the risk of the company prior to diversification. The mistake made in the article is that the analysis in the article simply captures the diversification risk reduction that investors can get on their own. If an investor adds the common stock of a "pure play" water utility to the portfolio, the performance achieved from owning the stock in this water company will be blended with the other stocks owned by that investor. If the portfolio is already adequately diversified, then the overall risk of that investor's portfolio will already be minimized through the impact of diversification. Any further dampening of the diversification risk that occurs because the "pure play" utility diversifies will only be redundant to the diversification benefits that have already occurred. This is precisely why the only type of risk that impacts the cost of equity is the non-diversifiable risk. Diversifiable risks are eliminated by the portfolio effect.

Q. IN RESPONSE TO RAR-ROR-22, PART C, MS. AHERN SAID THAT SHE IS AWARE OF STUDIES THAT HAVE SHOWN VALUE LINE AND THOMPSON/FIRST CALL EARNINGS GROWTH RATES HAVE SHOWN A TENDENCY TO BE TOO HIGH. DID THIS ADMISSION CAUSE HER TO REJECT HER USE OF THESE ANALYSTS GROWTH RATES?

A. No. She rationalized her use of these overstated analysts forecasts by saying she "…is unaware of studies which indicate that investors do not rely upon analysts' earnings growth forecasts in arriving at their expectations of stock price growth." Ms. Ahern's response to this interrogatory is important because it shows a flaw in what she is willing to use in her analysis. She is willing to use these five year earnings growth rates even though empirical studies show analysts forecasts are overstated, there is substantial literature from the financial press that shows investors are well aware of these overstatements, and that these five-year growth rates are inconsistent with the long-term sustainable growth rate that is required for use in the constant growth form of the DCF model. Not only that, her reason for being willing to accept these growth rates is that no one has proven investors don't rely upon them. I think Ms. Ahern has improperly turned the tables. Before using a method to obtain a growth rate, there should be a sound logical basis for using them.

Q. IN RESPONSE TO RAR-ROR-12, MS. AHERN SAYS THAT SHE BELIEVES COMMON STOCKS WILL CONTINUE TO SELL

SUBSTANTIALLY ABOVE BOOK VALUE IRRESPECTIVE OF THE LEVEL OF THE FUTURE RETURN ON BOOK EQUITY INVESTORS EXPECT THE COMPANIES TO EARN IN THE FUTURE. PLEASE COMMENT ON HER RESPONSE.

A. Ms. Ahern is incorrect. If she were correct that common stocks will continue to sell substantially above book value irrespective of the level of future return on book equity investors expect, then the BPU might just as well allow EWC a 0% return on equity. If the BPU did this and the result was that stock prices remained substantially above book value, it would be possible for rates to be minimized while at the same time the companies would still be able to attract capital. Because Ms. Ahern is mistaken about the relationship between the future expected return on book equity and the resultant stock price, it is essential for the BPU to allow a cost of equity substantially higher than the zero that would be derived from Ms. Ahern's testimony. I bring this point out because it shows a basic, fundamental misunderstanding by Ms. Ahern of what the entire process of determining the cost of equity is all about.

G. Conclusion

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF MS. AHERN'S TESTIMONY.

A. Ms. Ahern recommends that the company be allowed a return on equity of 11.60%. This recommendation is based upon seriously flawed approaches to the DCF, risk premium and CAPM methods. It is also based upon a "comparable earnings" approach that is not an equity costing method at all. Her testimony and interrogatory responses are riddled with such frequent and basic, fundamental errors in finance that her testimony deserves no weight. Mistakes include a DCF method based upon either short-term growth rates or a b x r +sv method that has a serious mismatch between the retention rate used to compute growth and the retention rate used to compute the dividend yield. Ms. Ahern's Risk Premium and CAPM method, including the improper use of an arithmetic, or non-compounded, growth rate method for measuring historic returns, makes the erroneous assumption that there has not been a marked downturn in the risk premium.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

APPENDIX A - IMPLEMENTATION OF BOTH THE DCF METHOD AND THE RISK PREMIUM/CAPM METHOD

I. DCF Method

Q. HOW IS THE DCF METHOD USUALLY IMPLEMENTED?

A. The DCF method is usually implemented in utility rate proceedings using the constant growth version. It is applied by implementing the following formula:

cost of equity = dividend yield + future expected growth

Where growth refers to the future sustainable growth rate in dividends, earnings, book value and stock price.

Q. IS THE DCF MODEL WIDELY USED IN UTILITY RATE PROCEEDINGS?

A. Yes. The DCF model has been widely used for many years. From my experience, the constant growth form of the DCF model is more widely used than any other approach to determining the cost of equity.

Q. IS THE DCF MODEL COMMONLY IMPLEMENTED IN A CONSISTENT MANNER?

A. No. The DCF model is widely used and widely abused. Most implementations of the DCF model in utility rate proceedings start out with the same D/P +g, or dividend yield plus growth formula. Also, most generally agree that the growth rate "g" must be representative of the constant future growth rate anticipated by

investors for dividends, earnings, book value, and stock price. However, all too often, this important principle is forgotten when it comes time to implement the constant growth DCF formula. Such carelessness causes substantial, unnecessary error when implementing the constant growth version of the DCF model.

Q. WHY IS IT SO IMPORTANT FOR THE GROWTH RATE USED IN THE CONSTANT GROWTH VERSION OF THE DCF MODEL TO BE REPRESENTATIVE OF THE CONSTANT GROWTH RATE FOR DIVIDENDS, EARNINGS, BOOK VALUE AND STOCK PRICE?

A. The derivation of the constant growth formula is based upon the principle that investors buy stock solely for the right to future cash flows obtained as a result of that ownership. The cash flows are obtained through dividend payments and/or stock price appreciation. The constant growth version of the DCF formula will accurately quantify investors' expectations only if investors expect the dividend yield (defined as dividend payment divided by stock price) and the growth in dividends to best be estimated at one constant growth rate for many years into the future. The dividend yield and growth rate that are used in the constant growth formula must be selected carefully. Consider what happens if the expected growth rates are not all equal:

1. DIFFERENT GROWTH RATE FOR EARNINGS AND FOR DIVIDENDS. Both dividends and the ability for a company to grow dividends in the future are directly derived from earnings. The dividend

yield, or D/P, portion of the constant growth DCF formula quantifies the investor-derived value from the portion of earnings paid out as a dividend and the "g" portion of the constant growth DCF formula quantifies the value of the portion of earnings retained in the business. If dividends are quantified using the current dividend rate, but an earnings forecast is used to quantify "g" that is based upon a future environment in which earnings are expected to grow more rapidly than dividends, an ever-increasing portion of the total return expected by investors will be attributable to growth and a smaller portion will be attributable to dividends. Under these conditions, other things being equal, the constant growth version of the DCF model would overstate the cost of equity because the decrease in the payout ratio that results from a more rapid earnings growth rate than dividend growth rate would shift a greater portion of the earnings from dividends to earnings growth. The result of this is that the higher future earnings growth rate would cause the portion of earnings available for dividends to be lower, and therefore the dividend yield would be lower. Conversely, if future earnings growth were expected to be less than dividend growth, the constant growth form of the DCF model would understate the cost of equity. Every time a dividend payment is scheduled, the board of directors of a company decides what portion of earnings to pay out as a dividend and what portion of earnings to re-invest, or "retain" in the business. It is this re-investment of earnings that causes sustainable growth. Both dividends and growth therefore compete for the same

dollars of earnings. The higher the portion of earnings allocated to the payment of dividends, the smaller the amount of earnings left over for re-investment and therefore the lower the future growth rate. The relationship between the portion of earnings paid out as a dividend and the portion re-invested in the business is commonly referred to as either the dividend "payout" ratio (which is computed by dividing dividends by earnings), or the "retention rate" (which is computed by dividing the portion of earnings re-invested in the business by earnings). The sum of the payout ratio and the retention rate is 1.0, or 100% because 100% of earnings are either paid out as a dividend or retained in the business. The constant growth version of the DCF formula uses a specific dividend rate to compute the "D/P" term of its formula. This specific dividend rate has a specific earnings "retention rate" associated with it. This specific "retention rate" provides for one and only one percentage of earnings that remains to cause the growth that is quantified in the second term of the equation. This is because the portion of earnings paid out as a dividend and the portion not paid out as a dividend must remain equal to total earnings. Consider what happens if the dividend "payout ratio" or the earnings "retention" ratio are not constant. If they are not constant, the portion of earnings available for growth and the portion available for dividends will continue to shift over time, but under such conditions the constant growth formula produces an erroneous result because it is incapable of properly accounting for this change.

2. EARNINGS PER SHARE GROWTH RATE DIFFERENT FROM STOCK PRICE GROWTH RATE. When earnings per share growth rates are measured over a relatively short time period such as the five-year consensus growth rates compiled by services such as Zacks and I/B/E/S, it is likely that investors expect materially different growth rates in earnings per share and stock price. This is because the earnings per share growth rate as reported in such services is simply the compound annual growth rate in the earnings per share from the most recently completed fiscal year to the earnings per share forecast for five years into the future. Presumably, an earnings per share forecast for five years into the future is sufficiently far off that analysts' forecasts for that time period must be based upon an expectation of normal conditions. Five years into the future is too far off to forecast abnormal economic conditions, abnormal weather conditions, or any abnormal operating problems that could impact earnings. However, the base year from which earnings are forecast is likely to contain some abnormalities that have an impact on earnings. To the extent this abnormality exists, the forecast of earnings per share growth from the base year to a period five years in the future will be equal to the sustainable growth rate plus or minus the impact of any abnormalities. Growth that is required to bring earnings up to or down to normally expected conditions is not sustainable growth and therefore it is not the kind of growth that would be mirrored in the stock price growth rate.

3. DIFFERENT GROWTH RATE FOR EARNINGS AND FOR BOOK VALUE. The return on book equity is computed by dividing earnings by book value. This is an important number for several reasons: a) for a regulated utility company, the allowed cost of equity is the return on book equity that a utility commission intends for a company to earn on the regulated portion of its business, and b) unregulated companies attempt to earn the highest risk adjusted returns on equity that are possible. If earnings per share grow more rapidly than book value per share, the return on equity increases. Conversely, if earnings per share grow more slowly than book value per share, the return on equity decreases. While increases and/or decreases in the earned return on equity can and do occur, it is not credible to forecast a sustained change in the return on equity for the many years into the future that are required in the constant-growth DCF model. A forecasted continuation of a decrease in the earned return on equity would eventually drive the earned return on equity to near zero – a condition that is not credible for a regulated business providing a needed service. Similarly, a forecasted continuation of an increase in the earned return on equity would eventually drive the earned return on equity to an extremely high number – a condition that would not form the basis for a credible growth rate forecast for a regulated business because of the regulatory constraints on the authorized return. Similarly, an earnings per share growth rate higher than the book value per share growth rate is not credible for a

competitive business because, as returns would go higher and higher, more and more competitors would be attracted. If a growth rate based upon an earning per share forecast higher than the forecast book value per share growth rate was used in a constant-growth form of the DCF model, then the constant-growth version of the DCF model would contain an upward bias. Conversely, if an earnings per share forecast that is lower than the book value per share growth rate, then the constant-growth form of the DCF model would contain a downward bias.

Q. ARE FIVE-YEAR EARNINGS PER SHARE FORECASTS OF THE TYPE AVAILABLE FROM SOURCES SUCH AS ZACKS, I/B/E/S, AND VALUE LINE SUITABLE AS A PROXY FOR LONG-TERM SUSTAINABLE GROWTH IN THE CONSTANT-GROWTH FORM OF THE DCF MODEL?

A. No. For the above reasons, it is improper to directly use a five-year earnings per share forecast as a proxy for long-term sustainable growth in the constant-growth DCF model. No attempt is made for these earnings per share forecasts to be representative of the anticipated growth rate in dividends per share, book value per share, or stock price. Therefore, these sources can be used to develop a sustainable growth rate in the context of a constant-growth DCF model, but if used directly as a proxy for long-term growth they are no more accurate than it would be to forecast the height of a human at age 60 based upon a reasonable forecast of annual growth for the five years starting at age

12. These earnings per share forecasts are generally different from the anticipated growth in dividends, book value, and stock price because they include the often substantial impact of bringing earnings up or down to a normal earned return on equity from whatever return on equity was achieved in the most recently completed fiscal year. Additionally, such analysts' growth rates tend to be overstated because of the well-documented propensity for analysts to be optimistic.[23] The combined effect of the habitual optimism and the required movement over a relatively short five-year time period to bring earnings per share up to the optimistic levels causes five-year analysts' growth rates to commonly overstate the future sustainable growth rate. As noted earlier, an October 4, 2001, report issued by Credit Suisse First Boston noted that analysts' estimates "… have on average been 6% too optimistic 12 months prior to a reporting date."[24] As a result, DCF approaches that rely

[23] While there are many sources that have shown this optimism to exist, one noteworthy source is a statement by Arthur Levitt, former chairman of the U.S. Securities and Exchange Commission. The following appeared on page 4 of the 5/31/99 issue of Barrons:

> ARTHUR LEVITT MAY BE THE best chairman of the SEC since Joe Kennedy. And no accident, really: Like Kennedy, Levitt spent enough time in the Street to develop a fine nose for good stocks and bad people.
>
> Back in April, Levitt delivered some cogent remarks on analysts (in the sacred order of being, they're somewhat lower than angels) and their innate bullishness (solely the product of their sunny natures).
>
> As he observed, sell recommendations make up 1.4% of all analysts' recommendations, while buys represent 68%.
>
> By way of explanation for this strange imbalance, he offers the possibility of a "direct correlation between the content of an analyst's recommendation and the amount of business his firm does with the issuer."
>
> Analysts, he grouses are too eager to see every frog of a stock as a prince. What the world needs, he laments, are analysts who call a frog a frog.

[24] *Weekly Insights*, "Global Strategy Perspectives", October 4, 2001, page 58.

upon the direct use of analysts' five-year growth rates repeatedly overstate the cost of equity.

Q. HOW IS IT POSSIBLE TO ENSURE THAT THE GROWTH RATE USED IN THE CONSTANT-GROWTH VERSION OF THE DCF MODEL WILL RESULT IN A CONSTANT GROWTH RATE INDICATOR FOR DIVIDENDS, EARNINGS, BOOK VALUE, AND STOCK PRICE?

A. The most straight-forward and most accurate way to make this computation is to use the formula "b x r + sv" formula, where b= the earnings retention rate, r=the future expected return on book equity, and sv is a factor that accounts for sustainable growth caused by the sale of new shares of common stock. The mathematics in support of the derivation of the DCF model show that the "b x r + sv" formula should be used to quantify sustainable growth. Common mistakes with this formula include using historic values of "b x r" and/or of "sv" rather than future expected values, and most importantly by failing to realize that in order for the formula to be applied properly, the retention rate value, "b" must be determined in a manner that is consistent with the other values input into the DCF model. This is a critical step necessary to ensure that the portion of the future expected earnings that has been allocated to dividends is consistent with the future expected earnings level that is used to compute growth. This is the way to be sure that the retention rate used to compute the dividend yield portion of the constant-growth portion of the DCF model is the same as the retention rate used to compute growth. If the two are not equal, then the total amount of future

expected earnings allocated in aggregate to dividends and to growth will be something other than 100% of earnings. An approach that accounts for something other than 100% of earnings in the cost of equity computation will result in an invalid result.

The way to ensure the consistency necessary for a valid result from the implementation of the constant-growth form of the DCF model is to compute the retention rate "b" based upon the inputs used for the dividend rate "D" and the future expected return on equity, "r". This computation is straight-forward. By definition the retention rate "b" is equal to the portion of dividends not paid out as a dividend divided by earnings. The earnings consistent with the value used for "D" is computed by multiplying book value as of the time of the determination of "D" by the value of "r". The result is the future expected rate of earnings that is consistent with the value used for "D". By subtracting "D" from the future expected earnings consistent with the value used for "r" and dividing that amount by the earnings consistent with the value chosen for "r" results in a retention rate that contains the necessary consistency. If any other value for "b" is used, such as a forecasted value for "b" in some future time period, then the result from the constant-growth DCF computation would be invalid.

Q. HOW DID YOU APPLY THE DCF MODEL IN THIS CASE?

A. I applied the DCF method two different ways. One way is a single-stage, or constant growth DCF model in which I added a growth rate that was carefully

constructed to meet the rigorous requirements of the constant growth formula. The second DCF analysis is a multi-stage method. Both approaches to the DCF method are dependent upon an estimate of what common equity investors expect for future cash flow. Any company creates a future cash flow for its equity investors by investing funds in assets that are needed by its business. The future cash flow rate is therefore dependent upon the rate at which the funds invested by the equity investors is able to earn. The rate at which they are able to earn is referred to as the return on book equity.

Q. HOW DID YOU DETERMINE THE FUTURE RETURN ON BOOK EQUITY ANTICIPATED BY INVESTORS?

A. I examined both the historic actual returns earned on average by the comparative groups of electric companies, the future return on equity forecast by Value Line, and the return on equity required to achieve the consensus growth rate compiled by Zacks.

Q. YOU SAID THAT ANALYSTS' ESTIMATES ARE WELL KNOWN TO HAVE A TENDENCY TO BE HIGH. PLEASE PROVIDE YOUR BASIS FOR THAT CONCLUSION.

A. In addition to the statements from former Securities Exchange Commission chairman Arthur Levitt, and the statements in a recent report from Credit Suisse First Boston that I have referenced earlier in this testimony, other noteworthy sources include an article that appeared on the first page of the September 3, 2001 issue of the Financial Times. This article, entitled "HSBC shakes up research" begins by saying:

> HSBC is radically restructuring its investment research in a sign that banks are responding to criticism of the quality of equity analysis.
>
> The bank's analysts will be required to publish as many "sell" recommendations on stocks as "buys" and HSBC will invest its own money in its best research ideas. The move is in response to criticism that investment banks' analysts are too positive about companies in the hope of generating lucrative corporate finance work.
>
> Criticism has been particularly strong in the US, where many banks continued to talk up technology shares at the peak of the market. The banks are facing a wave of litigation from investors who lost money by following analysts' recommendations. Merrill Lynch recently paid $400,000 to a client to drop an action against Henry Blodget, its star internet analyst.
>
> Banks have also been attacked by US regulators and politicians.

An article appeared in the November 18, 2001, edition of the New York Times, on the first page of the Sunday business section 3. This article, entitled "Telecom's Pied Piper: Whose Side Was He On?" is an article about Salomon Smith Barney telecommunications analyst Jack Benjamin Grubman, "… one of Wall Street's highest-paid analysts…". The article then says:

> Anyone can make mistakes, but Dr. Grubman's cheerleading epitomizes the conflict-of-interest questions that have dogged Wall Street for two years: Even as he

> rallied clients of Salomon Smith Barney, a unit of **Citigroup**, to buy shares of untested telecommunications companies and to hold on to the shares as they lost almost all of their value, he was aggressively helping his firm win lucrative stock and bond deals from these same companies.
>
> Since 1997, Salomon has taken in more investment banking fees from telecom companies than any other firm on the Street. Because of Dr. Grubman's power and prominence, and because his compensation is based in part on fees the company generated with his help, a part of those fees went to him.

