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**EMPLOYEES'**  
**RETIREMENT SYSTEM**  
OF GEORGIA

**GEORGIA MILITARY PENSION FUND**

**EXPERIENCE INVESTIGATION FOR THE  
FIVE-YEAR PERIOD ENDING JUNE 30, 2009**





# Cavanaugh Macdonald

CONSULTING, LLC

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December 16, 2010

Board of Trustees,  
Georgia Military Pension Fund  
Suite 400, Two Northside 75  
Atlanta, GA 30318

Members of the Board:

We are pleased to submit the results of an investigation of the economic and demographic experience for the Georgia Military Pension Fund. The purpose of the investigation was to assess the reasonability of the actuarial assumptions currently used by the Pension Fund. This investigation covers the five-year period from July 1, 2004 to June 30, 2009.

This report shows a comparison of the actual and expected cases of separation from active service. A comparison between the rates of separation and mortality presently in use and the recommended revised rates are also shown in this report.

All new assumptions are shown in the attached tables in Appendix C of this report. In the actuary's judgment, the recommended assumptions are suitable for use until further experience indicates that modifications are desirable.

The experience investigation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

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## Section I Executive Summary

The following table summarizes the findings and recommendations with regard to the assumptions utilized for the Georgia Military Pension Fund. Detailed explanations for the recommendations are found in the sections that follow.

<b>Summary of Recommended Assumptions</b>	
<b>Economic Assumptions</b>	
<b>Investment Rate of Return</b>	Composed of Inflation component and Real Rate of Return component.
Inflation	Recommend change to annual rate of inflation assumption from 3.75% to 3.00%.
Real Rate of Investment Return	Recommend 4.50% assumption resulting in no change to the 7.50% net investment return assumption.
<b>Demographic Assumptions</b>	
<b>Withdrawal</b>	Recommend change to current assumption.
<b>Retirement</b>	Recommend change to current assumption.
<b>Mortality</b>	Recommend change to current assumption.
<b>Other Assumptions and Methods and Administrative Changes</b>	
<b>Administrative Expenses</b>	Recommend change to current assumption.
<b>Amortization Method</b>	Recommend maximum amortization period of 20 years.
<b>Asset Smoothing</b>	Recommend no change to current method.
<b>All others</b>	Recommend no change to other actuarial methods.



## Section II Financial Impact

The following table highlights the impact of the recommended changes on the principal valuation results.

<b>Impact on Principal Valuation Results</b>		
	<b>Valuation Results 2009</b>	<b>Recommended Assumptions*</b>
<b>Unfunded Accrued Liability</b>	\$14,608,277	\$15,362,542
<b>Funding Ratio</b>	30.5%	29.5%
<b>Employer Annual Required Contribution</b>		
<b>Normal</b>	\$ 88,340	\$ 107,313
<b>Accrued Liability</b>	<u>1,432,905</u>	<u>1,506,942</u>
<b>Total</b>	\$1,521,245	\$1,614,255
<b>Amortization Period (in years)</b>	20	20

\*Normal Cost includes estimated administrative expenses.



### Section III Economic Assumptions

There are two economic assumptions used in the actuarial valuations performed for the Fund. They are:

- Price Inflation
- Investment Return

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 27, “*Selection of Economic Assumptions for Measuring Pension Obligations*”, which provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans. As noted in ASOP No. 27, because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes based on a mixture of past experience and future expectations. These estimates therefore are best stated as a range utilizing the actuary’s professional judgment. In setting the range and the single point within that range to use, the actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table shows our recommendations followed by detailed discussions of each assumption.

Item	Current	Proposed
Price Inflation	3.75%	3.00%
Real Rate of Return	<u>3.75</u>	<u>4.50</u>
Investment Return	7.50%	7.50%



## Price Inflation

**Background:** As can be seen from the table on the previous page, assumed price inflation is used as the basis for both the investment return assumption and the wage inflation assumption. These latter two assumptions will be discussed in detail in the following sections.

It is important that the price inflation assumption be consistently applied throughout the economic assumptions utilized in an actuarial valuation. This is called for in ASOP No. 27 and is also required to meet the parameters for determining pension liabilities and expense under Governmental Accounting Standards Board (GASB) Statements No. 25 and 27.

The current price inflation assumption is 3.75% per year.