The demise of Enron has served to substantially reinforce investors' mistrust of analysts. Consider the impact on investors when they read the article entitled "The Analyst Who Warned About Enron" that appeared on pages C1 and C17 of the 1/29/02 edition of the *Wall Street Journal*. The article explains that "Financial Analysts who tracked Enron Corp. have taken a pounding for being company 'shills' and for failing to concede they didn't fully understand the Houston energy-trading concern's complex finances." Then, the article explains one exception was bond analyst Daniel Scotto who told clients back in August that Enron securities "should be sold at all costs and sold now" Instead of his accurate recommendation resulting in him getting a promotion, it resulted in his being fired. As the article explains,:

> Dr. Scotto's experience highlights one of the oldest pressure points on Wall Street involving financial analysts, who traditionally act as a filter between investors and the financial markets. During the past decade, Wall Street securities firms increasingly have pushed their research analysts to actively trumpet stocks and bonds, not impartially analyze them.
>
> The side benefits to the securities firms can be enormous: If an analyst touts a company's securities, the securities firm stands a greater chance at becoming an

> adviser to that company, and garnering the fees that will follow. Nowadays, analysts can be stars, receiving bonuses of several hundred thousand dollars for helping their firm to win big underwriting deals. Bash the securities of a corporate client, though, and the securities firm could be shut out of lucrative deals. Enron issued billions of dollars worth of securities in recent years, generating huge fees for its financial advisers and bankers.

Because of articles like these, others that have appeared over the years, and knowledge gained from personal experience, knowledgeable investors know that analysts' forecasts have a strong tendency to be overly optimistic.

A. Implementation of Single-stage DCF

Q. HOW DID YOU IMPLEMENT THE SINGLE-STAGE OR CONSTANT GROWTH DCF IN THIS CASE?

A. I started by taking the current quarterly dividend rate for each company examined[25] and multiplying it by 4 to arrive at the current annual rate. This number was then converted to a dividend yield by dividing it by the stock price of each company. The stock price used was determined two different ways. One way was to take the actual stock price as of March 31, 2003. The second way was to take the average of the high and low stock price for the year ended March 31, 2003. Then, the dividend yield was increased by adding one-half the future expected growth rate. This upward adjustment to the dividend yield is necessary

[25] The group of companies were selected by the company witness.

because the DCF formula specifies that the dividend yield to be used is equal to the dividends expected to be paid over the next year divided by the market price. After this adjustment to increase the dividend yield, the yield is equal to an estimate of dividends over the next year. To each dividend yield result, I added one-half the future expected growth rate. After the adjustment, the yield is equal to an estimate of dividends over the next year.[26]

Q. HOW DID YOU OBTAIN THE GROWTH RATES YOU USED IN THE CONSTANT GROWTH, OR k= D/P + G, VERSION OF THE DCF METHOD?

A. I derived the growth rates from the internal, or retention growth rate, or "b x r" method where "b" represents the future expected retention rate and "r" represents the future expected earned return on book equity. In addition to the "b x r" growth caused by the retention of earnings, I added an amount to recognize that growth is also caused by the sale of new common stock in excess of book value.

A critical requirement in the implementation of the simplified version of the DCF model is that the estimate of the future expected growth rate be a growth rate that is expected to be sustained, on average, for many years into the future. Stock analysts and textbooks recognize that generally the most accurate way to estimate the sustainable growth rate in a constant growth DCF method is to use

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[26] The complex version does not directly use dividend yields. Instead, it determines the present value of each dividend payment as a discounted cash flow.

what is usually referred to as the retention growth, or "b x r" method. In this approach, the future expected retention rate "b" is multiplied by the future expected return on book equity "r" in order to obtain a sustainable growth rate. Other methods to estimate future sustainable growth are sometimes used. However, those methods are generally more subjective, and even if used with extreme care, do not have the same potential for accuracy that a properly applied "b x r" estimate has. The reason for this is, in order to produce a meaningful result, those methods must be adjusted to eliminate factors which would otherwise cause them to include non-recurring influences on growth and/or growth rates that are not equally representative of the future average expected growth in earnings, dividends, book value, and stock price.

The "b x r" method is best implemented by multiplying the *future expected* return on book equity by the retention rate that is consistent with both the future expected return on book equity and the dividend rate used to compute the dividend yield. Also, future sustainable growth should include an increment of growth to allow for the impact of sales of new common stock above book value.

The "b x r" growth rate computation, unless adjusted, does not account for sustainable growth that is caused by the purchase or sale of common stock above book value. Therefore, I modified the "b x r" growth rate to account for this additional growth factor. This additional growth factor, which is a standard part of the DCF computation, is sometimes referred to as the “SV” growth.

An accurate estimate for the future sustainable value of "r" (return on equity) when multiplied by a value for "b" (retention rate) that is consistent with the selection of the dividend rate and the expected return on book equity, produces a growth rate that is constant and sustainable.

Q. DO STOCK ANALYSTS USE THE "b x r" METHOD?

A. Yes. In the textbook, Investments, by Bodie, Kane and Marcus (Irwin, 1989) at page 478, expected growth rate of dividends is described as follows:

> How do stock analysts derive forecasts of *g*, the expected growth rate of dividends? Usually, they first assume a constant dividend payout ratio (that is, ratio of dividends to earnings), which implies that dividends will grow at the same rate as earnings. Then they try to relate the expected growth rate of earnings to the expected profitability of the firm's *future* investment opportunities. The exact relationship is
>
> g= b X ROE
>
> where *b* is the proportion of the firm's earnings that is reinvested in the business, called the **plowback ratio** or the **earnings retention ratio,** and ROE is the rate of return (return on equity) on new investments. If all of the variables are specified correctly, [the] equation . . . is true by definition, . . .

Q. HOW DID YOU COMPUTE "g"?

A. As previously stated, I used the “b x ROE” method specified in the above textbook quote, although I refer to it in this testimony as the “b x r” method. In the above equation, ROE has the same meaning as "r". I recognized that investors have both historical and forecasted information available to determine the future return on book equity expected by investors. Forecasted data includes not only specific data for a company being evaluated, but also includes overall industry forecasted data. In addition to “b x r” growth, I included a factor to allow for growth caused by the sale of new common stock at a price other than book value.

I have reflected the impact on growth caused by the sale or repurchase of common stock in my recommended growth rate.

Q. THERE ARE COST OF CAPITAL WITNESSES WHO CLAIM THAT THE "b x r" METHOD IS SOMEHOW CIRCULAR. THIS IS BECAUSE THE FUTURE EARNED RETURN ON BOOK EQUITY THAT YOU USE TO QUANTIFY GROWTH IS USED TO DETERMINE THE COST OF EQUITY, AND THE COST OF EQUITY IS THEN USED TO DETERMINE THE FUTURE RETURN ON EQUITY THAT WILL BE EARNED. IS THIS CIRCULAR?

A. No. Those who erroneously claim that the method is circular confuse the definition of “r” and the definition of “k”. While “r” is defined as the future return on **book** equity anticipated by investors, “k” is the cost of equity, or the return investors expect on the **market price** investment. Since the market price is determined based upon what investors are willing to pay for a stock, and the book

value is based upon the net stockholders' investment in the company, "r" usually has a different value than "k". In fact, the proper application of the DCF method relates a specific stock market price to a specific expectation of future cash flows that is created by future earned return ("r") levels. For example, assume investors are willing to pay $10 a share for a company when the expectations are that the company will be able to earn 12% on its book equity in the future. If events would cause investors to re-evaluate the 12% return expectation, the stock price should be expected to change. If investors' expectations of the future return on book equity change from 12% to 10%, and there is no corresponding change in the cost of equity, the stock price would decline. The cost of equity, however, would not decline simply because an event might occur that would cause investors to lower their estimate for "r". The cost of equity is equal to the sum of both the dividend yield and growth. Investors' estimate of "r" influences the investors' estimate for growth. Changes in growth expectations cause investors to change the price they are willing to pay for stock. A change in the stock price can cause a change in the dividend yield that offsets the change in expected growth. In this way, a higher dividend yield would offset by the lower expected growth rate and leave the cost of equity, "k", unchanged.

B. Determination of the Future Return on Equity "r"

Q. HOW DID YOU DETERMINE THE VALUE OF "r" THAT YOU USED IN YOUR RETAINED EARNINGS GROWTH COMPUTATIONS?

A. My estimate for "r" for the comparative group of water companies covered by value line is 11.00%. The value of "r" used for companies chosen by the company witness was also 11.00%. The value of "r" that is required in the DCF formula is the one that is sustainable into the future for much longer than 5 years.

C. Determination of Retention Rate, "b"

Q. HOW HAVE YOU DETERMINED THE VALUE OF THE FUTURE EXPECTED RETENTION RATE "b" THAT YOU USED IN YOUR SIMPLIFIED DCF ANALYSIS?

A. I have recognized that the retention rate, "b", is merely the residual of the dividend rate, "D", and the future expected return on book equity, "r." Since, by definition, "b" is the fraction of earnings not paid out as a dividend, the only correct value to use for "b" is the one that is consistent with the quantification of the other variables when implementing the DCF method. The formula to determine "b" is:

b= 1- (D/E), where

b = retention rate

D = Dividend rate

E = Earnings rate

However, "E" is equal to "r" times the book value per share. Book value per share is a known amount, as is "E", consistent with the future expected value for "r", and the "D" used to compute dividend yield. Therefore, to maximize the accuracy of the DCF method, quantification of the value of "b" should be done in a manner that recognizes the interdependency between the value of "b" and the values for "r" and "D". I directly computed the value of "b" based upon the values of "D", and "r".

Q. WHAT RETENTION RATES DID YOU USE IN THE SINGLE-STAGE DCF METHOD?

A. Based upon the above formula, I used a retention rate of electric 30.66% to 31.31% based on the companies covered by Value Line and 35.73% to 35.77% based on the companies chosen by Ms. Ahern. See JAR 5, pp.1 & 2.

D. Implementation of Multi-stage DCF

Q. HOW DID YOU IMPLEMENT THE MULTI-STAGE DCF METHOD?

A. The first stage of the model is based upon Value Line*'s* estimates of dividends per share and earnings per share for 2003 through 2007[27] for the companies examined. Value Line does not show a specific earnings and dividend projection for every year from 2003 to 2007. Projections for years skipped by Value Line were made by extrapolation from the available data. When implementing this method, I mechanically used Value Line's projections for the period in which the projections were available.

I determined future earnings in the second stage of the non-constant DCF model by multiplying the future book value per share by the future expected earned return on book equity. For the purposes of this case, I used two future return on book equity estimates; a high end of range and a low end of range. Projected book value equals the beginning book value plus the current year's earnings minus the current year's dividends. Book value growth projections also include the effect of sales of new common stock. The projections in the second stage of the DCF model were made for 40 years into the future. Events longer than 40 years into the future have a minimal present value.[28]

[27] The estimate for 2007 is shown by Value Line as its estimate from 2006-2008.

[28] For example, a change in an assumption that the selling market-to-book would be 0.1 lower or higher than as of the time of purchase would introduce a potential inaccuracy in the indicated cost of equity of plus or minus about 25 basis points in a 30-year analysis, but a similar change in the market-to-book ratio expectation would introduce only plus or minus about 15 basis points in a 40 year analysis. If longer than 40 years were used, the result would be even less sensitive to the future market-to-book ratio expectation.

My projections have relied on a constant dividend payout ratio for the second stage[29].

I derived the estimated future stock price from the projected book value using the same market-to-book ratio at the time of sale as exists today. The only cash outflow is the price paid for the stock. The non-constant version of the model uses both the spot stock price and the average stock price over one year to be representative of the price paid.

The retention rate used in the second-stage was computed by projecting the continuation of dividend growth at the same percentage change as occurred between the next-to-the last and the last year of the first stage into the first year of the second stage. The resulting retention rate for this first year of the second stage was then determined by relating the resultant dividend rate to the earnings per share projected for the first year of the second stage. For years subsequent to the first year of the second stage, the retention rate was held constant at the second stage first-year amount.

The results for the complex, or multi-stage DCF are shown on JAR 5.

Q. WHAT COST OF EQUITY IS INDICATED BY THE IMPLEMENTATION OF THE DCF METHOD IN THIS CASE?

[29]As in the case of the future expected earned return on equity assumption, if there were evidence to support the use of varying payout ratios instead of a constant payout ratio, the same model could still be used to accurately quantify the cost of equity. Unlike the simplified DCF model, this model specifically accounts for the fact that a change in the payout ratio has an impact on the book value, and therefore has an impact on the earnings rate achieved in the future.

A. As shown on Schedule JAR 2., the cost of equity indicated by the DCF method was estimated to be between 9.02% and 9.05%, depending upon the group of companies and the time period examined.

II. RISK PREMIUM/CAPM METHOD

Q. PLEASE EXPLAIN THE RISK PREMIUM/CAPM METHOD.

A. The risk premium/CAPM method estimates the cost of equity by analyzing the historic difference between the cost of equity and a related factor such as the rate of inflation or the cost of debt.

One critically important fact to understand when implementing the risk premium method is that risk premiums have declined in recent years. As mentioned earlier in this testimony, Federal Reserve Chairman Alan Greenspan, made a speech on October 14, 1999 entitled "Measuring Financial Risk in the Twenty-first Century". The text of the speech is available at http://www.bog.frb.fed.us/boarddocs/speeches/1999/19991014.htm. In the speech, Chairman Greenspan says:

> That equity risk premiums have generally declined during the past decade is not in dispute. What is at issue is how much of the decline reflects new, irreversible technologies, and what part is a consequence of a prolonged business expansion without a significant period of adjustment. The business expansion is, of course, reversible, whereas technological advancements presumably are not.

Q. IS CHAIRMAN GREENSPAN'S VIEW OF THE REDUCTION IN RISK PREMIUMS CONSISTENT WITH WHAT INVESTORS NOW GENERALLY EXPECT?

A. Yes. One good source to confirm that the financial community shares Chairman Greenspan's conclusion is an article that appeared in the April 5, 1999, issue of *Business Week*:

> The risk premium is the difference between the risk-free interest rate, usually the return on U.S. Treasury bills, and the return on a diversified stock portfolio. Over more than 70 years, the return to stocks averaged 11.2%, and T-bills, just 3.8%. The difference between the two returns, 7.4%, is the risk premium. Economists explain this extra return as an investors' reward for taking on the greater risk of owning stocks. **Most market watchers believe that in recent years, the premium has fallen to somewhere between 3% and 4% because of lower inflation and a long business upswing that makes corporate earnings less variable.**
> [emphasis added]

On October 4, 2001, the previously referenced report from Credit Suisse First Boston concluded that the equity risk premium over treasury bonds is 3.7%, and the equity risk premium over Baa rated corporate bonds is now 1.9%.[30]

A. Inflation Risk Premium Method.

Q. HOW HAVE YOU APPLIED THE INFLATION PREMIUM METHOD?

[30] Weekly Insights, "Global Strategy Perspectives", October 4, 2001, Credit Suisse First Boston, page 55 and 61.

A. I implemented the inflation premium method by adding investors' current expectation for inflation to the long-term rate earned by common stocks net of inflation. This result was modified, based upon beta, to obtain a result that was compatible with the risk of the average electric distribution utility.

Q. WHAT IS THE BASIS FOR THE INFLATION PREMIUM METHOD?

A. A book entitled *Stocks for the Long Run*[31] examined the real returns achieved by common stocks from 1802 through 1997. The conclusion in the book is that equity returns in excess of the inflation rate have been very similar in all major sub-periods between 1802 and 1997, while the risk premium in between bonds and common stocks has been erratic. Page 11 of this book says:

> Despite extraordinary changes in the economic, social, and political environment over the past two centuries, stocks have yielded between 6.6 and 7.2 percent per year after inflation in all major subperiods.

The book then says on page 12:

> Note the extraordinary stability of the real return on stocks over all major subperiods: 7.0 percent per year from 1802-1870, 6.6 percent from 1871 through 1925, and 7.2 percent per year since 1926. Ever since World War II, during which all the inflation in the U.S. has experienced over the past two hundred years has occurred, the average real rate of return on stocks has been 7.5 percent per year. This is virtually identical to the previous 125 years, which saw no overall inflation. This remarkable stability of long-term real returns is a characteristic of mean reversion, a property of a

[31] *Stocks for the Long Run* by Jeremy J. Siegel, Professor at Wharton. McGraw Hill, 1998. According to the book cover, Professor Siegel was "… hailed by Business Week as the top business school professor in the country…".

variable to offset its short-term fluctuations so as to produce far more stable long-term returns.

Continuing on page 14, *Stocks for the Long Run* says:

> As stable as the long-term real returns have been for equities, the same cannot be said of fixed-income assets. Table 1-2 reports the nominal and real returns on both short-term and long-term bonds over the same time periods as in Table 1-1. The real returns on bills has dropped precipitously from 5.1 percent in the early part of the nineteenth century to a bare 0.6 percent since 1926, a return only slightly above inflation.
>
> The real return on long-term bonds has shown a similar pattern. Bond returns fell from a generous 4.8 percent in the first sub period to 3.7 percent in the second, and then to only 2.0 percent in the third.

The book explains some of the reasons why bond returns have been especially unstable. Page 16 says:

> The stock collapse of the early 1930's caused a whole generation of investors to shun equities and invest in government bonds and newly-insured bank deposits, driving their return downward. Furthermore, the increase in the financial assets of the middle class, whose behavior towards risk was far more conservative than that of the wealthy of the nineteenth century, likely played a role in depressing bond and bill returns.
>
> Moreover, during World War II and the early postwar years, interest rates were kept low by the stated bond support policy of the Federal Reserve. Bondholders had bought these bonds because of the widespread predictions of depression after the war. This support policy was abandoned in 1951 because low interest rates fostered inflation. But interest rate controls, particularly on deposits, lasted much longer.

The book then provides a conclusion on page 16 that:

> Whatever the reason for the decline in the return on fixed-income assets over the past century, it is almost certain that

the real returns on bonds will be higher in the future than they have been over the last 70 years. As a result of the inflation shock of the 1970's, bondholders have incorporated a significant inflation premium in the coupon on long-term bonds.

Q. IS IT POSSIBLE TO ACCURATELY QUANTIFY INVESTORS' CURRENT EXPECTATIONS FOR INFLATION?

A. Yes. It has recently become possible to analytically determine investor's expectations for inflation. The U.S. government has issued inflation-indexed treasury bonds. The total return received by investors in these bonds is a fixed interest rate plus an increment to the principal based upon the actual rate of inflation that occurs over the life of the bond. These bonds pay a lower interest rate simply because investors know that in addition to the interest payments, they will receive the allowance for inflation as part of the increment to the principal. This is in contrast to conventional U.S. treasury bonds. The principal amount of a conventional bond does not change over the life of the bond. Therefore, whatever allowance for inflation investors believe they need can only be obtained through the interest payment. By comparing the interest rate on conventional U.S. treasury bonds with the interest rate on inflation-indexed U.S. treasury bonds, the future inflation rate anticipated by investors can be quantified.

Q. WHAT IS THE CURRENT INFLATION EXPECTATION OF INVESTORS?

A. As of September 2003, the inflation expectation of investors was estimated to be about 2.60%. See JAR 9. This was obtained by observing that long-term inflation-indexed treasury securities were yielding 2.57%, while long-term non inflation-indexed treasury securities were yielding 5. 18%. The difference between 5. 18% and 2.57% is 2.61%. This result was rounded to 2.60%. Adding this 2.60% inflation expectation to the 6.6% to 7.2% range produces an inflation risk premium indicated cost of equity of 9.20% to 9.80% for an equity investment of average risk.

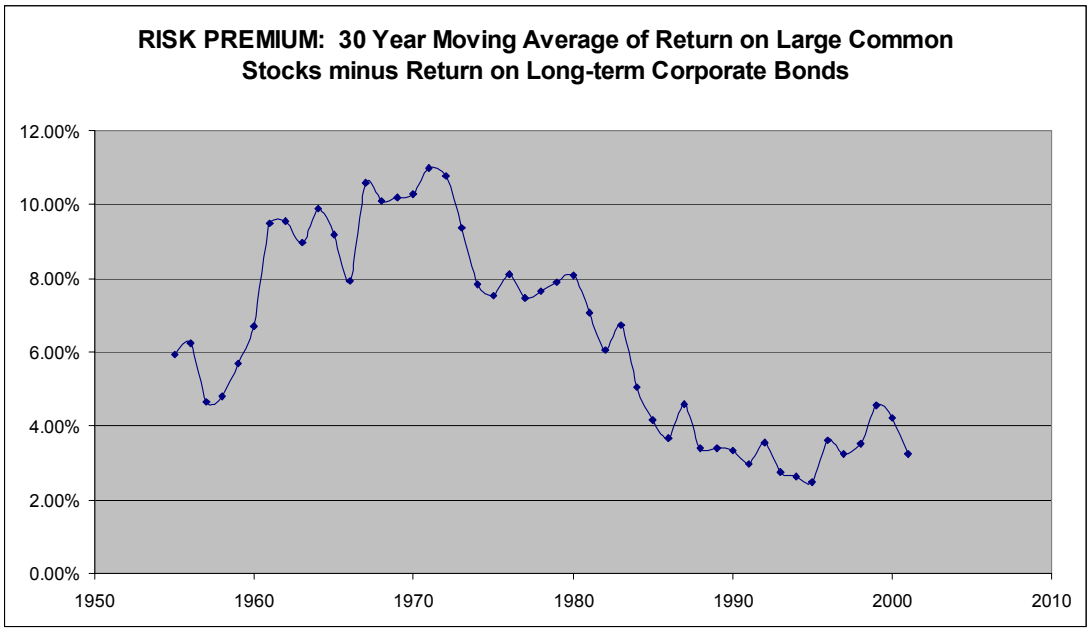
B. Debt Risk Premium Method

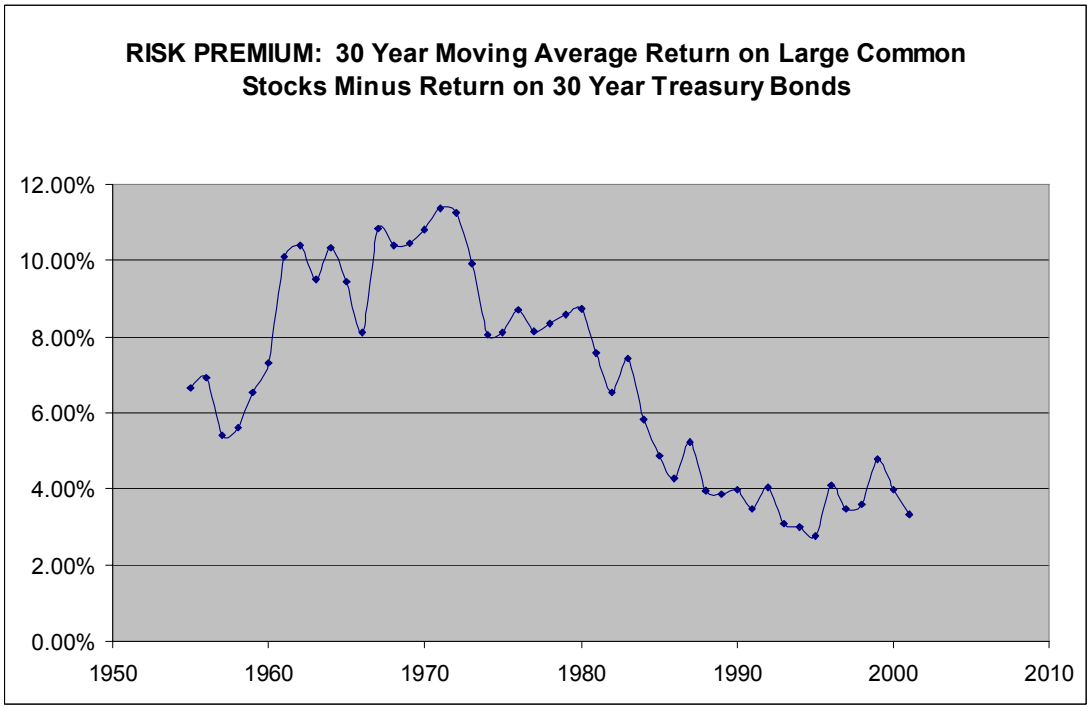
Q. HOW DID YOU DETERMINE THE COST OF EQUITY USING THE DEBT RISK PREMIUM METHOD?

A. As shown on JAR 10, I separately determined the proper risk premium applicable to long-term treasury bonds, long-term corporate bonds, intermediate-term treasury bonds and short-term treasury bills. In this way, the debt risk premium method I present considers a wide array of data points across the yield curve. In this way, the results are less impacted by a temporary imbalance that may exist in the debt maturity "yield curve".

Q. EARLIER IN THIS SECTION OF YOUR TESTIMONY, YOU SHOWED THAT FEDERAL RESERVE CHAIRMAN GREENSPAN NOTED THAT THE FACT THAT EQUITY RISK PREMIUMS HAVE DECLINED "… IS NOT IN DISPUTE." YOU ALSO PROVIDED SOURCES FROM FINANCIAL LITERATURE CONCLUDING THAT THE RISK PREMIUM IS NOW LESS THAN 4%. DO YOU HAVE ANALYTICAL SUPPORT TO SHOW THAT THE STATEMENTS BY CHAIRMAN GREENSPAN AND FROM THE OTHER SOURCES YOU HAVE QUOTED ARE CORRECT?

A. I examined the historic actual earned returns on common stocks and bonds from 1926 through 2000. But, rather than merely making one simplistic computation that examined the entire time period with only one return number over the entire period, I examined a 30-year moving average of the earned returns. Thirty years is long enough to see if indeed there is a trend to the earned returns, but not so short as to be overly influenced by the natural volatility in earned returns that generally occurs over just a year or a few years. As shown in the following graphs, the decline in the risk premiums is persistent and undeniable.


RISK PREMIUM: 30 Year Moving Average of Return on Large Common Stocks minus Return on Long-term Corporate Bonds
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
1950
1960
1970
1980
1990
2000
2010

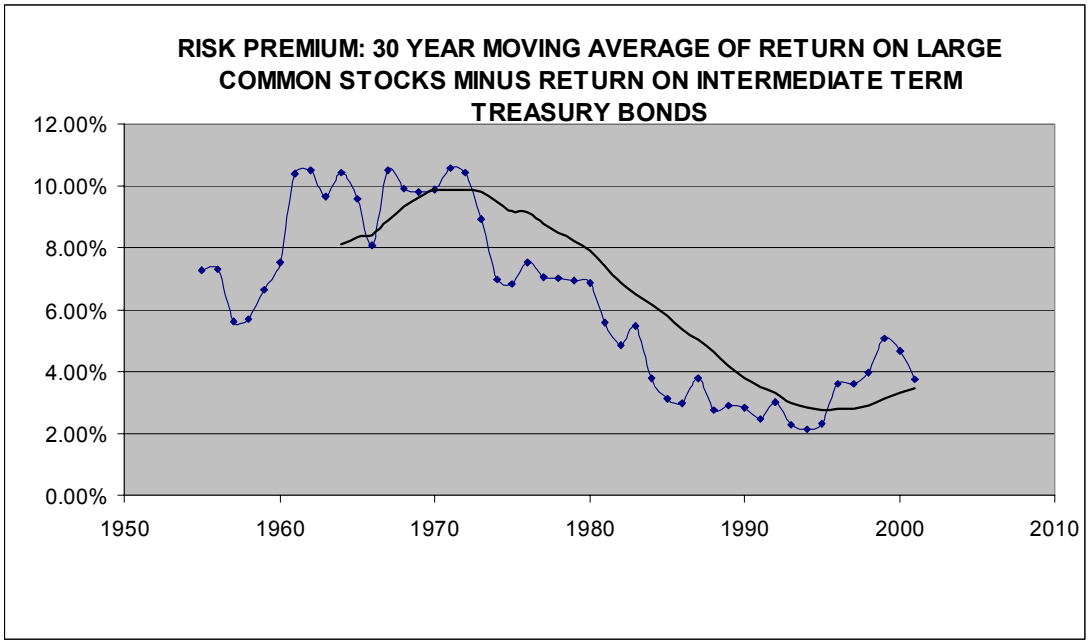

RISK PREMIUM: 30 Year Moving Average Return on Large Common Stocks Minus Return on 30 Year Treasury Bonds
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
1950
1960
1970
1980
1990
2000
2010

An examination of the above graphs confirms that a risk premium over 30 year Treasuries in the 3 to 4% range is appropriate. For my equity cost computations, I used the conservatively high estimate of 4.0% as the risk premium appropriate to add to U.S. Treasuries when determining the cost of equity for an industrial company of average risk.. For applying the appropriate risk premium to interest rates other than U.S. Treasuries, I determined the average historic risk spread between long-term treasuries and the other interest rate categories I examined. See Schedule JAR 10, p. 2. This 4% risk premium was increased or decreased as warranted by the historic data when applied to each of the separate interest rate categories to which I applied the risk premium method.

Q. WHY HAVE YOU CHOSEN 30 YEARS TO SHOW THE DOWNTREND IN THE RISK PREMIUM RATHER THAN A SHORTER TIME PERIOD SUCH AS 10 YEARS?

A. Ten years is far too short a time period to be able to observe the actual risk premium based upon realized historic returns. The reason that realized returns over a short time are not helpful at quantifying the risk premium is as follows. If the equity risk premium declines, this means by definition that equity investors are willing to settle for a lower risk premium component of the total return they are demanding. If they are willing to settle for a lower return and if other things remain equal, this means that investors are willing to pay a higher stock price for the same future expected cash flow. What this means is that the initial reaction

to a lowering of the equity risk premium is for the stock price to rise. A rise in the stock price results in a higher historic earned return at the same time the higher stock price means the investor would expect a lower future return. Unless enough years are used in the historic analysis to diminish the misleading impact of the initial response to a reduction in the risk premium, the historic earned returns will not be helpful. I am especially encouraged by the relative consistency of the trend in the lowering of the risk premium as shown in the 30-year data. This reinforces the likelihood that the risk premium has declined as Federal Reserve Chairman Greenspan and many others have observed.



Q. ARE THERE REASONS WHY THE RISK PREMIUM HAS BEEN ON A MULTI-DECADE DECLINE?

A. Yes. One important reason is a lowering of the U.S. capital gains income tax rate. Investors are concerned about the total after-tax return earned. The majority of the return earned by an investor on a long-term bond (and in many cases all of the return earned by a long-term bond investor) is the interest income. Interest income is fully taxed at regular income tax rates. This is in contrast to an investor in common stocks. An investor in the average large common stock has received the majority of their total return in the form of stock price, or capital appreciation. Capital appreciation is not taxed at all until the stock is sold. Then, it is taxed at the long-term capital gains rate if the stock as been owned long enough to be eligible for such treatment. Currently, long-term capital gains are subject to a federal income tax of no more than 20%.

This is a considerably lower rate on long-term capital gains than prevailed in prior decades.

Another important reason why the risk premium demanded by common stock investors versus bond investors has declined is because enough years have now passed since the Great Depression that a greater proportion of investors are more comfortable owning common stocks than was the case when the memory of the Great Depression was forefront in the minds of most investors.

Yet another factor is the proliferation of mutual funds. While it is debatable whether the popularity of mutual funds is proof that the risk premium has declined (because more investors are comfortable investing in common stock) or is the

reason that the risk premium declined (because mutual fund marketing has increased the availability of investment funds for equity), it is nevertheless a relevant factor.

Q. WHAT COST OF EQUITY IS INDICATED BY THE IMPLEMENTATION OF THE RISK PREMIUM/CAPM METHOD IN THIS CASE?

A. As shown on JAR 2, the cost of equity indicated by the risk premium/CAPM method is 7.79% to 8.86%.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

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APPENDIX B - TESTIFYING EXPERIENCE OF JAMES A. ROTHSCHILD

TESTIFYING EXPERIENCE OF JAMES A. ROTHSCHILD
THROUGH SEPTEMBER 30, 2003

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New England Power Company; Docket No.ER88-630-000 & Docket No. ER88-631-000, Rate of Return, April, 1989
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Philadelphia Electric Company - Conowingo; Docket No. EL-80-557/588, July, 1983. Rate of Return.
Ocean State Power Company, Ocean States II Power Company, Docket No. ER94-998-000 and ER94-999-000, Rate of Return, July, 1994.
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Gulf Power Company; Docket No. 840086-EI, Rate of Return, August, 1984
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Elizabethtown Water Company, BPU Docket No. WR 95110557, OAL Docket No. PUC 12247-95, Rate of Return, March, 1996.
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Report on the Valuation of Nemours Corporation, filed on behalf of IRS, October, 1983 (Submitted to Tax Court)

JAR 1, P.1

Elizabethtown Water Company
Overall Cost of Capital

Recommended Capital Structure Based on Company Witness Requested Capital Structure Type of Capital	Ratios [A]	Cost Rate	Weighted Cost Rate [F]	Pre-tax Cost Rate	
Long-Term Debt	47.200%	5.990% [B]	2.83%	2.83%	
Short-Term Debt	8.960%	2.000% [C]	0.18%	0.18%	
Preferred Stock	2.050%	7.370% [D]	0.15%	0.15%	[G]
Common Equity	41.790%	9.10% [E]	3.80%	5.85%	[G]
	100.00%		6.96%	9.01%	

Source:

[A] Exhibit PT-8 Testimony of Pauline M. Ahern, July 2003. Page 4, Lines 12 to 18.
[B] Exhibit PT-8 Testimony of Pauline M. Ahern, July 2003. Schedule 6, P.1.
[C] Estimated based upon cost of short-term debt to other utilities.
[D] Exhibit PT-8 Testimony of Pauline M. Ahern, July 2003. Schedule 7
[E] JAR 2
[F] Capital Ratios times Cost Rate
[G] Weighted cost rate divided by 1 minus federal income tax rate.

JAR 2

ELIZABETHTOWN WATER COMPANY
COST OF EQUITY SUMMARY

	Average for Year ending 10/31/03		As of 10/31/2003	
SIMPLIFIED, OR CONSTANT GROWTH DCF (D/P +g) RESULTS:				
ALL COMPANIES COVERED BY VALUE LINE	8.89%	[A]	8.92%	[A]
COMPANY WITNESS GROUP	9.22%	[B]	9.23%	[B]
	9.05%		9.07%	
COMPLEX, OR MULTI-STAGE DCF RESULT FOR COMPANY WITNESS GROUP:				
Based upon HIGH End of Range for future return on book	9.32%	[C]	9.36%	[D]
Based upon LOW End of Range for future return on book	8.22%	[E]	8.25%	[F]
Midpoint of Range	8.77%		8.80%	
Risk Premiuim/CAPM				
	Low end of Range		High end of Range	
Based upon Average Return over inflation	9.40%	[G]	10.00%	[G]
In all major sub-peroids from 1802 through 1997				
(Manor sub-peroids are 1802-1870, 1871-1925, and 1926-1997)				
Based upon analysis of historic returns from 1926-2001:				
Adjusted for Telecom Specific Risk	6.37%	[H]		
Results for Equity of Average Risk			7.90%	[H]
Average	7.88%		8.95%	
Midpoint		8.42%		

Recommended Equity Cost Rate	9.00%
Adjustment for Capital Structure	0.10%
Recommended cost of equity	9.10%

Source:

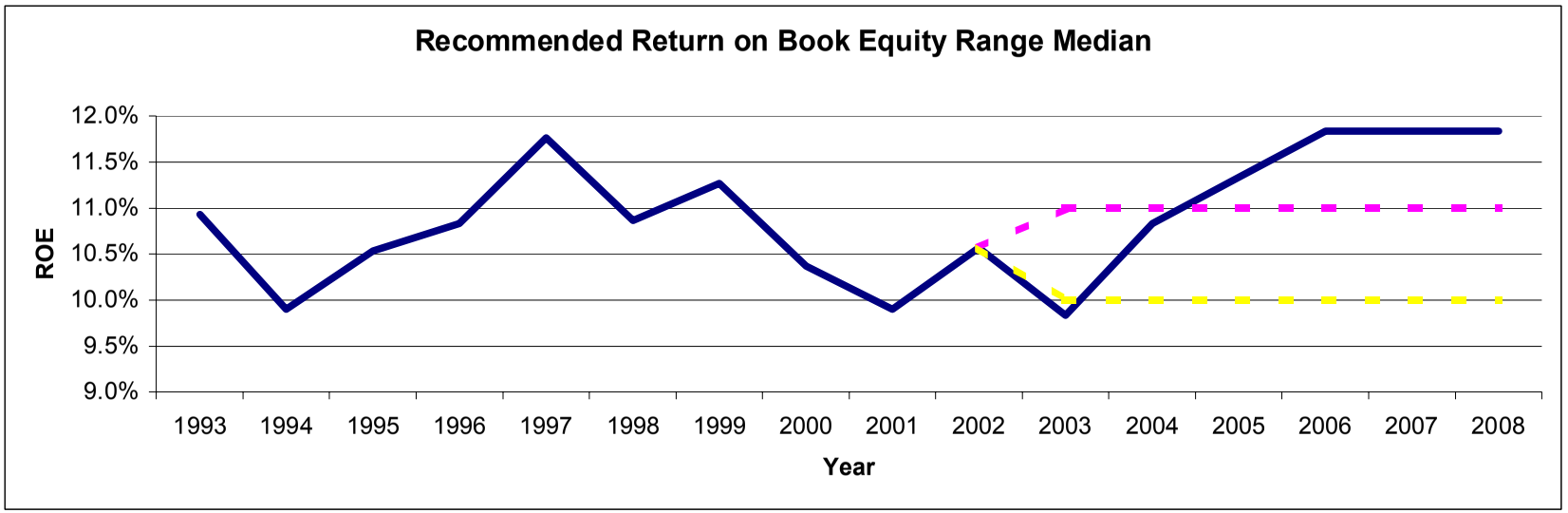
[A]	JAR 5, P.1
[B]	JAR 5, P.2
[C]	JAR 6, P. 2
[D]	JAR 6, P.1
[E]	JAR 6, P. 4
[F]	JAR 6, P. 3
[G]	JAR 9
[H]	JAR 10, P. 1