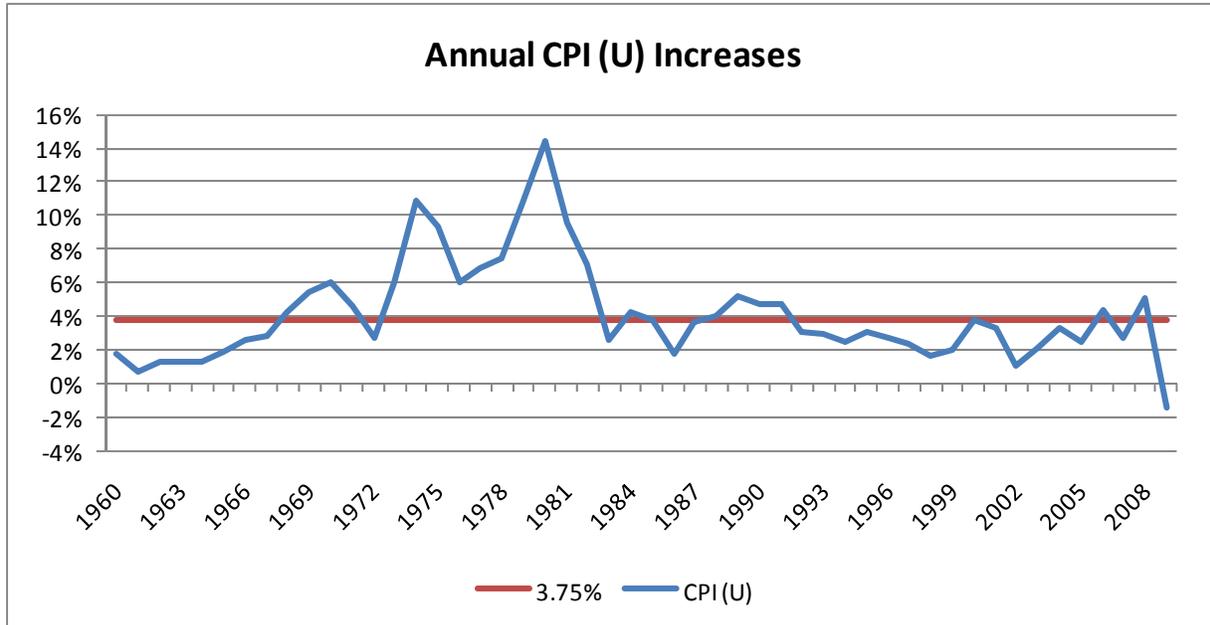
**Past Experience:** The Consumer Price Index, US City Average, All Urban Consumers, CPI (U), has been used as the basis for reviewing historical levels of price inflation. The level of that index in June of each of the last 50 years is provided in Appendix A.

In analyzing this data, annual rates of inflation have been determined by measuring the compound growth rate of the CPI (U) over various time periods. The results are as follows:

Period	Inflation
2000-2009	2.64%
1990-1999	2.96
1980-1989	5.55
1970-1979	7.04
1960-1969	2.32
1990-2009	2.80%
1980-2009	3.71
1970-2009	4.53
1960-2009	4.09



The graph below shows the annual increases in the CPI (U) over the entire 50 year period.



**Recommendation:** It is difficult to accurately predict inflation. Inflation’s short-term volatility is illustrated by comparing its average rate over the last 10, 20, 30, 40 and 50 years. Although the 10 and 20-year averages of 2.6% and 2.8%, respectively, are significantly lower than the Fund’s assumed rate of 3.75%, the longer 30, 40 and 50-year averages of 3.7%, 4.5% and 4.1% respectively, are at or slightly higher than the Fund’s rate. The validity of the Fund’s assumption is, therefore, dependent upon the emphasis one assigns to the short and long-terms.

Current economic forecasts suggest lower inflation but are generally looking at a shorter time period than appropriate for our purposes. In the 2009 OASDI Trustees Report, the Chief Actuary for Social Security bases the 75 year cost projections on an intermediate inflation assumption of 2.8% with a range of 1.8% to 3.8%. We concur in general with a range of 2.0% - 4.0%, and recommend use of a 3.00% per year rate recognizing the likely inflation pressures built into the economy at the current time.