Schedule JAR 3

Comparative Water Companies
Return On Common Equity

	Historical										Forecast					
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
AMER. STATES WATER	10.2%	9.5%	10.0%	9.0%	9.2%	9.4%	10.1%	9.3%	10.1%	9.5%	8.5%	9.5%	9.8%	10.0%	10.0%	10.0%
CALIFORNIA WATER	12.4%	9.9%	9.9%	12.3%	14.1%	10.8%	11.4%	10.1%	7.2%	9.5%	8.0%	9.0%	9.8%	10.5%	10.5%	10.5%
PHILA. SUBURBAN	10.2%	10.3%	11.7%	11.2%	12.0%	12.4%	12.3%	11.7%	12.4%	12.7%	13.0%	14.0%	14.5%	15.0%	15.0%	15.0%
Average	*10.9%*	*9.9%*	*10.5%*	*10.8%*	*11.8%*	*10.9%*	*11.3%*	*10.4%*	*9.9%*	*10.6%*	*9.8%*	*10.8%*	*11.3%*	*11.8%*	*11.8%*	*11.8%*
Median	*10.2%*	*9.9%*	*10.0%*	*11.2%*	*12.0%*	*10.8%*	*11.4%*	*10.1%*	*10.1%*	*9.5%*	*8.5%*	*9.5%*	*9.8%*	*10.5%*	*10.5%*	*10.5%*
Range -- Average																
High										10.6%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Low										10.6%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Range -- Median																
High										9.5%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Low										9.5%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%

Source: Most Current Value Line at Time of Prep
The value for 2005 is extrapolated from the 2004 and 2006-2008 values
The values for the 2006-2008 are assumed to be same for all three years



COMPARATIVE COMPANIES — **JAR 4, P.1.**

SELECTED FINANCIAL DATA

	VL Issue	[1] Book Per Sh. Dec. 00 [A]	[2] Book Per Sh. Dec. 01 [A]	[3] Book Per Sh. Dec. 02 [A]	[4] Book Per Sh. Dec. 03 Est. by V.L. [A]		[5] Market Price At 10/31/03 [B]	[6] Market Price High for Year [B]	[7] Market Price Low for Year [B]	[8] Market to Book At 10/31/03 [C]	[9] Market to Book Avg. for Year [C]		[10] Div. Rate [A]		[11] Dividend Yield At 10/31/2003 [D]	[12] Dividend Yield Avg. for Year [D]
ALL WATER UTILITIES COVERED BY VALUE LINE																
AMERICAN STATES WATER CO.		$12.74	$13.22	$14.05	$14.90	E	$24.50	$28.95	$21.57	1.64	1.75		$0.88		3.61%	3.50%
CALIFORNIA WATER SERVICE GROUP		$12.90	$12.95	$13.12	$13.90	E	$27.35	$31.40	$23.65	1.97	2.04		$1.12		4.11%	4.08%
PHILADELPHIA SUBURBAN CORP.		$6.42	$6.91	$7.26	$7.55	E	$23.62	$25.09	$19.74	3.13	3.03		$0.56		2.37%	2.50%
AVERAGE		$10.69	$11.03	$11.48	$12.12		$25.16	$28.48	$21.65	2.25	2.27		$0.86		3.36%	3.36%
MEDIAN										1.97	2.04				3.61%	3.50%
COMPANY WITNESS GROUP																
AMERICAN STATES WATER CO.		$12.74	$13.22	$14.05	$14.90	E	$24.50	$28.95	$21.57	1.64	1.75		$0.88		3.61%	3.50%
ARTESIAN RESOURCES CORP.					$13.36	[E]	$26.74	$37.50	$22.50	2.00	2.25	[F]	$0.79	[E]	2.95%	2.63%
CALIFORNIA WATER SERVICE GROUP		$12.90	$12.95	$13.12	$13.90	E	$27.35	$31.40	$23.65	1.97	2.04		$1.12		4.11%	4.08%
MIDDLESEX WATER COMPANY					$9.94	[E]	$26.01	$28.30	$20.50	2.62	2.45	[F]	$0.86	[E]	3.31%	3.52%
PHILADELPHIA SUBURBAN CORP.		$6.42	$6.91	$7.26	$7.55	E	$23.62	$25.09	$19.74	3.13	3.03		$0.56		2.37%	2.50%
SOUTHWEST WATER COMPANY					$6.75	[E]	$14.30	$15.24	$11.94	2.12	2.01	[F]	$0.23	[E]	1.61%	1.69%
YORK WATER COMPANY					$5.91	[E]	$18.15	$20.23	$14.00	3.07	2.90	[F]	$0.54	[E]	2.98%	3.16%
AVERAGE		$10.69	$11.03	$11.48	$10.33		$22.95	$26.67	$19.13	2.36	2.35		71.26%		2.99%	3.01%
MEDIAN										2.12	2.25				2.98%	3.16%

e= Estimated by Value Line

Sources:

[A]	Most current Value Line at time of prep. of schedule.
[B]	Yahoo Finance -- Historical Prices
[C]	Market price divided by book value
[D]	Dividend rate divided by market price
[E]	Yahoo Finance -- Key Statistics
[F]	Market price divided by book value. Note: Only used 2003 for Companies not in Value Line

		COMPARATIVE COMPANIES					**JAR 4, P.2.**					
		EARNINGS PER SHARE AND RETURN ON EQUITY										
			[1]	[2]	[3]		[4]	[5]	[6]		[7]	
			EPS	EPS	EPS		Return	Return	Value Line		Return on	
			2001	2002	2003		on Eq.	on Eq.	Future Exp.		Equity	
							2002	2003	Return on Eq.		2001	
			[A]	[A]	[A]		[B]		[A]			
		ALL WATER UTILITIES COVERED BY VALUE LINE										
		AMERICAN STATES WATER CO.	$1.35	$1.34	$1.30		9.83%	8.98%	10.00%		10.40%	
		CALIFORNIA WATER SERVICE GROUP	$0.94	$1.25	$1.10		9.59%	8.14%	10.50%		7.27%	
		PHILADELPHIA SUBURBAN CORP.	$0.85	$0.90	$1.00		12.70%	13.50%	15.00%		12.75%	
			$1.05	$1.16	$1.13		10.71%	10.21%	11.83%		10.14%	
							9.83%	8.98%	10.50%		10.40%	
		COMPANY WITNESS GROUP										
		AMERICAN STATES WATER CO.	$1.35	$1.34	$1.30		9.83%	8.98%	10.00%		10.40%	
		ARTESIAN RESOURCES CORP.			$1.24	[C]		18.56%	9.05%	[D]		
		CALIFORNIA WATER SERVICE GROUP	$0.94	$1.25	$1.10		9.59%	8.14%	10.50%		7.27%	
		MIDDLESEX WATER COMPANY			$0.88	[C]		17.71%	9.65%	[D]		
		PHILADELPHIA SUBURBAN CORP.	$0.85	$0.90	$1.00		12.70%	13.50%	15.00%		12.75%	
		SOUTHWEST WATER COMPANY				[C]		0.00%	7.29%	[D]		
		YORK WATER COMPANY				[C]		0.00%	10.17%	[D]		
			$1.05	$1.16	$1.10		10.71%	9.56%	10.24%		10.14%	
							9.83%	8.98%	10.00%		10.40%	
		e= Estimated by Value Line										
Source:	[A]	Most current Value Line at time of prep. of schedule.										
	[B]	Earnings Per Share divded by average book value. Book value shown on JAR 4, P.1.										
	[C]	Yahoo Finance -- Key Statistics. Most Recent Quarter X 4. Note: If left blank then N/A										
	[D]	Yahoo Finance -- Key Statistics. Current Return on Equity.										

RETURN ON EQUITY IMPLIED IN **JAR 4, P.3.**

YAHOO FINANCE COVERING BROKER'S GROWTH RATES

	Y/E Book [3]	Earnings 2003	Dividends	Zack's Consensus 5 Year Growth Rate 10/	Y/E Book in 2007 at Zack's Growth	Y/E Book in 2008 at Zack's Growth	Earnings 2008 at Zack's Growth	Return on Equity to achieve Zack's Growth		VALUE LINE BETA
	[A]	[A]	[A]	[B]	[C]	[C]	[C]	[C]		[A]
ALL WATER UTILITIES COVERED BY VALUE LINE										
AMERICAN STATES WATER CO.	$14.90	$1.30	$0.88	3.00%	$16.69	$17.17	$1.51	8.90%	AWR	0.60
CALIFORNIA WATER SERVICE GROUP	$13.90	$1.10	$1.12	4.00%	$13.79	$13.76	$1.34	9.71%	CWT	0.60
PHILADELPHIA SUBURBAN CORP.	$7.55	$1.00	$0.56	9.00%	$9.74	$10.42	$1.54	15.26%	PSC	0.70
	$12.12	$1.13	$0.86	5.33%	$13.41	$13.79	$1.46	11.29%		0.63
				4.00%				9.71%		0.60
COMPANY WITNESS GROUP										
AMERICAN STATES WATER CO.	$14.90	$1.30	$0.88	3.00%	$16.69	$17.17	$1.51	8.90%	AWR	0.60
ARTESIAN RESOURCES CORP.	$13.36	$1.24	$0.79	8.00%	$15.55	$16.21	$1.82	11.47%	ARTNA	
CALIFORNIA WATER SERVICE GROUP	$13.90	$1.10	$1.12	4.00%	$13.79	$13.76	$1.34	9.71%	CWT	0.60
MIDDLESEX WATER COMPANY	$9.94	$0.88	$0.86	7.00%	$10.04	$10.06	$1.23		MSEX	
PHILADELPHIA SUBURBAN CORP.	$7.55	$1.00	$0.56	9.00%	$9.74	$10.42	$1.54	15.26%	PSC	0.70
SOUTHWEST WATER COMPANY	$6.75		$0.23	5.00%	$5.71	$5.42			SWWC	
YORK WATER COMPANY	$5.91		$0.54	7.00%	$3.34	$2.59			YORW	
	$10.33	$1.10	$0.71	6.14%	$10.70	$10.81	$1.49	11.34%		0.63
				7.00%				10.59%		0.60

[A] Value Line

[B] Harris Direct Web Site. Zacks Company Report.

[C] Projected return on equity is obtained by escalating both dividends and earnings per share by the stated growth rate, and adding earnings and subtracting dividends in each year to determine the book value.

ALL WATER UTILITIES COVERED BY VALUE LINE
DISCOUNTED CASH FLOW (DCF) INDICATED COST OF EQUITY

			BASED ON AVERAGE MARKET PRICE FOR Year Ending 10/31/03	BASED UPON MARKET PRICE AS OF 10/31/2003
1	Dividend Yield On Market Price	[B]	3.36%	3.36%
2	Retention Ratio:			
	a) Market-to-book	[B]	2.27	2.25
	b) Div. Yld on Book	[C]	7.63%	7.56%
	c) Return on Equity	[A]	11.00%	11.00%
	d) Retention Rate	[D]	30.66%	31.31%
3	Reinvestment Growth	[E]	3.37%	3.44%
4	New Financing Growth	[F]	2.06%	2.02%
5	Total Estimate of Investor Anticipated Growth	[G]	5.43%	5.47%
6	Increment to Dividend Yield for Growth to Next Year	[H]	0.09%	0.09%
7	**Indicated Cost of Equity**	**[I]**	8.89%	8.92%

Some of the Considerations for determining Future Expected Return on Equity:

		Median	Mean	Source:
[A]	Value Line Expectation	10.50%	11.83%	JAR 4, P.2.
	Return on Equity to Achieve Zacks' Growth	9.71%	11.29%	JAR 4, P.3.
	Earned Return on Equity in 2003	8.98%	10.21%	JAR 4, P.2.
	Earned Return on Equity in 2002	9.83%	10.71%	JAR 4, P.2.
	Earned Return on Equity in 2001	10.40%	10.14%	JAR 4, P.2.

[B] JAR 4, P.1.
[C] Line 1 x Line 2a
[D] 1- Line 2b/Line 2c
[E] Line 2c x Line 2d
[F] Estimated impact of dilution or premium due to sale of equity at other than book value. Computed based upon mathematically derived result based upon the Value Line forecasted external financing rate.
[M/B X (Ext. Fin Rate+1)]/(M/B + Ext. Fin. Rate-1) — Ext. Fin. rate used = 1.65% [J]
[G] Line 3 + Line 4
[H] Line 1 x one-half of line 5
[I] Line 1 + Line 5 + Line 6
[J] JAR 8

COMPANY WITNESS GROUP
DISCOUNTED CASH FLOW (DCF) INDICATED COST OF EQUITY

			BASED ON AVERAGE MARKET PRICE FOR Year Ending 10/31/03	BASED UPON MARKET PRICE AS OF 10/31/2003
1	Dividend Yield On Market Price	[B]	3.01%	2.99%
2	Retention Ratio:			
	a) Market-to-book	[B]	2.35	2.36
	b) Div. Yld on Book	[C]	7.07%	7.07%
	c) Return on Equity	[A]	11.00%	11.00%
	d) Retention Rate	[D]	35.77%	35.73%
3	Reinvestment Growth	[E]	3.93%	3.93%
4	New Financing Growth	[F]	2.18%	2.21%
5	Total Estimate of Investor Anticipated Growth	[G]	6.12%	6.14%
6	Increment to Dividend Yield for Growth to Next Year	[H]	0.09%	0.09%
7	**Indicated Cost of Equity**	**[I]**	9.22%	9.23%

Some of the Considerations for determining Future Expected Return on Equity:

		Median	Mean	Source:
[A]	Value Line Expectation	10.00%	10.24%	JAR 4, P.2.
	Return on Equity to Achieve Zacks' Growth	10.59%	11.34%	JAR 4, P.2.
	Earned Return on Equity in 2003	8.98%	9.56%	JAR 4, P.2.
	Earned Return on Equity in 2002	9.83%	10.71%	JAR 4, P.2.
	Earned Return on Equity in 2001	10.40%	10.14%	JAR 4, P.2.

[B] JAR 4, P.1.
[C] Line 1 x Line 2a
[D] 1- Line 2b/Line 2c
[E] Line 2c x Line 2d
[F] Estimated impact of dilution or premium due to sale of equity at other than book value. Computed based upon mathematically derived result based upon the Value Line forecasted external financing rate.
[M/B X (Ext. Fin Rate+1]/(M/B + Ext. Fin. Rate-1) Ext. Fin. rate used = 1.65% [J]
[G] Line 3 + Line 4
[H] Line 1 x one-half of line 5
[I] Line 1 + Line 5 + Line 6
[J] JAR 8

JAR 6, P.1

ALL WATER UTILITIES COVERED BY VALUE LINE
FULL DCF METHOD
Based on Market Price on 10/31/2003

	Year	[1] Year End Book	[2] Retention Rate	[3] Dividend	[4] Earnings Per Share	[5] Retained Earnings Per Share	[6] External Financing Rate	[7] Increment to book from Ext. Fin.	[8] Total Increment to Book	[9] Market Price	[10] Mkt to Book	[11] Expect. Ret. on Equity	[12] Cash Fl. from Stock Trans.	[13] Cash Fl. from Div.	[14] Total Cash Flow
		[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]
										M/B Change					
	2002	$11.48	27.51%	$0.84	$1.16	$0.32				$25.79	2.25		($25.79)		($25.79)
	2003	$12.12	24.41%	$0.86	$1.13	$0.28			$0.28	$27.22	2.25	9.61%		$0.86	$0.86
First	2004	$12.88	34.25%	$0.88	$1.33	$0.46			$0.46	$28.95	2.25	10.67%		$0.88	$0.88
Stage	2005	$14.12	40.65%	$0.92	$1.54	$0.63			$0.63	$31.72	2.25	11.42%		$0.92	$0.92
	2006	$15.35	45.52%	$0.95	$1.75	$0.80			$0.80	$34.49	2.25	11.88%		$0.95	$0.95
	2007	$16.22	31.31%	$1.19	$1.74	$0.54	1.65%	$0.32	$0.87	$36.43	2.25	11.00%		$1.19	$1.19
	2008	$17.13	31.31%	$1.26	$1.83	$0.57	1.65%	$0.34	$0.91	$38.49	2.25	11.00%		$1.26	$1.26
	2009	$18.10	31.31%	$1.33	$1.94	$0.61	1.65%	$0.36	$0.97	$40.66	2.25	11.00%		$1.33	$1.33
	2010	$19.12	31.31%	$1.41	$2.05	$0.64	1.65%	$0.38	$1.02	$42.95	2.25	11.00%		$1.41	$1.41
	2011	$20.20	31.31%	$1.49	$2.16	$0.68	1.65%	$0.40	$1.08	$45.38	2.25	11.00%		$1.49	$1.49
	2012	$21.34	31.31%	$1.57	$2.28	$0.72	1.65%	$0.42	$1.14	$47.94	2.25	11.00%		$1.57	$1.57
	2013	$22.54	31.31%	$1.66	$2.41	$0.76	1.65%	$0.45	$1.20	$50.64	2.25	11.00%		$1.66	$1.66
	2014	$23.81	31.31%	$1.75	$2.55	$0.80	1.65%	$0.47	$1.27	$53.50	2.25	11.00%		$1.75	$1.75
	2015	$25.15	31.31%	$1.85	$2.69	$0.84	1.65%	$0.50	$1.34	$56.52	2.25	11.00%		$1.85	$1.85
	2016	$26.57	31.31%	$1.95	$2.84	$0.89	1.65%	$0.53	$1.42	$59.70	2.25	11.00%		$1.95	$1.95
	2017	$28.07	31.31%	$2.06	$3.01	$0.94	1.65%	$0.56	$1.50	$63.07	2.25	11.00%		$2.06	$2.06
	2018	$29.66	31.31%	$2.18	$3.18	$0.99	1.65%	$0.59	$1.58	$66.63	2.25	11.00%		$2.18	$2.18
	2019	$31.33	31.31%	$2.30	$3.35	$1.05	1.65%	$0.62	$1.67	$70.39	2.25	11.00%		$2.30	$2.30
	2020	$33.10	31.31%	$2.43	$3.54	$1.11	1.65%	$0.66	$1.77	$74.36	2.25	11.00%		$2.43	$2.43
	2021	$34.96	31.31%	$2.57	$3.74	$1.17	1.65%	$0.69	$1.87	$78.55	2.25	11.00%		$2.57	$2.57
	2022	$36.94	31.31%	$2.72	$3.95	$1.24	1.65%	$0.73	$1.97	$82.99	2.25	11.00%		$2.72	$2.72
	2023	$39.02	31.31%	$2.87	$4.18	$1.31	1.65%	$0.78	$2.08	$87.67	2.25	11.00%		$2.87	$2.87
	2024	$41.22	31.31%	$3.03	$4.41	$1.38	1.65%	$0.82	$2.20	$92.61	2.25	11.00%		$3.03	$3.03
	2025	$43.55	31.31%	$3.20	$4.66	$1.46	1.65%	$0.87	$2.33	$97.84	2.25	11.00%		$3.20	$3.20
	2026	$46.00	31.31%	$3.38	$4.93	$1.54	1.65%	$0.91	$2.46	$103.36	2.25	11.00%		$3.38	$3.38
	2027	$48.60	31.31%	$3.57	$5.20	$1.63	1.65%	$0.97	$2.60	$109.19	2.25	11.00%		$3.57	$3.57
	2028	$51.34	31.31%	$3.78	$5.50	$1.72	1.65%	$1.02	$2.74	$115.35	2.25	11.00%		$3.78	$3.78
	2029	$54.23	31.31%	$3.99	$5.81	$1.82	1.65%	$1.08	$2.90	$121.85	2.25	11.00%		$3.99	$3.99
	2030	$57.29	31.31%	$4.21	$6.13	$1.92	1.65%	$1.14	$3.06	$128.73	2.25	11.00%		$4.21	$4.21
	2031	$60.53	31.31%	$4.45	$6.48	$2.03	1.65%	$1.20	$3.23	$135.99	2.25	11.00%		$4.45	$4.45
	2032	$63.94	31.31%	$4.70	$6.85	$2.14	1.65%	$1.27	$3.41	$143.66	2.25	11.00%		$4.70	$4.70
	2033	$67.55	31.31%	$4.97	$7.23	$2.26	1.65%	$1.34	$3.61	$151.76	2.25	11.00%		$4.97	$4.97
	2034	$71.36	31.31%	$5.25	$7.64	$2.39	1.65%	$1.42	$3.81	$160.33	2.25	11.00%		$5.25	$5.25
Second	2035	$75.38	31.31%	$5.54	$8.07	$2.53	1.65%	$1.50	$4.03	$169.37	2.25	11.00%		$5.54	$5.54
Stage	2036	$79.64	31.31%	$5.86	$8.53	$2.67	1.65%	$1.58	$4.25	$178.93	2.25	11.00%		$5.86	$5.86
	2037	$84.13	31.31%	$6.19	$9.01	$2.82	1.65%	$1.67	$4.49	$189.02	2.25	11.00%		$6.19	$6.19
	2038	$88.87	31.31%	$6.54	$9.52	$2.98	1.65%	$1.77	$4.75	$199.68	2.25	11.00%		$6.54	$6.54
	2039	$93.89	31.31%	$6.90	$10.05	$3.15	1.65%	$1.87	$5.01	$210.95	2.25	11.00%		$6.90	$6.90
	2040	$99.18	31.31%	$7.29	$10.62	$3.32	1.65%	$1.97	$5.30	$222.85	2.25	11.00%		$7.29	$7.29
	2041	$104.78	31.31%	$7.71	$11.22	$3.51	1.65%	$2.08	$5.60	$235.42	2.25	11.00%		$7.71	$7.71
	2042	$110.69	31.31%	$8.14	$11.85	$3.71	1.65%	$2.20	$5.91	$248.70	2.25	11.00%	$248.70	$8.14	$256.84
												Internal Rate of Return			9.36%

Source:

[A] First Stage is average from Value Line. Second stage is prior years' book plus value from Col.[8]
[B] First Stage is (Col. [4]-Col.[3]/Col.[4]). For second sage, see result on JAR 5, P.1
[C] First Stage is from Value Line. Second stage is Col. [4] x (1-Col. [2])
[D] First Stage is from Value line. Second stage is average of current and prior year's value from Col. [1] x Col. [11]
[E] Col. [4] - Col. [3]
[F] JAR 8
[G] Col. [5] + Col. [7]
[H] Col. [7] + Col. [8]
[I] Col. [1] x Col. [10]
[J] JAR 4, P.1.
[K] First stage is Col. [4]/Avg. of Current and prior year's Col. [1]. Second stage is from JAR 5, P.1
[L] - Col. [9] for year of purchase, + Col. [9] for year of sale.
[M] Col. [3]
[N] Col. [12] + Col. [13]

JAR 6, P.2

ALL WATER UTILITIES COVERED BY VALUE LINE
FULL DCF METHOD
Based on Market Price for Year Ended 10/31/2003

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
	Year	Year End Book	Retentio Rate	Dividend	Earnings Per Share	Retained Earnings Per Share	External Financing Rate	Increme to book from Ext. Fin.	Total Increment to Book	Market Price	Mkt to Book	Expect. Ret. on Equity	Cash Fl. from Stock Trans.	Cash Fl. from Div.	Total Cash Flow
		[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]
										M/B Change					
	2002	$11.48	27.51%	$0.84	$1.16	$0.32				$26.05	2.27		($26.05)		($26.05)
	2003	$12.12	24.41%	$0.86	$1.13	$0.28			$0.28	$27.50	2.27	9.61%		$0.86	$0.86
First	2004	$12.88	34.25%	$0.88	$1.33	$0.46			$0.46	$29.24	2.27	10.67%		$0.88	$0.88
Stage	2005	$14.12	40.65%	$0.92	$1.54	$0.63			$0.63	$32.04	2.27	11.42%		$0.92	$0.92
	2006	$15.35	45.52%	$0.95	$1.75	$0.80			$0.80	$34.84	2.27	11.88%		$0.95	$0.95
	2007	$16.21	30.66%	$1.20	$1.74	$0.53	1.65%	$0.33	$0.86	$36.79	2.27	11.00%		$1.20	$1.20
	2008	$17.12	30.66%	$1.27	$1.83	$0.56	1.65%	$0.35	$0.91	$38.86	2.27	11.00%		$1.27	$1.27
	2009	$18.08	30.66%	$1.34	$1.94	$0.59	1.65%	$0.37	$0.96	$41.04	2.27	11.00%		$1.34	$1.34
	2010	$19.09	30.66%	$1.42	$2.04	$0.63	1.65%	$0.39	$1.01	$43.34	2.27	11.00%		$1.42	$1.42
	2011	$20.16	30.66%	$1.50	$2.16	$0.66	1.65%	$0.41	$1.07	$45.76	2.27	11.00%		$1.50	$1.50
	2012	$21.29	30.66%	$1.58	$2.28	$0.70	1.65%	$0.43	$1.13	$48.33	2.27	11.00%		$1.58	$1.58
	2013	$22.49	30.66%	$1.67	$2.41	$0.74	1.65%	$0.46	$1.19	$51.04	2.27	11.00%		$1.67	$1.67
	2014	$23.75	30.66%	$1.76	$2.54	$0.78	1.65%	$0.48	$1.26	$53.90	2.27	11.00%		$1.76	$1.76
	2015	$25.08	30.66%	$1.86	$2.69	$0.82	1.65%	$0.51	$1.33	$56.92	2.27	11.00%		$1.86	$1.86
	2016	$26.48	30.66%	$1.97	$2.84	$0.87	1.65%	$0.54	$1.41	$60.11	2.27	11.00%		$1.97	$1.97
	2017	$27.97	30.66%	$2.08	$2.99	$0.92	1.65%	$0.57	$1.48	$63.48	2.27	11.00%		$2.08	$2.08
	2018	$29.53	30.66%	$2.19	$3.16	$0.97	1.65%	$0.60	$1.57	$67.04	2.27	11.00%		$2.19	$2.19
	2019	$31.19	30.66%	$2.32	$3.34	$1.02	1.65%	$0.63	$1.66	$70.80	2.27	11.00%		$2.32	$2.32
	2020	$32.94	30.66%	$2.45	$3.53	$1.08	1.65%	$0.67	$1.75	$74.76	2.27	11.00%		$2.45	$2.45
	2021	$34.78	30.66%	$2.58	$3.72	$1.14	1.65%	$0.70	$1.85	$78.95	2.27	11.00%		$2.58	$2.58
	2022	$36.73	30.66%	$2.73	$3.93	$1.21	1.65%	$0.74	$1.95	$83.38	2.27	11.00%		$2.73	$2.73
	2023	$38.79	30.66%	$2.88	$4.15	$1.27	1.65%	$0.79	$2.06	$88.05	2.27	11.00%		$2.88	$2.88
	2024	$40.97	30.66%	$3.04	$4.39	$1.34	1.65%	$0.83	$2.17	$92.99	2.27	11.00%		$3.04	$3.04
	2025	$43.26	30.66%	$3.21	$4.63	$1.42	1.65%	$0.88	$2.30	$98.20	2.27	11.00%		$3.21	$3.21
	2026	$45.69	30.66%	$3.39	$4.89	$1.50	1.65%	$0.93	$2.43	$103.71	2.27	11.00%		$3.39	$3.39
	2027	$48.25	30.66%	$3.58	$5.17	$1.58	1.65%	$0.98	$2.56	$109.52	2.27	11.00%		$3.58	$3.58
	2028	$50.95	30.66%	$3.78	$5.46	$1.67	1.65%	$1.03	$2.70	$115.66	2.27	11.00%		$3.78	$3.78
	2029	$53.81	30.66%	$4.00	$5.76	$1.77	1.65%	$1.09	$2.86	$122.14	2.27	11.00%		$4.00	$4.00
	2030	$56.83	30.66%	$4.22	$6.09	$1.87	1.65%	$1.15	$3.02	$128.99	2.27	11.00%		$4.22	$4.22
	2031	$60.01	30.66%	$4.46	$6.43	$1.97	1.65%	$1.22	$3.19	$136.22	2.27	11.00%		$4.46	$4.46
	2032	$63.38	30.66%	$4.71	$6.79	$2.08	1.65%	$1.28	$3.36	$143.85	2.27	11.00%		$4.71	$4.71
	2033	$66.93	30.66%	$4.97	$7.17	$2.20	1.65%	$1.36	$3.55	$151.91	2.27	11.00%		$4.97	$4.97
	2034	$70.68	30.66%	$5.25	$7.57	$2.32	1.65%	$1.43	$3.75	$160.43	2.27	11.00%		$5.25	$5.25
Second	2035	$74.64	30.66%	$5.54	$7.99	$2.45	1.65%	$1.51	$3.96	$169.42	2.27	11.00%		$5.54	$5.54
Stage	2036	$78.82	30.66%	$5.85	$8.44	$2.59	1.65%	$1.60	$4.18	$178.92	2.27	11.00%		$5.85	$5.85
	2037	$83.24	30.66%	$6.18	$8.91	$2.73	1.65%	$1.69	$4.42	$188.95	2.27	11.00%		$6.18	$6.18
	2038	$87.91	30.66%	$6.53	$9.41	$2.89	1.65%	$1.78	$4.67	$199.54	2.27	11.00%		$6.53	$6.53
	2039	$92.84	30.66%	$6.89	$9.94	$3.05	1.65%	$1.88	$4.93	$210.72	2.27	11.00%		$6.89	$6.89
	2040	$98.04	30.66%	$7.28	$10.50	$3.22	1.65%	$1.99	$5.20	$222.53	2.27	11.00%		$7.28	$7.28
	2041	$103.54	30.66%	$7.69	$11.09	$3.40	1.65%	$2.10	$5.50	$235.01	2.27	11.00%		$7.69	$7.69
	2042	$109.34	30.66%	$8.12	$11.71	$3.59	1.65%	$2.21	$5.80	$248.18	2.27	11.00%	$248.18	$8.12	$256.30
												Internal Rate of Return			9.32%

Source:

[A] First Stage is average from Value Line. Second stage is prior years' book plus value from Col.[8]

[B] First Stage is (Col. [4]-Col.[3]/Col.[4]). For second sage, see result on JAR 5, P.1

[C] First Stage is from Value Line. Second stage is Col. [4] x (1-Col. [2])

[D] First Stage is from Value line. Second stage is average of current and prior year's value from Col. [1] x Col. [11]

[E] Col. [4] - Col. [3]

[F] JAR 8

[G] Col. [5] + Col. [7]

[H] Col. [7] + Col. [8]

[I] Col. [1] x Col. [10]

[J] JAR 4, P.1.

[K] First stage is Col. [4]/Avg. of Current and prior year's Col. [1]. Second stage is from JAR 5, P.1

[L] - Col. [9] for year of purchase, + Col. [9] for year of sale.

[M] Col. [3]

[N] Col. [12] + Col. [13]

JAR 6, P.3

ALL WATER UTILITIES COVERED BY VALUE LINE
FULL DCF METHOD
Based on Market Price on 10/31/2003

	Year	[1] Year End Book	[2] Retention Rate	[3] Dividend	[4] Earnings Per Share	[5] Retained Earnings Per Share	[6] External Financing Rate	[7] Increment to book from Ext. Fin.	[8] Total Increment to Book	[9] Market Price	[10] Mkt to Book	[11] Expect. Ret. on Equity	[12] Cash Fl. from Stock Trans.	[13] Cash Fl. from Div.	[14] Total Cash Flow
		[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]
										M/B Change					
	2002	$11.48	27.51%	$0.84	$1.16	$0.32				$25.79	2.25		($25.79)		($25.79)
	2003	$12.12	24.41%	$0.86	$1.13	$0.28			$0.28	$27.22	2.25	9.61%		$0.86	$0.86
First	2004	$12.88	34.25%	$0.88	$1.33	$0.46			$0.46	$28.95	2.25	10.67%		$0.88	$0.88
Stage	2005	$14.12	40.65%	$0.92	$1.54	$0.63			$0.63	$31.72	2.25	11.42%		$0.92	$0.92
	2006	$15.35	45.52%	$0.95	$1.75	$0.80			$0.80	$34.49	2.25	11.88%		$0.95	$0.95
	2007	$16.11	31.31%	$0.97	$1.42	$0.44	1.65%	$0.32	$0.76	$36.21	2.25	9.00%		$0.97	$0.97
	2008	$16.92	31.31%	$1.02	$1.49	$0.47	1.65%	$0.34	$0.80	$38.01	2.25	9.00%		$1.02	$1.02
	2009	$17.76	31.31%	$1.07	$1.56	$0.49	1.65%	$0.35	$0.84	$39.90	2.25	9.00%		$1.07	$1.07
	2010	$18.64	31.31%	$1.13	$1.64	$0.51	1.65%	$0.37	$0.88	$41.89	2.25	9.00%		$1.13	$1.13
	2011	$19.57	31.31%	$1.18	$1.72	$0.54	1.65%	$0.39	$0.93	$43.98	2.25	9.00%		$1.18	$1.18
	2012	$20.55	31.31%	$1.24	$1.81	$0.57	1.65%	$0.41	$0.98	$46.17	2.25	9.00%		$1.24	$1.24
	2013	$21.57	31.31%	$1.30	$1.90	$0.59	1.65%	$0.43	$1.02	$48.47	2.25	9.00%		$1.30	$1.30
	2014	$22.65	31.31%	$1.37	$1.99	$0.62	1.65%	$0.45	$1.07	$50.88	2.25	9.00%		$1.37	$1.37
	2015	$23.77	31.31%	$1.43	$2.09	$0.65	1.65%	$0.47	$1.13	$53.42	2.25	9.00%		$1.43	$1.43
	2016	$24.96	31.31%	$1.51	$2.19	$0.69	1.65%	$0.50	$1.18	$56.08	2.25	9.00%		$1.51	$1.51
	2017	$26.20	31.31%	$1.58	$2.30	$0.72	1.65%	$0.52	$1.24	$58.87	2.25	9.00%		$1.58	$1.58
	2018	$27.51	31.31%	$1.66	$2.42	$0.76	1.65%	$0.55	$1.31	$61.80	2.25	9.00%		$1.66	$1.66
	2019	$28.88	31.31%	$1.74	$2.54	$0.79	1.65%	$0.58	$1.37	$64.88	2.25	9.00%		$1.74	$1.74
	2020	$30.32	31.31%	$1.83	$2.66	$0.83	1.65%	$0.60	$1.44	$68.11	2.25	9.00%		$1.83	$1.83
	2021	$31.83	31.31%	$1.92	$2.80	$0.88	1.65%	$0.63	$1.51	$71.51	2.25	9.00%		$1.92	$1.92
	2022	$33.41	31.31%	$2.02	$2.94	$0.92	1.65%	$0.67	$1.59	$75.07	2.25	9.00%		$2.02	$2.02
	2023	$35.08	31.31%	$2.12	$3.08	$0.96	1.65%	$0.70	$1.66	$78.81	2.25	9.00%		$2.12	$2.12
	2024	$36.82	31.31%	$2.22	$3.24	$1.01	1.65%	$0.73	$1.75	$82.73	2.25	9.00%		$2.22	$2.22
	2025	$38.66	31.31%	$2.33	$3.40	$1.06	1.65%	$0.77	$1.83	$86.86	2.25	9.00%		$2.33	$2.33
	2026	$40.58	31.31%	$2.45	$3.57	$1.12	1.65%	$0.81	$1.93	$91.18	2.25	9.00%		$2.45	$2.45
	2027	$42.60	31.31%	$2.57	$3.74	$1.17	1.65%	$0.85	$2.02	$95.72	2.25	9.00%		$2.57	$2.57
	2028	$44.73	31.31%	$2.70	$3.93	$1.23	1.65%	$0.89	$2.12	$100.49	2.25	9.00%		$2.70	$2.70
	2029	$46.95	31.31%	$2.83	$4.13	$1.29	1.65%	$0.94	$2.23	$105.50	2.25	9.00%		$2.83	$2.83
	2030	$49.29	31.31%	$2.98	$4.33	$1.36	1.65%	$0.98	$2.34	$110.75	2.25	9.00%		$2.98	$2.98
	2031	$51.75	31.31%	$3.12	$4.55	$1.42	1.65%	$1.03	$2.46	$116.27	2.25	9.00%		$3.12	$3.12
	2032	$54.33	31.31%	$3.28	$4.77	$1.49	1.65%	$1.08	$2.58	$122.06	2.25	9.00%		$3.28	$3.28
	2033	$57.03	31.31%	$3.44	$5.01	$1.57	1.65%	$1.14	$2.71	$128.14	2.25	9.00%		$3.44	$3.44
	2034	$59.87	31.31%	$3.61	$5.26	$1.65	1.65%	$1.19	$2.84	$134.53	2.25	9.00%		$3.61	$3.61
Second	2035	$62.86	31.31%	$3.79	$5.52	$1.73	1.65%	$1.25	$2.98	$141.23	2.25	9.00%		$3.79	$3.79
Stage	2036	$65.99	31.31%	$3.98	$5.80	$1.82	1.65%	$1.32	$3.13	$148.26	2.25	9.00%		$3.98	$3.98
	2037	$69.27	31.31%	$4.18	$6.09	$1.91	1.65%	$1.38	$3.29	$155.65	2.25	9.00%		$4.18	$4.18
	2038	$72.73	31.31%	$4.39	$6.39	$2.00	1.65%	$1.45	$3.45	$163.40	2.25	9.00%		$4.39	$4.39
	2039	$76.35	31.31%	$4.61	$6.71	$2.10	1.65%	$1.52	$3.62	$171.54	2.25	9.00%		$4.61	$4.61
	2040	$80.15	31.31%	$4.84	$7.04	$2.21	1.65%	$1.60	$3.80	$180.08	2.25	9.00%		$4.84	$4.84
	2041	$84.14	31.31%	$5.08	$7.39	$2.31	1.65%	$1.68	$3.99	$189.05	2.25	9.00%		$5.08	$5.08
	2042	$88.34	31.31%	$5.33	$7.76	$2.43	1.65%	$1.76	$4.19	$198.47	2.25	9.00%	$198.47	$5.33	$203.80
												Internal Rate of Return			8.25%