Price Inflation Assumption	
Current	3.75%
Reasonable Range	2.00% - 4.00%
Recommended	3.00%



## Investment Return

**Background:** The assumed investment return is one of the most significant assumptions in the annual actuarial valuation process as it is used to discount the expected benefit payments for all active, inactive and retired members of the Fund. Minor changes in this assumption can have a major impact on valuation results. The investment return assumption should reflect the asset allocation target for the funds set by the Board of Trustees.

The current assumption is 7.50%, consisting of a price inflation assumption of 3.75% and a real rate of return assumption of 3.75%. The return is net of all investment and administrative expenses.

**Past Experience:** The assets for the Fund are valued using a widely accepted asset-smoothing methodology that fully recognizes the expected investment income and also recognizes 1/7 of each year's investment gain or loss (the difference between actual and expected investment income). The recent experience over the last five years is shown in the table below.

Year Ending 6/30	Actuarial Value	Market Value
2005	7.8%	7.8%
2006	7.2	6.2
2007	8.2	14.7
2008	6.7	(3.5)
2009	3.5	(13.0)
Average	6.7%	2.4%

Because of the significant variability in past year-to-year results and the inter-play of inflation on those results in the short term, we prefer to base our investment return assumption on the capital market assumptions utilized by the Board in setting investment policy and the asset allocation established by the Board as a result of that policy. This approach is referred to as the building block method in ASOP No. 27.



**Analysis:** The current capital market assumptions and asset allocation are shown in Appendix B. Using stochastic projection results provides an expected range of real rates of return over a 50 year time horizon. Looking at one year results produces an expected real return of 5.85% but also has a high standard deviation or measurement of volatility. By expanding the time horizon, the average return does not change much but the volatility declines significantly. The following table provides a summary of results.

Time Span In Years	Mean Real Return	Standard Deviation	Real Returns by Percentile				
			5 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	95 <sup>th</sup>
1	6.81%	15.33%	-16.43%	-4.13%	5.85%	16.63%	33.54%
5	6.03%	6.73%	-4.44%	1.34%	5.81%	10.42%	17.65%
10	6.00%	4.73%	-1.50%	2.74%	5.90%	9.16%	13.97%
20	5.98%	3.32%	0.61%	3.61%	5.96%	8.17%	11.45%
30	5.95%	2.72%	1.55%	4.04%	5.95%	7.74%	10.43%
40	5.98%	2.33%	2.18%	4.38%	5.97%	7.53%	9.77%
50	5.98%	2.07%	2.66%	4.55%	5.95%	7.37%	9.43%

The percentile results are percentage of the 5,000 random results that produce returns over the time span shown of less than the amount indicated. Thus for the 10 year time span, 5% of the resulting real rates of return were below -1.50% and 95% were above that. As the time span increases, the results begin to merge. Over a 50 year time span, the results indicate there is a 25% chance that real returns will be below 4.55% and a 25% chance they will be above 7.37%. In other words there is a 50% chance the real returns will be between 4.55% and 7.37%.

**Investment Expenses:** There are currently no investment expenses allocated to the Fund. We recommend that a portion of the investment expenses incurred by the fund as a whole be allocated to this Fund. We would not expect the investment expense ratio long term to exceed 0.10% and are recommending that level in setting the net investment return assumption.



**Recommendation:** Using the building block approach of ASOP No. 27 and the projection results outlined above, we are recommending a range for the investment return assumption of the 25<sup>th</sup> to 75<sup>th</sup> percentile real returns over the 50 year time span plus the recommended inflation assumption less the recommended expense ratio. The following table details the range.

Item	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile	75 <sup>th</sup> Percentile
Real Rate of Return	4.55%	5.95%	7.37%
Inflation	3.00	3.00	3.00
Expenses	<u>(0.10)</u>	<u>(0.10)</u>	<u>(0.10)</u>
Net Investment Return	7.45%	8.85%	10.27%

There is a 50% chance that the net return will be 8.85% or more over a 50-year period. A net return of 7.50% is at the 26<sup>th</sup> percentile. Although not in the center of the recommended range, in our opinion a return of 7.50% is conservative yet reasonable. We recommend that the long-term net investment return assumption remain at 7.50%.

Investment Return Assumption	
Current	7.50%
Reasonable Range	7.45% - 10.27%
Recommended	7.50%



## **Section IV Demographic Assumptions**

There are several demographic assumptions used in the actuarial valuations performed for the Georgia Military Pension Fund. They are:

- Rates of Withdrawal
- Rates of Service Retirement
- Rate of Mortality

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 35, “*Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*”, which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP No. 35.