Source:

[A] First Stage is average from Value Line. Second stage is prior years' book plus value from Col.[8]
[B] First Stage is (Col. [4]-Col.[3]/Col.[4]). For second sage, see result on JAR 5, P.1
[C] First Stage is from Value Line. Second stage is Col. [4] x (1-Col. [2])
[D] First Stage is from Value line. Second stage is average of current and prior year's value from Col. [1] x Col. [11]
[E] Col. [4] - Col. [3]
[F] JAR 8
[G] Col. [5] + Col. [7]
[H] Col. [7] + Col. [8]
[I] Col. [1] x Col. [10]
[J] JAR 4, P.1.
[K] First stage is Col. [4]/Avg. of Current and prior year's Col. [1]. Second stage is from JAR 5, P.1
[L] - Col. [9] for year of purchase, + Col. [9] for year of sale.
[M] Col. [3]
[N] Col. [12] + Col. [13]

JAR 6, P.4

ALL WATER UTILITIES COVERED BY VALUE LINE
FULL DCF METHOD
Based on Market Price for Year Ended 10/31/2003

	Year	[1] Year End Book	[2] Retentio Rate	[3] Dividend	[4] Earnings Per Share	[5] Retained Earnings Per Share	[6] External Financing Rate	[7] Increme to book from Ext. Fin.	[8] Total Increment to Book	[9] Market Price	[10] Mkt to Book	[11] Expect. Ret. on Equity	[12] Cash Fl. from Stock Trans.	[13] Cash Fl. from Div.	[14] Total Cash Flow
		[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]	[N]
										M/B Change					
	2002	$11.48	27.51%	$0.84	$1.16	$0.32				$26.05	2.27		($26.05)		($26.05)
	2003	$12.12	24.41%	$0.86	$1.13	$0.28			$0.28	$27.50	2.27	9.61%		$0.86	$0.86
First	2004	$12.88	34.25%	$0.88	$1.33	$0.46			$0.46	$29.24	2.27	10.67%		$0.88	$0.88
Stage	2005	$14.12	40.65%	$0.92	$1.54	$0.63			$0.63	$32.04	2.27	11.42%		$0.92	$0.92
	2006	$15.35	45.52%	$0.95	$1.75	$0.80			$0.80	$34.84	2.27	11.88%		$0.95	$0.95
	2007	$16.11	30.66%	$0.98	$1.42	$0.43	1.65%	$0.33	$0.76	$36.57	2.27	9.00%		$0.98	$0.98
	2008	$16.91	30.66%	$1.03	$1.49	$0.46	1.65%	$0.34	$0.80	$38.38	2.27	9.00%		$1.03	$1.03
	2009	$17.75	30.66%	$1.08	$1.56	$0.48	1.65%	$0.36	$0.84	$40.29	2.27	9.00%		$1.08	$1.08
	2010	$18.63	30.66%	$1.14	$1.64	$0.50	1.65%	$0.38	$0.88	$42.28	2.27	9.00%		$1.14	$1.14
	2011	$19.55	30.66%	$1.19	$1.72	$0.53	1.65%	$0.40	$0.92	$44.38	2.27	9.00%		$1.19	$1.19
	2012	$20.52	30.66%	$1.25	$1.80	$0.55	1.65%	$0.42	$0.97	$46.58	2.27	9.00%		$1.25	$1.25
	2013	$21.54	30.66%	$1.31	$1.89	$0.58	1.65%	$0.44	$1.02	$48.89	2.27	9.00%		$1.31	$1.31
	2014	$22.61	30.66%	$1.38	$1.99	$0.61	1.65%	$0.46	$1.07	$51.32	2.27	9.00%		$1.38	$1.38
	2015	$23.73	30.66%	$1.45	$2.09	$0.64	1.65%	$0.48	$1.12	$53.86	2.27	9.00%		$1.45	$1.45
	2016	$24.91	30.66%	$1.52	$2.19	$0.67	1.65%	$0.51	$1.18	$56.53	2.27	9.00%		$1.52	$1.52
	2017	$26.14	30.66%	$1.59	$2.30	$0.70	1.65%	$0.53	$1.24	$59.34	2.27	9.00%		$1.59	$1.59
	2018	$27.44	30.66%	$1.67	$2.41	$0.74	1.65%	$0.56	$1.30	$62.28	2.27	9.00%		$1.67	$1.67
	2019	$28.80	30.66%	$1.75	$2.53	$0.78	1.65%	$0.58	$1.36	$65.37	2.27	9.00%		$1.75	$1.75
	2020	$30.23	30.66%	$1.84	$2.66	$0.81	1.65%	$0.61	$1.43	$68.61	2.27	9.00%		$1.84	$1.84
	2021	$31.73	30.66%	$1.93	$2.79	$0.85	1.65%	$0.64	$1.50	$72.01	2.27	9.00%		$1.93	$1.93
	2022	$33.30	30.66%	$2.03	$2.93	$0.90	1.65%	$0.68	$1.57	$75.58	2.27	9.00%		$2.03	$2.03
	2023	$34.95	30.66%	$2.13	$3.07	$0.94	1.65%	$0.71	$1.65	$79.33	2.27	9.00%		$2.13	$2.13
	2024	$36.68	30.66%	$2.24	$3.22	$0.99	1.65%	$0.75	$1.73	$83.27	2.27	9.00%		$2.24	$2.24
	2025	$38.50	30.66%	$2.35	$3.38	$1.04	1.65%	$0.78	$1.82	$87.40	2.27	9.00%		$2.35	$2.35
	2026	$40.41	30.66%	$2.46	$3.55	$1.09	1.65%	$0.82	$1.91	$91.73	2.27	9.00%		$2.46	$2.46
	2027	$42.42	30.66%	$2.58	$3.73	$1.14	1.65%	$0.86	$2.00	$96.28	2.27	9.00%		$2.58	$2.58
	2028	$44.52	30.66%	$2.71	$3.91	$1.20	1.65%	$0.90	$2.10	$101.05	2.27	9.00%		$2.71	$2.71
	2029	$46.73	30.66%	$2.85	$4.11	$1.26	1.65%	$0.95	$2.21	$106.07	2.27	9.00%		$2.85	$2.85
	2030	$49.05	30.66%	$2.99	$4.31	$1.32	1.65%	$1.00	$2.32	$111.33	2.27	9.00%		$2.99	$2.99
	2031	$51.48	30.66%	$3.14	$4.52	$1.39	1.65%	$1.05	$2.43	$116.85	2.27	9.00%		$3.14	$3.14
	2032	$54.03	30.66%	$3.29	$4.75	$1.46	1.65%	$1.10	$2.55	$122.64	2.27	9.00%		$3.29	$3.29
	2033	$56.71	30.66%	$3.46	$4.98	$1.53	1.65%	$1.15	$2.68	$128.72	2.27	9.00%		$3.46	$3.46
	2034	$59.52	30.66%	$3.63	$5.23	$1.60	1.65%	$1.21	$2.81	$135.11	2.27	9.00%		$3.63	$3.63
Second	2035	$62.47	30.66%	$3.81	$5.49	$1.68	1.65%	$1.27	$2.95	$141.81	2.27	9.00%		$3.81	$3.81
Stage	2036	$65.57	30.66%	$4.00	$5.76	$1.77	1.65%	$1.33	$3.10	$148.84	2.27	9.00%		$4.00	$4.00
	2037	$68.82	30.66%	$4.19	$6.05	$1.85	1.65%	$1.40	$3.25	$156.22	2.27	9.00%		$4.19	$4.19
	2038	$72.24	30.66%	$4.40	$6.35	$1.95	1.65%	$1.47	$3.41	$163.97	2.27	9.00%		$4.40	$4.40
	2039	$75.82	30.66%	$4.62	$6.66	$2.04	1.65%	$1.54	$3.58	$172.10	2.27	9.00%		$4.62	$4.62
	2040	$79.58	30.66%	$4.85	$6.99	$2.14	1.65%	$1.62	$3.76	$180.63	2.27	9.00%		$4.85	$4.85
	2041	$83.53	30.66%	$5.09	$7.34	$2.25	1.65%	$1.70	$3.95	$189.59	2.27	9.00%		$5.09	$5.09
	2042	$87.67	30.66%	$5.34	$7.70	$2.36	1.65%	$1.78	$4.14	$198.99	2.27	9.00%	$198.99	$5.34	$204.34
												Internal Rate of Return			8.22%

Source:

[A] First Stage is average from Value Line. Second stage is prior years' book plus value from Col.[8]
[B] First Stage is (Col. [4]-Col.[3]/Col.[4]). For second sage, see result on JAR 5, P.1
[C] First Stage is from Value Line. Second stage is Col. [4] x (1-Col. [2])
[D] First Stage is from Value line. Second stage is average of current and prior year's value from Col. [1] x Col. [11]
[E] Col. [4] - Col. [3]
[F] JAR 8
[G] Col. [5] + Col. [7]
[H] Col. [7] + Col. [8]
[I] Col. [1] x Col. [10]
[J] JAR 4, P.1.
[K] First stage is Col. [4]/Avg. of Current and prior year's Col. [1]. Second stage is from JAR 5, P.1
[L] - Col. [9] for year of purchase, + Col. [9] for year of sale.
[M] Col. [3]
[N] Col. [12] + Col. [13]

JAR 6, P.5

ALL WATER UTILITIES COVERED BY VALUE LINE

VALUE LINE'S EARNINGS PROJECTIONS

Earnings Per Share Forecast by Value Line

	2002	2003	2004	2005	2006
AMER. STATES WATER	$1.34	$1.30	$1.45	$1.65	$1.85
CALIFORNIA WATER	$1.25	$1.10	$1.45	$1.70	$1.95
PHILA. SUBURBAN	$0.90	$1.00	$1.10	$1.28	$1.45
	$1.16	$1.13	$1.33	$1.54	$1.75

Source: Most Current Value Line at Time of Prep: 2002 and 2003.

The value for 2005 is extrapolated from Value Line's 2004 and 2006 Values

JAR 6, P.6

ALL WATER UTILITIES COVERED BY VALUE LINE

VALUE LINE'S BOOK VALUE PROJECTIONS

Book Value Per Share Forecast by Value Line

	2002	2003	2004	2005	2006
AMER. STATES WATER	$14.05	$14.90	$14.90	$16.30	$17.70
CALIFORNIA WATER	$13.12	$13.90	$15.75	$17.10	$18.45
PHILA. SUBURBAN	$7.26	$7.55	$8.00	$8.95	$9.90
AVERAGE	$11.48	$12.12	$12.88	$14.12	$15.35

Source: Most Current Value Line at Time of Prep: 2002 and 2003.

The value for 2005 is extrapolated from Value Line's 2004 and 2006 Values

	COMPARATIVE WATER COMPANIES					JAR 6, P.7.
	Value Line's Projection of Dividends Per Share					
	2002	2003	2004	2005	2006	Compound Annual
			Value Line			Growth from 2000
AMOUNT:			Estimate			to 2006
AMER. STATES WATER	$0.87	$0.88	$0.90	$0.94	$0.98	2.41%
CALIFORNIA WATER	$1.12	$1.12	$1.13	$1.16	$1.18	1.05%
PHILA. SUBURBAN	$0.54	$0.57	$0.60	$0.65	$0.70	5.33%
Average	$0.84	$0.86	$0.88	$0.92	$0.95	2.93%
		1.58%	2.33%	4.37%	4.19%	
Source: Most Current Value Line at Time of Prep: 2002 and 2003.						
The value for 2005 is extrapolated from Value Line's 2004 and 2006 Values						
		2003	2004	2005	2006	
PERCENT CHANGE FROM PRIOR YEAR:						
AMER. STATES WATER		1.15%	2.27%	4.44%	4.26%	
CALIFORNIA WATER		0.00%	0.89%	2.21%	2.16%	
PHILA. SUBURBAN		5.56%	5.26%	8.33%	7.69%	
AVERAGE		2.23%	2.81%	5.00%	4.70%	
Source: Most current Value Line at time of prep. of schedule.						

All Water Companies Covered By Value Line						JAR 7, P.1.
	% Common Equity					
						Average Without
	1999	2000	2001	2002	2003	Short Term Debt
AMER. STATES WATER	48.40%	51.90%	44.70%	48.00%	52.00%	49.00%
CALIFORNIA WATER	52.00%	50.20%	48.80%	44.00%	42.50%	47.50%
PHILA. SUBURBAN	46.70%	47.80%	47.70%	45.80%	46.00%	46.80%
Average	**49.0%**	**50.0%**	**47.1%**	**45.9%**	**46.8%**	**47.8%**
Source: Most Current Value Line at Time of Preparation						
Note: Long Term Debt is reported in value line to be higher than Total Debt. Therefore, estimated short term debt as zero.						

Water Companies Covered By Value Line — **JAR 7, P.2.**

	($000,000s) Total Debt	Quantity: LT Debt [A]	ST Debt [B]	Pfd Stock [A]	Equity [C]	Total Capital [D]	Percentage: LT Debt [E]	ST Debt [E]	Pfd Stock [E]	Equity Ratio With ST Debt [E]	
AMER. STATES WATER	$ 274.2	$ 230.9	$ 43.3	$ -	$ 213.1	$ 487.3	47.4%	8.9%	0.0%	43.7%	[F]
CALIFORNIA WATER	301.7	270.10	31.60	3.50	214.97	520.17	51.9%	6.1%	0.7%	41.3%	[F]
PHILA. SUBURBAN	741.9	580.80	161.10	0.20	490.96	1,233.06	47.1%	13.1%	0.0%	39.8%	[F]
	$ 439	**$ 361**	**$ 79**	**$ 1**	**$ 306**	**$ 747**	**48.80%**	**9.34%**	**0.23%**	**41.63%**	
						Median	**47.38%**	**8.88%**	**0.02%**	**41.33%**	

[A] Source: Most Current Value Line at Time of Preparation

[B] Total Debt Minus Long-Term Debt

[C] The amount of equity was calculated by using the following information provided by Value Line:

- %E: % of equity in the capital structure without short-term debt
- LT: Amount of Long-Term Debt in the Capital Structure
- PS: Amount of Preferred Stock in the Capital Structure

We know the % of equity provided by value line can be expressed algebraically:

Note: E is defined as the amount of equity in the Capital Structure

Step 1: $E = (\%E) \times (E + LT + PS)$

Step 2: $E = \%E \times E + \%E \times LT + \%E \times PS$

Step 3: $E - \%E \times E = \%E \times LT + \%E \times PS$

Step 4: $E - \%E \times E = \%E \times (LT + PS)$

Step 5: $E \times (1 - \%E) = \%E \times (LT + PS)$

Step 6: $E = \%E \times (LT + PS) / (1 - \%E)$

Therefore we are able to solve for the amount of equity in the capital structure with the information provided by Value Line. As the formula in Step 6 shows, the amount of equity is equal to the % of equity in the capital structure without short-term debt times the sum of Long-term debt and Preferred Stock all divided by 1 minus the % of equity in the capital structure.

[D] Sum of Long-Term Debt, Short-Term Debt, Preferred Stock and Equity

[E] Quantities in columns L through O Divided by Total Capital in Column P

[F] Use Average of 2002 and 2003 equity ratios (Capital Structure as of 6/30/02)

JAR 8

All Water Companies Covered By Value Line
EXTERNAL FINANCING RATE
(Millions of Shares)

	Common Stock Outstanding			Compound	Adjusted For Capital Structure
	2003	2004	2006-08	Annual	Change
AMER. STATES WATER	16.80	16.80	16.80	0.00%	
CALIFORNIA WATER	17.00	18.80	18.80	2.03%	
PHILA. SUBURBAN	69.00	70.50	75.00	1.68%	
			Average	1.24%	
			Median	1.68%	
			Round to	**1.65%**	

Source: Most current Value Line at time of prep. of schedule.

JAR 9

COST OF EQUITY INDICATED BY INFLATION RISK PREMIUM METHOD

1	Interest rate on 30 year treasury bonds		5.05%	[A]	
2	Interest rate on inflation indexed 30 year treasury bonds	Apr-32	2.25%	[B]	
3	Difference		2.80%	Line 1 minus Line 2	
4	Round to		2.80%		
RISK PREMIUM					
5	Historic Return on Common Stocks Net of Inflation	6.60%	to	7.20%	[C]
6	Inflation expectation	2.80%		2.80%	Line 4
7	Inflation Risk Premium Indicated Cost of Equity for Company of Average Risk	9.40%	to	10.00%	
	Mid-point		9.70%		

Sources:

[A] Wall Street Journal, 11/18/03. Bond Matures Feb 2031

[B] Wall Street Journal, 11/18/03. Bond Matures Apr 2032

[C] Page 12 of Stocks for the Long Run, Second Edition, by Jeremy J. Siegel, 1998, McGraw Hill.

JAR 10, P.1.

RISK PREMIUM/CAPM METHOD
EQUITY FOR COMMON STOCK :

	Average Risk		Risk Premium Adjustment		Applicable to Water company Based upon a beta of 0.63 [G]
Based on Long-term Treasury Bonds					
Interest rate on 20 year treasury bonds	5.08%	[A]			5.08%
Applicable Risk Premium	4.00%	[B]	-1.47%	[F]	2.53%
	9.08%				**7.61%**
Based on Corporate Bonds					
Interest on corporate bonds	5.81%	[C]			5.81%
Applicable Risk Premium	3.51%	[B]	-1.29%	[F]	2.22%
	9.32%				**8.03%**
Based on Intermediate Term U.S Treasury Bonds					
Intereset on 10 year U.S. Treasury Bonds	3.04%	[D]			3.04%
Applicable Risk Premium	3.90%	[B]	-1.43%	[F]	2.47%
	6.94%				**5.51%**
Based on U.S. Treasury Bills					
Interest on 90 day U.S. Treasury Bills	0.94%	[E]			0.94%
Applicable Risk Premium	5.33%	[B]	-1.96%	[F]	3.38%
	6.27%				**4.32%**

SUMMARY OF INDICATED RISK PREMIUM FOR EQUITY WITH AVERAGE RISK

Lowest	6.27%	4.32%
Highest	9.32%	8.03%
Average	**7.90%**	**6.37%**

Sources:

[A] Wall Street Journal, 11/18/03. Used Maturity Date Of August 2023
[B] JAR 10, P.2.
[C] Federal Reserve Statistical Release. Release date 11/17/03. AAA Rated Corporate Bonds
[D] Wall Street Journal, 11/18/03. Used Maturity Date of August 2013
[E] Wall Street Journal, 11/18/03. Used Maturity Date of January 2003
[F] Amount in last column determined by multiplying the amount in the first column by the beta.
The amount in the middle column is the difference between the amount in the first column and the amount I the last column. Used AAA Corporate bonds.
[G] JAR 4, P.3.

RISK PREMIUM BASED UPON ANALYSIS OF HISTORIC RETURNS — **JAR 10, P.2.**

Compound annual returns from 1926 through 1999:

Large Common Stocks	11.35%
Corporate Bonds	5.61%
Long-term U.S. Treasury Bonds	5.12%
Intermediate Term U.S. Treasury Bonds	5.22%
U.S. Treasury Bills	3.79%
Inflation	3.07%

Average diference from Long-term U.S. Treasury Bonds:

Large Common Stocks	6.23%
Corporate Bonds	0.49%
Long-term U.S. Treasury Bonds	0.00%
Intermediate Term U.S. Treasury Bonds	0.10%
U.S. Treasury Bills	-1.33%
Inflation	-2.05%

Common Stock Risk Premium Consistent With Current Market Environment:

Long-term U.S. Treasury Bonds	4.00% or less.	See graph on	Schedule JAR 10, P. 3
Corporate Bonds	3.51% or less.	Risk premium on large common stocks minus average differnce from corporate bonds per above table.	
Intermediate Term U.S. Treasury Bonds	3.90% or less.	Risk premium on large common stocks minus average differnce from corporate bonds per above table.	
U.S. Treasury Bills	5.33% or less.	Risk premium on large common stocks minus average differnce from corporate bonds per above table.	
Inflation	6.05% or less.	Risk premium on large common stocks minus average differnce from corporate bonds per above table.	

Schedule JAR 10, P. 3

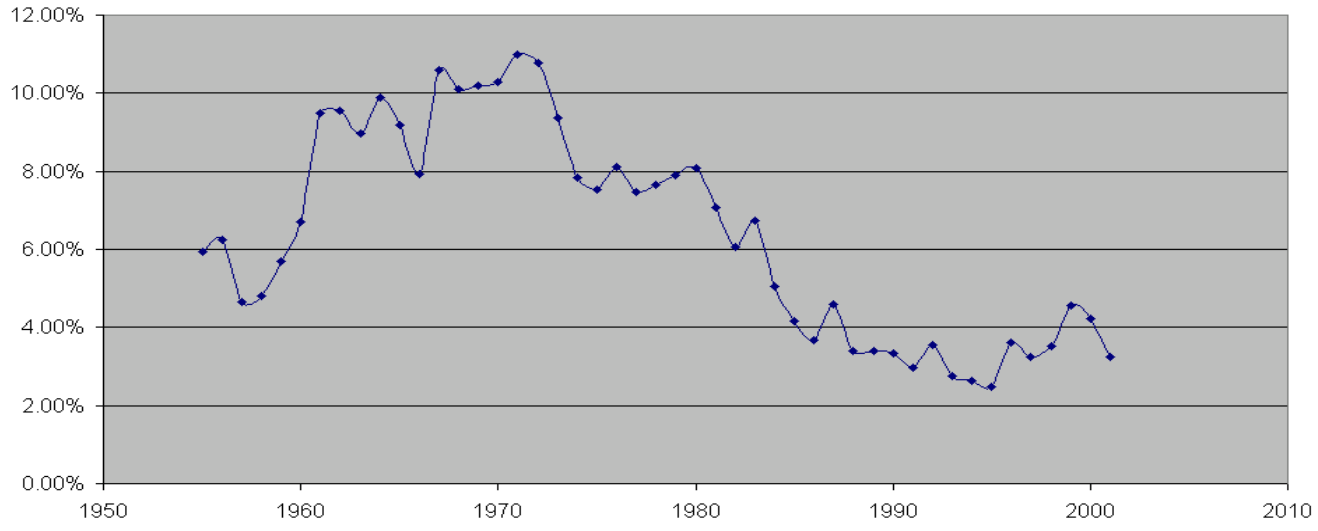
	Large Company Stocks	Long-Term Corporate Bonds	Long-term Government Bonds	Intermediate Term Government Bonds	U.S. Treasury Bills	Inflation	*Large Company Stocks*	*Long-Term Corporate Bonds*	*Long-term Government Bonds*	*Intermediate Term Government Bonds*	*U.S. Treasury Bills*	*Inflation*	$100 Investment Esc. at Pub. Ut. Geom. Averag	$100 Investment Esc. at Pub. Ut. Arithmetic Average
							Value of $100 invested at end of of 1925							
1925							100	100	100	100	100	100		
1926	11.62%	7.37%	7.77%	5.38%	3.27%	-1.49%	111.62	107.37	107.77	105.38	103.27	98.51	111.35	112.65
1927	37.49%	7.44%	8.93%	4.52%	3.12%	-2.08%	153.47	115.36	117.39	110.14	106.49	96.46	123.98	126.91
1928	43.61%	2.84%	0.10%	0.92%	3.56%	-0.97%	220.39	118.63	117.51	111.16	110.28	95.53	138.05	142.97
1929	-8.42%	3.27%	3.42%	6.01%	4.75%	0.20%	201.84	122.51	121.53	117.84	115.52	95.72	153.71	161.05
1930	-24.90%	7.98%	4.66%	6.72%	2.41%	-6.03%	151.58	132.29	127.19	125.76	118.31	89.94	171.16	181.43
1931	-43.34%	-1.85%	-5.31%	-2.32%	1.07%	-9.52%	85.88	129.84	120.44	122.84	119.57	81.38	190.58	204.39
1932	-8.19%	10.82%	16.84%	8.81%	0.96%	-10.30%	78.85	143.89	140.72	133.66	120.72	73.00	212.20	230.25
1933	53.99%	10.38%	-0.07%	1.83%	0.30%	0.51%	121.42	158.83	140.62	136.11	121.08	73.37	236.28	259.39
1934	-1.44%	13.84%	10.03%	9.00%	0.16%	2.03%	119.67	180.81	154.73	148.36	121.28	74.86	263.09	292.21
1935	47.67%	9.61%	4.98%	7.01%	0.17%	2.99%	176.72	198.19	162.43	158.76	121.48	77.10	292.94	329.18
1936	33.92%	6.74%	7.52%	3.06%	0.18%	1.21%	236.67	211.54	174.65	163.61	121.70	78.03	326.18	370.83
1937	-35.03%	2.75%	0.23%	1.56%	0.31%	3.10%	153.76	217.36	175.05	166.17	122.08	80.45	363.19	417.75
1938	31.12%	6.13%	5.53%	6.23%	-0.02%	-2.78%	201.61	230.69	184.73	176.52	122.05	78.22	404.41	470.61
1939	-0.41%	3.97%	5.94%	4.52%	0.02%	-0.48%	200.79	239.84	195.70	184.50	122.08	77.84	450.29	530.16
1940	-9.78%	3.39%	6.09%	2.96%	0.00%	0.96%	181.15	247.97	207.62	189.96	122.08	78.59	501.39	597.24
1941	-11.59%	2.73%	0.93%	0.50%	0.06%	9.72%	160.15	254.74	209.55	190.91	122.15	86.23	558.28	672.81
1942	20.34%	2.60%	3.22%	1.94%	0.27%	9.29%	192.73	261.37	216.30	194.61	122.48	94.24	621.63	757.94
1943	25.90%	2.83%	2.08%	2.81%	0.35%	3.16%	242.65	268.76	220.80	200.08	122.91	97.21	692.16	853.85
1944	19.75%	4.73%	2.81%	1.80%	0.33%	2.11%	290.57	281.48	227.00	203.68	123.31	99.26	770.70	961.89
1945	36.44%	4.08%	10.73%	2.22%	0.33%	2.25%	396.45	292.96	251.36	208.20	123.72	101.50	858.15	1,083.60
1946	-8.07%	1.72%	-0.10%	1.00%	0.35%	18.16%	364.46	298.00	251.11	210.28	124.15	119.93	955.53	1,220.71
1947	5.71%	-2.34%	-2.62%	0.91%	0.50%	9.01%	385.27	291.03	244.53	212.20	124.78	130.74	1,063.95	1,375.16
1948	5.50%	4.14%	3.40%	1.85%	0.81%	2.71%	406.46	303.07	252.84	216.12	125.79	134.28	1,184.67	1,549.16
1949	18.79%	3.31%	6.45%	2.32%	1.10%	-1.80%	482.83	313.11	269.15	221.14	127.17	131.86	1,319.10	1,745.18
1950	31.71%	2.12%	0.06%	0.70%	1.20%	5.79%	635.94	319.74	269.31	222.69	128.70	139.50	1,468.78	1,966.00
1951	24.02%	-2.69%	-3.93%	0.36%	1.49%	5.87%	788.69	311.14	258.73	223.49	130.61	147.69	1,635.44	2,214.76
1952	18.37%	3.52%	1.16%	1.63%	1.66%	0.88%	933.57	322.10	261.73	227.13	132.78	148.99	1,821.01	2,495.00
1953	-0.99%	3.41%	3.64%	3.23%	1.82%	0.62%	924.33	333.08	271.26	234.47	135.20	149.91	2,027.64	2,810.70
1954	52.62%	5.39%	7.19%	2.68%	0.86%	-0.50%	1,410.71	351.03	290.76	240.75	136.36	149.16	2,257.71	3,166.34
1955	31.56%	0.48%	-1.29%	-0.65%	1.57%	0.37%	1,855.94	352.72	287.01	239.19	138.50	149.71	2,513.89	3,566.98
1956	6.56%	-6.81%	-5.59%	-0.42%	2.46%	2.86%	1,977.68	328.70	270.97	238.18	141.91	153.99	2,799.14	4,018.32
1957	-10.78%	8.71%	7.46%	7.84%	3.14%	3.02%	1,764.49	357.33	291.18	256.85	146.36	158.64	3,116.76	4,526.76
1958	43.36%	-2.22%	-6.09%	-1.29%	1.54%	1.76%	2,529.57	349.39	273.45	253.54	148.62	161.44	3,470.42	5,099.54
1959	11.96%	-0.97%	-2.26%	-0.39%	2.95%	1.50%	2,832.11	346.00	267.27	252.55	153.00	163.86	3,864.20	5,744.80
1960	0.47%	9.07%	13.78%	11.76%	2.66%	1.48%	2,845.42	377.39	304.10	282.25	157.07	166.28	4,302.67	6,471.69
1961	26.89%	4.82%	0.97%	1.85%	2.13%	0.67%	3,610.55	395.58	307.05	287.47	160.42	167.40	4,790.89	7,290.57
1962	-8.73%	7.95%	6.89%	5.56%	2.73%	1.22%	3,295.35	427.03	328.20	303.46	164.80	169.44	5,334.51	8,213.05
1963	22.80%	2.19%	1.21%	1.64%	3.12%	1.65%	4,046.69	436.38	332.17	308.43	169.94	172.23	5,939.81	9,252.27
1964	16.48%	4.77%	3.51%	4.04%	3.54%	1.19%	4,713.59	457.19	343.83	320.90	175.96	174.28	6,613.80	10,422.97
1965	12.45%	-0.46%	0.71%	1.02%	3.93%	1.92%	5,300.43	455.09	346.27	324.17	182.87	177.63	7,364.26	11,741.80
1966	-10.06%	0.20%	3.65%	4.69%	4.76%	3.35%	4,767.21	456.00	358.91	339.37	191.58	183.58	8,199.88	13,227.51
1967	23.98%	-4.95%	-9.18%	1.01%	4.21%	3.04%	5,910.38	433.43	325.97	342.80	199.64	189.16	9,130.31	14,901.21
1968	11.06%	2.57%	-0.26%	4.54%	5.21%	4.72%	6,564.07	444.57	325.12	358.36	210.04	198.09	10,166.32	16,786.68
1969	-8.50%	-8.09%	-5.07%	-0.74%	6.58%	6.11%	6,006.13	408.60	308.63	355.71	223.86	210.19	11,319.88	18,910.73
1970	4.01%	18.37%	12.11%	16.86%	6.52%	5.49%	6,246.97	483.66	346.01	415.68	238.46	221.73	12,604.34	21,303.53
1971	14.31%	11.01%	13.23%	8.72%	4.39%	3.36%	7,140.91	536.91	391.79	451.93	248.93	229.18	14,034.55	23,999.10
1972	18.98%	7.26%	5.69%	5.16%	3.84%	3.41%	8,496.26	575.89	414.08	475.25	258.49	237.00	15,627.04	27,035.75
1973	-14.66%	1.14%	-1.11%	4.61%	6.93%	8.80%	7,250.71	582.46	409.48	497.16	276.40	257.85	17,400.22	30,456.63
1974	-26.47%	-3.06%	4.35%	5.69%	8.00%	12.20%	5,331.44	564.63	427.30	525.45	298.51	289.31	19,374.61	34,310.35
1975	37.20%	14.64%	9.20%	7.83%	5.80%	7.01%	7,314.74	647.30	466.61	566.59	315.82	309.59	21,573.04	38,651.69
1976	23.84%	18.65%	16.75%	12.87%	5.08%	4.81%	9,058.58	768.02	544.76	639.51	331.87	324.48	24,020.91	43,542.35
1977	-7.18%	1.71%	-0.69%	1.41%	5.12%	6.77%	8,408.17	781.15	541.01	648.53	348.86	346.45	26,746.55	49,051.84
1978	6.56%	-0.07%	-1.18%	3.49%	7.18%	9.03%	8,959.75	780.60	534.62	671.16	373.91	377.74	29,781.46	55,258.44
1979	18.44%	-4.18%	-1.23%	4.09%	10.38%	13.31%	10,611.92	747.97	528.05	698.61	412.72	428.01	33,160.74	62,250.38
1980	32.42%	-2.76%	-3.95%	3.91%	11.24%	12.40%	14,052.31	727.33	507.19	725.93	459.11	481.09	36,923.46	70,127.02
1981	-4.91%	-1.24%	1.86%	9.45%	14.71%	8.94%	13,362.34	718.31	516.62	794.53	526.64	524.10	41,113.14	79,000.30
1982	21.41%	42.56%	40.36%	29.10%	10.54%	3.87%	16,223.22	1,024.03	725.13	1,025.74	582.15	544.38	45,778.21	88,996.33
1983	22.51%	6.26%	0.65%	7.41%	8.80%	3.80%	19,875.06	1,088.13	729.84	1,101.74	633.38	565.07	50,972.63	100,257.18
1984	6.27%	16.86%	15.48%	14.02%	9.85%	3.95%	21,121.23	1,271.59	842.82	1,256.21	695.77	587.39	56,756.46	112,942.88
1985	32.16%	30.09%	30.97%	20.33%	7.72%	3.77%	27,913.82	1,654.21	1,103.85	1,511.59	749.48	609.53	63,196.57	127,233.72
1986	18.47%	19.85%	24.53%	15.14%	6.16%	1.13%	33,069.50	1,982.57	1,374.62	1,740.45	795.65	616.42	70,367.44	143,332.80
1987	5.23%	-0.27%	-2.71%	2.90%	5.47%	4.41%	34,799.04	1,977.22	1,337.37	1,790.92	839.17	643.60	78,351.98	161,468.93
1988	16.81%	10.70%	9.67%	6.10%	6.35%	4.42%	40,648.75	2,188.78	1,466.69	1,900.17	892.46	672.05	87,242.52	181,899.85
1989	31.49%	16.23%	18.11%	13.29%	8.37%	4.65%	53,449.05	2,544.02	1,732.31	2,152.70	967.16	703.30	97,141.86	204,915.92
1990	-3.17%	6.78%	6.18%	9.73%	7.81%	6.11%	51,754.71	2,716.50	1,839.36	2,362.16	1,042.70	746.27	108,164.48	230,844.26
1991	30.55%	19.89%	19.30%	15.46%	5.60%	3.06%	67,565.78	3,256.81	2,194.36	2,727.35	1,101.09	769.11	120,437.82	260,053.35
1992	7.67%	9.39%	8.05%	7.19%	3.51%	2.90%	72,748.07	3,562.63	2,371.01	2,923.44	1,139.73	791.41	134,103.81	292,958.31
1993	9.99%	13.19%	18.24%	11.24%	2.90%	2.75%	80,015.61	4,032.54	2,803.48	3,252.04	1,172.79	813.17	149,320.46	330,026.78
1994	1.31%	-5.76%	-7.77%	-5.14%	3.90%	2.67%	81,063.81	3,800.26	2,585.65	3,084.88	1,218.53	834.89	166,263.74	371,785.59
1995	37.43%	27.20%	31.67%	16.80%	5.60%	2.54%	111,405.99	4,833.94	3,404.52	3,603.14	1,286.76	856.09	185,129.56	418,828.21
1996	23.07%	1.40%	-0.93%	2.10%	5.21%	3.32%	137,107.36	4,901.61	3,372.86	3,678.81	1,353.80	884.51	206,136.08	471,823.21
1997	33.36%	12.95%	15.85%	8.38%	5.26%	1.70%	182,846.37	5,536.37	3,907.46	3,987.10	1,425.01	899.55	229,526.18	531,523.74
1998	28.58%	10.76%	13.06%	10.21%	4.86%	1.61%	235,103.86	6,132.08	4,417.77	4,394.18	1,494.27	914.03	255,570.34	598,778.28
1999	21.04%	-7.45%	-8.96%	-1.77%	4.68%	2.68%	284,569.72	5,675.24	4,021.94	4,316.40	1,564.20	938.53	284,569.72	674,542.64
2000	-9.11%	12.87%	21.48%	12.59%	5.89%	3.39%	258,645.41	6,405.65	4,885.86	4,859.84	1,656.33	970.35	316,859.63	759,893.59
2001	-11.88%	10.65%	3.70%	7.62%	3.83%	1.55%	227,918.34	7,087.85	5,066.63	5,230.15	1,719.77	985.39	352,813.45	856,044.12
Arithmetic Mean	12.65%	6.09%	5.69%	5.49%	3.86%	3.15%	11.35%	5.61%	5.12%	5.22%	3.79%	3.07%		
							Geometric Mean	Geometric Mean	Geometric Mean	Geometric Mean	Geometric Mean	Geometric Mean		

Source of data:
Ibbotson Associates Stocks, Bonds, Bills, and Inflation 2002 Yearbook

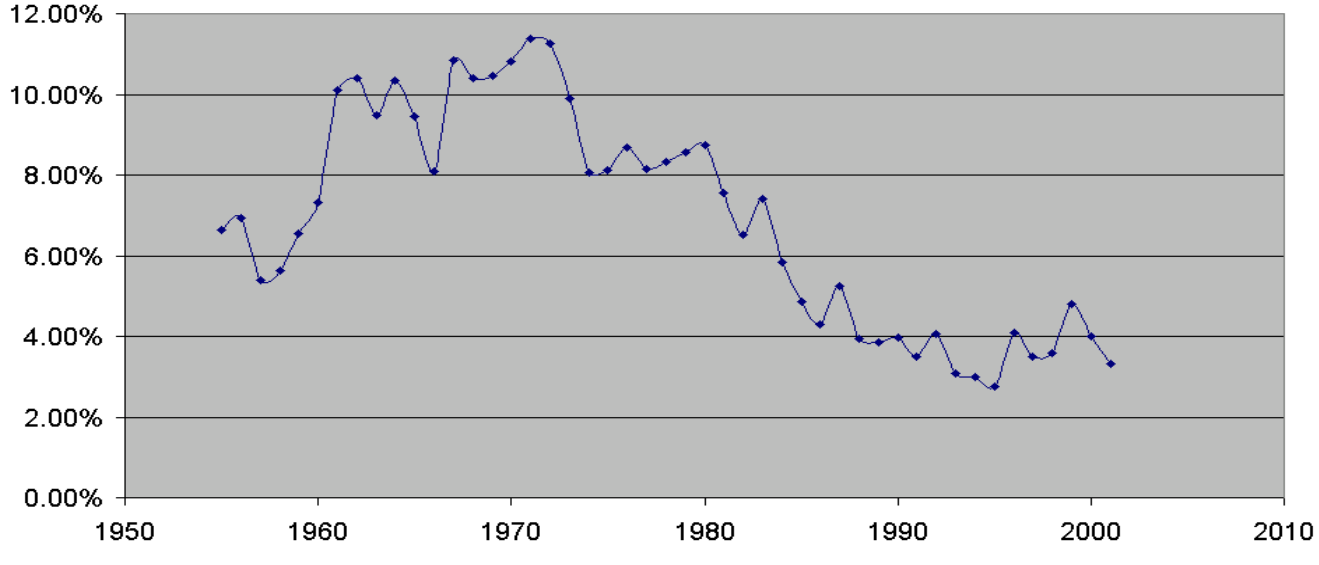
	30 Year Moving Average					30 Year Moving Average			
					Risk Premium				
Returns on Large Company Stocks Bonds	Returns on Long-Term Corporate Bonds	Returns on Long-term Government Bonds	Returns on Intermediate Term Government Bills	Returns on U.S. Treasury Bills	Large Stocks vs. Long-Term Corporate Bonds	Large Stocks vs Long-term Government Bonds	Intermediate Term Government	U.S. Treasury Bills	
10.23%	4.29%	3.58%	2.95%	1.09%	1955	5.94%	6.65%	7.28%	9.13%
10.06%	3.80%	3.12%	2.76%	1.07%	1956	6.26%	6.93%	7.30%	8.99%
8.48%	3.84%	3.07%	2.86%	1.07%	1957	4.64%	5.41%	5.62%	7.42%
8.47%	3.67%	2.86%	2.79%	1.00%	1958	4.81%	5.62%	5.69%	7.48%
9.20%	3.52%	2.66%	2.57%	0.94%	1959	5.68%	6.54%	6.63%	8.26%
10.27%	3.56%	2.95%	2.73%	0.95%	1960	6.71%	7.32%	7.54%	9.32%
13.27%	3.78%	3.17%	2.87%	0.98%	1961	9.49%	10.10%	10.40%	12.29%
13.25%	3.69%	2.86%	2.77%	1.04%	1962	9.56%	10.39%	10.48%	12.21%
12.40%	3.43%	2.91%	2.76%	1.14%	1963	8.97%	9.49%	9.63%	11.26%
13.03%	3.14%	2.70%	2.61%	1.25%	1964	9.89%	10.33%	10.42%	11.78%
12.00%	2.81%	2.56%	2.41%	1.37%	1965	9.19%	9.45%	9.60%	10.63%
10.53%	2.59%	2.43%	2.46%	1.52%	1966	7.93%	8.10%	8.07%	9.00%
12.93%	2.33%	2.09%	2.44%	1.65%	1967	10.61%	10.84%	10.49%	11.28%
12.31%	2.21%	1.90%	2.39%	1.83%	1968	10.10%	10.41%	9.92%	10.48%
11.99%	1.79%	1.53%	2.21%	2.04%	1969	10.20%	10.46%	9.78%	9.95%
12.53%	2.25%	1.72%	2.64%	2.26%	1970	10.27%	10.81%	9.88%	10.27%
13.49%	2.52%	2.11%	2.91%	2.40%	1971	10.98%	11.39%	10.58%	11.09%
13.45%	2.67%	2.19%	3.02%	2.52%	1972	10.78%	11.26%	10.43%	10.93%
11.99%	2.61%	2.08%	3.08%	2.74%	1973	9.38%	9.91%	8.91%	9.25%
10.18%	2.35%	2.13%	3.21%	2.99%	1974	7.84%	8.05%	6.97%	7.19%
10.20%	2.68%	2.08%	3.39%	3.17%	1975	7.53%	8.12%	6.81%	7.03%
11.30%	3.21%	2.62%	3.78%	3.33%	1976	8.10%	8.69%	7.53%	7.97%
10.82%	3.35%	2.68%	3.79%	3.49%	1977	7.48%	8.14%	7.03%	7.34%
10.86%	3.20%	2.53%	3.85%	3.70%	1978	7.66%	8.33%	7.01%	7.16%
10.85%	2.95%	2.27%	3.91%	4.00%	1979	7.90%	8.58%	6.94%	6.85%
10.87%	2.78%	2.13%	4.02%	4.33%	1980	8.09%	8.74%	6.85%	6.54%
9.89%	2.83%	2.33%	4.32%	4.76%	1981	7.06%	7.56%	5.57%	5.13%
9.98%	3.93%	3.46%	5.15%	5.05%	1982	6.05%	6.53%	4.83%	4.93%
10.77%	4.03%	3.35%	5.29%	5.28%	1983	6.74%	7.41%	5.48%	5.49%
9.44%	4.38%	3.61%	5.66%	5.58%	1984	5.06%	5.83%	3.78%	3.86%
9.46%	5.29%	4.59%	6.34%	5.79%	1985	4.17%	4.86%	3.12%	3.67%
9.84%	6.17%	5.56%	6.85%	5.91%	1986	3.67%	4.28%	2.99%	3.93%
10.45%	5.87%	5.21%	6.69%	5.99%	1987	4.58%	5.24%	3.76%	4.46%
9.70%	6.31%	5.76%	6.94%	6.16%	1988	3.39%	3.94%	2.75%	3.54%
10.29%	6.88%	6.43%	7.40%	6.34%	1989	3.41%	3.86%	2.88%	3.95%
10.15%	6.80%	6.18%	7.34%	6.51%	1990	3.35%	3.97%	2.81%	3.64%
10.26%	7.28%	6.78%	7.79%	6.63%	1991	2.98%	3.48%	2.47%	3.63%
10.87%	7.33%	6.81%	7.84%	6.66%	1992	3.54%	4.05%	3.02%	4.21%
10.46%	7.69%	7.37%	8.17%	6.65%	1993	2.77%	3.09%	2.29%	3.81%
9.95%	7.31%	6.96%	7.84%	6.66%	1994	2.63%	2.99%	2.11%	3.28%
10.68%	8.19%	7.92%	8.36%	6.72%	1995	2.49%	2.77%	2.33%	3.96%
11.85%	8.24%	7.75%	8.27%	6.74%	1996	3.61%	4.09%	3.58%	5.11%
12.12%	8.86%	8.63%	8.52%	6.77%	1997	3.26%	3.49%	3.60%	5.35%
12.67%	9.14%	9.09%	8.71%	6.76%	1998	3.53%	3.58%	3.95%	5.91%
13.72%	9.17%	8.93%	8.68%	6.69%	1999	4.56%	4.79%	5.05%	7.03%
13.21%	8.99%	9.23%	8.54%	6.67%	2000	4.22%	3.99%	4.67%	6.54%
12.24%	8.98%	8.91%	8.50%	6.65%	2001	3.25%	3.33%	3.73%	5.58%
						5.74%	6.23%	6.13%	7.56%

Source: Schedule JAR 10, P. 3

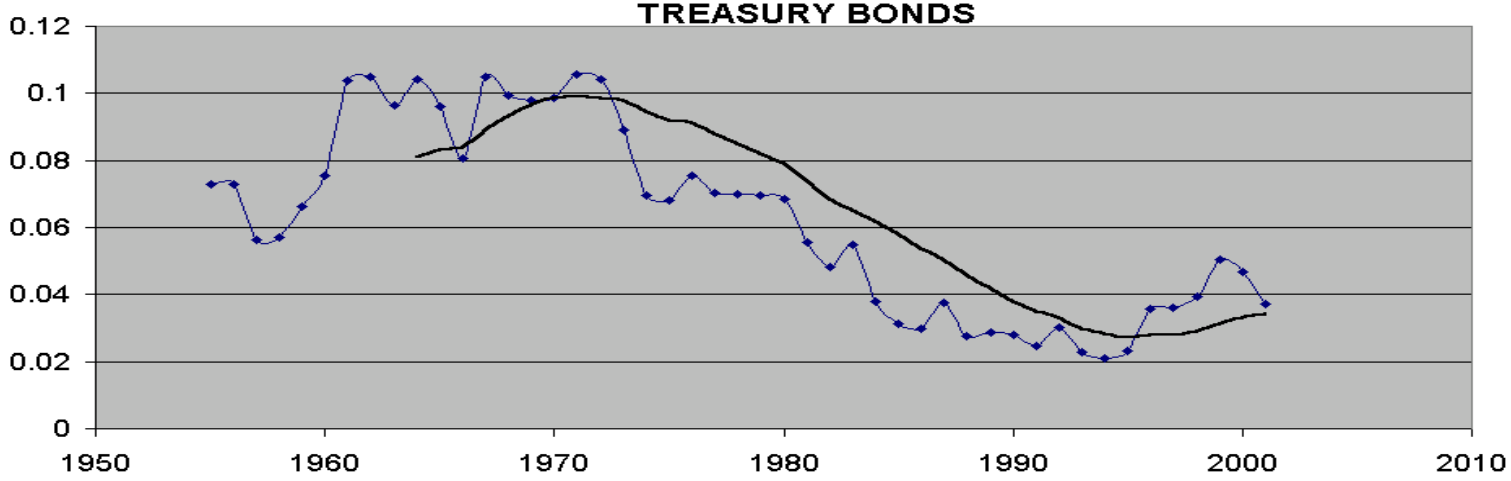
RISK PREMIUM: 30 Year Moving Average of Return on Large Common Stocks minus Return on Long-term Corporate Bonds



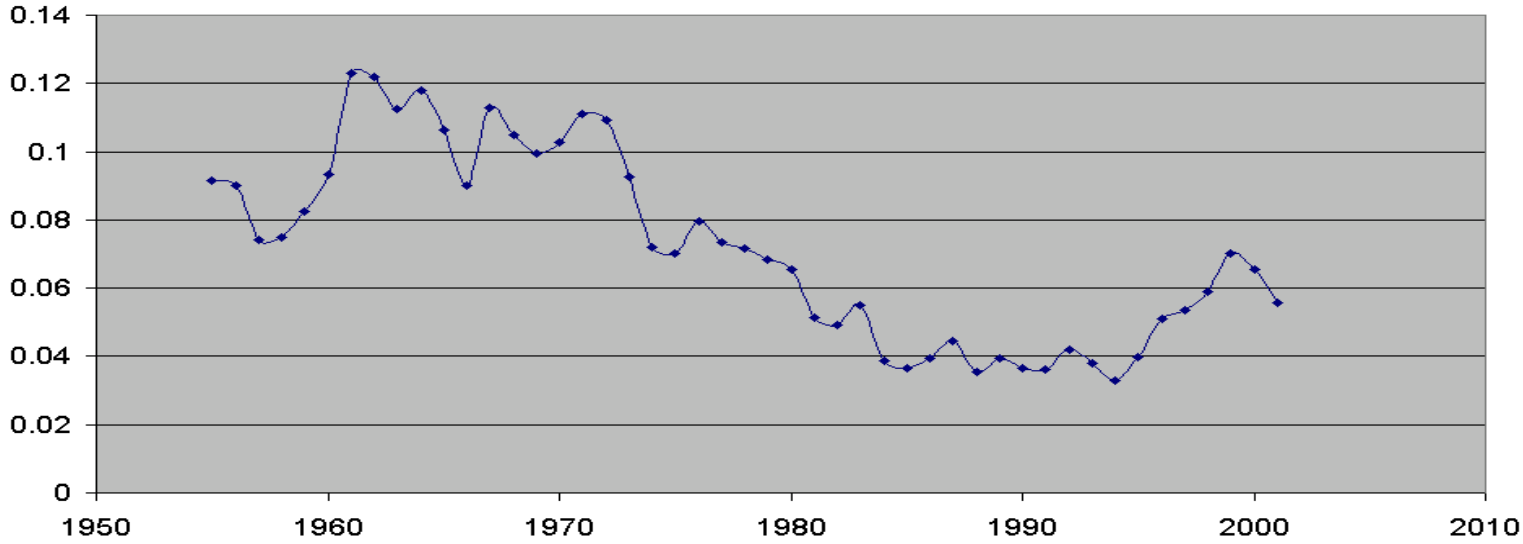
RISK PREMIUM: 30 Year Moving Average Return on Large Common Stocks Minus Return on 30 Year Treasury Bonds



RISK PREMIUM: 30 YEAR MOVING AVERAGE OF RETURN ON LARGE COMMON STOCKS MINUS RETURN ON INTERMEDIATE TERM TREASURY BONDS



RISK PREMIUM; 30 YEAR MOVING AVERAGE OF RETURN ON LARGE COMMON STOCKS VERSUS RETURN ON SHORT-TERM TREASURY BILLS



JAR 11, P.1

Cost of Equity Impac of Federal Income Tax Reduction

Summary

	After Tax Return New Tax Law		After Tax Return Old Tax Law		Cost of Equity Reduction	
1. Assume Tax Law Temporary	7.59%	[A]	7.50%	[B]	0.10%	
2. Assume Tax Law Permanent	8.11%	[C]	7.50%	[B]	0.62%	
3. Assume 1-Year Holding Period					0.78%	[D]
4. Tax Free Bond Analysis					1.02%	
			Average		0.90%	
Recommended Cost of Equity Reduction					0.50%	

[A] JAR 11, P.4
[B] JAR 11, P.2
[C] JAR 11, P.3
[D] JAR 11, P.5

JAR 11, P.2

Cost of Equity Impact of Federal Incom Tax Reduction
After Tax Cash Flow for Old Tax Law

Before Tax Cash Flow to Investor		Year 1	Year 2	Year 3	Year 10	Year 20	Year 30	Year 40
Capital Gains (Loss)	[A]	($25.16)						$198.07
Dividends	[A]		$0.86	$0.90	$1.31	$2.22	$3.77	$6.39
Bfore Tax Cash Flow to Investor		($25.16)	$0.86	$0.90	$1.31	$2.22	$3.77	$204.46
Bfore Tax Return (Old and New Tax Law)		**8.84%**						
Retention Rate	[B]	30.66%	30.66%	30.66%	30.66%	30.66%	30.66%	30.66%
Future Expected Return on Book	[B]	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
Growth	[B]	5.43%	5.43%	5.43%	5.43%	5.43%	5.43%	5.43%
Market to Book Ratio	[B]	2.27	2.27	2.27	2.27	2.27	2.27	2.27
Book Value	[C]	11.08	11.69	12.32	17.84	30.29	51.41	87.26
Tax Rates -- Old								
Capital Gains	[D]	20%	20%	20%	20%	20%	20%	20%
Dividends	[D]	30%	30%	30%	30%	30%	30%	30%
After Tax Cash Flow to Investor -- Old								
Capital Gains (Loss)		($25.16)	$0.00	$0.00	$0.00	$0.00	$0.00	$163.49
Dividends		0	0.60	0.63	0.91	1.55	2.64	4.47
After Tax Cash Flow to Investor		($25.16)	$0.60	$0.63	$0.91	$1.55	$2.64	$167.96
After Tax Return Old Tax Law (Assume Permanent)		**7.50%**						

Sources:

[A]	JAR 4 P.1
[B]	JAR 5 P.1
[C]	Capital Gains (Loss) / Market to Book Ratio
[D]	2003 U.S. Master Tax Guide

Cost of Equity Impact of Federal Incom Tax Reduction

After Tax Cash Flow for New Tax Law -- Assume Permanent

Tax Rates -- New									
Capital Gains		[A]	15%	15%	15%	15%	15%	15%	15%
Dividends		[A]	15%	15%	15%	15%	15%	15%	15%
After Tax Cash Flow to Investor -- New									
Capital Gains (loss)			($25.16)	$0.00	$0.00	$0.00	$0.00	$0.00	$172.13
Dividends			0.00	0.73	0.77	1.11	1.89	3.20	5.43
After Tax Cash Flow to Investor			($25.16)	$0.73	$0.77	$1.11	$1.89	$3.20	$177.56
After Tax Return New Tax Law			**8.11%**						
Sources:									
[A]	The Street.com "Dear Dagen: Bush's Tax Cut and Your Portfolio" June 9, 2003								

Cost of Equity Impact of Federal Incom Tax Reduction

After Tax Cash Flow for New Tax Law -- Assume Temporary

Tax Rates -- New										
Capital Gains			[A]	15%	15%	15%	20%	20%	20%	20%
Dividends			[A]	15%	15%	15%	30%	30%	30%	30%
After Tax Cash Flow to Investor -- New & Change Back in 2009										
Capital Gains (loss)				($25.16)	$0.00	$0.00	$0.00	$0.00	$0.00	$163.49
Dividends				0.00	0.73	0.77	0.91	1.55	2.64	4.47
After Tax Cash Flow to Investor				($25.16)	$0.73	$0.77	$0.91	$1.55	$2.64	$167.96
After Tax Return New Tax Law (Assume Temporary)				**7.59%**						
Sources:										
[A]	The Street.com "Dear Dagen: Bush's Tax Cut and Your Portfolio" June 9, 2003									

Cost of Equity Impact of Federal Incom Tax Reduction
On Year Stock Return Analysis

Before Tax Cash Flow to Investor					
Capital Gains	[A]	($25.16)	$26.52		
Dividends	[A]	0.00	0.86		
Before Tax Cash Flow to Investor		($25.16)	$27.38	$0.00	
Before Tax Return		**8.84%**			
Tax Rates -- Old					
Capital Gains	[B]	20%	20%	20%	
Dividends	[B]	30%	30%	30%	
After Tax Cash Flow to Investor -- Old					
Capital Gains (loss)	[A]	($25.16)	$26.25		
Dividends	[A]	0.00	0.60		
After Tax Cash Flow to Investor		($25.16)	$26.85	$0.00	
After Tax Return New Tax Law (Assume Temporary)		**6.73%**			
Tax Rates -- New					
Capital Gains	[C]	15%	15%	15%	
Dividends	[C]	15%	15%	15%	
After Tax Cash Flow to Investor -- New					
Capital Gains (loss)	[A]	($25.16)	$26.32		
Dividends	[A]	0.00	0.73		
After Tax Cash Flow to Investor		($25.16)	$27.05	$0.00	
After Tax Return New Tax Law (Assume Temporary)		**7.51%**			
Difference		**0.78%**			
Sources:					
[A]	JAR 11 P.1				
[B]	2003 U.S. Master Tax Guide				
[C]	The Street.com "Dear Dagen: Bush's Tax Cut and Your Portfolio" June 9, 2003				

Cost of Equity Impact of Federal Incom Tax Reduction
One Year Stock Return Analysis

Interest Rate -- AAA 20 Year Tax-Free Municipal Bond	4.35%	[A]
Interest Rate -- Coporate Bond	5.65%	[A]
Spread	1.30%	
% Lower Interest Rate for Tax-Free Bond	23.01%	
Before Tax Return (Old and New Tax Law)	8.84%	
23.01% Reduction of Before Tax Return	2.03%	
Approximate Percentage Tax Cut	50.00%	
Cost of Equity Drop (50% X 2.03%)	1.02%	
Conservative Estimate	0.50%	

Sources:
[A] Yahoo Finance. 11/21/03