The purpose of a study of demographic experience is to compare what actually happened to the membership during the study period (July 1, 2004, through June 30, 2009) with what was expected to happen based on the assumptions used in the most recent Actuarial Valuations.

Detailed tabulations by age, service and/or gender are performed over the entire study period. These tabulations look at all active and retired members during the period as well as separately annotating those who experience a demographic event, also referred to as a decrement. In addition the tabulation of all members together with the current assumptions permits the calculation of the number of expected decrements during the study period.

If the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, gender, or service does not follow the expected pattern, new assumptions are recommended. Recommended changes usually do not follow the exact actual experience during the observation period. Judgment is required to extrapolate future experience from past trends and current member behavior. In addition non-recurring events, such as the layoffs and forced work hour reductions that occurred in 2009, need to be taken into account in determining the weight to give to recent experience.

The remainder of this section presents the results of the demographic study. We have prepared tables that show a comparison of the actual and expected decrements and the overall ratio of actual to expected results (A/E Ratios) under the current assumptions. If a change is being proposed, the revised A/E Ratios are shown as well. Salary adjustments, other than the economic assumption for wage inflation discussed in the previous section, are treated as demographic assumptions.



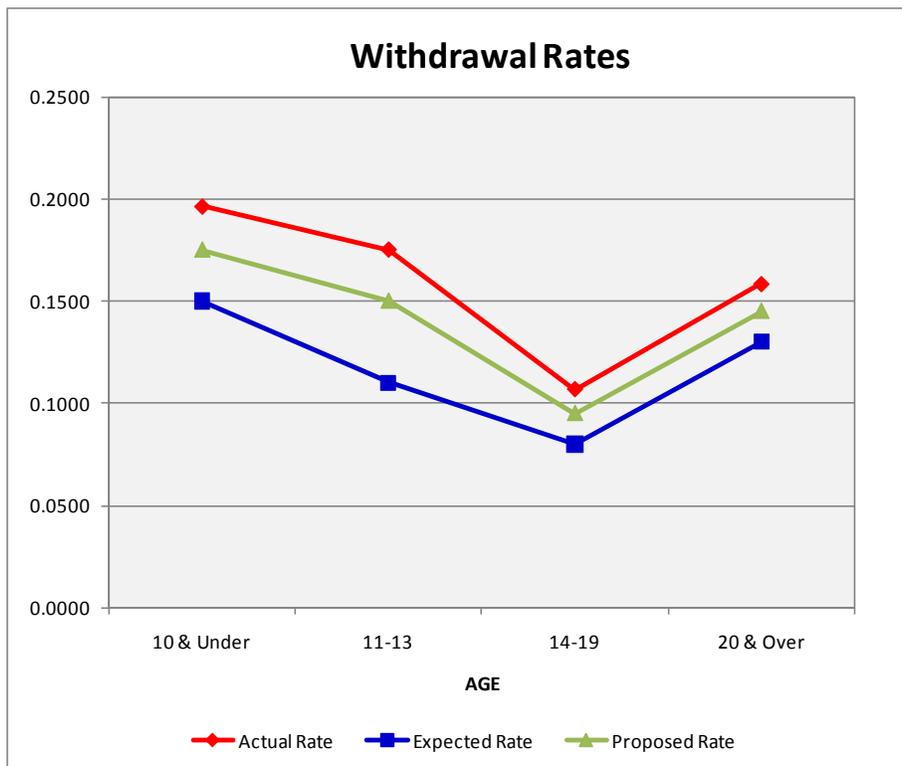
## RATES OF WITHDRAWAL

### COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS FROM ACTIVE SERVICE

YEARS OF SERVICE	NUMBER OF WITHDRAWALS		CURRENT
	Actual	Expected	Ratio of Actual to Expected
10 & Under	5,270	4,025.3	1.309
11-13	817	512.9	1.593
14-19	833	625.0	1.333
20 & Over	1,446	1,188.0	1.217
<b>TOTAL</b>	<b>8,366</b>	<b>6,351.2</b>	<b>1.317</b>

The rates of withdrawal adopted by the Board are used to determine the expected number of separations from active service which will occur as a result of resignation or dismissal. The experience indicates that during the period studied, there were more withdrawals than expected. We therefore recommend that we adjust the rates to partially reflect the experience.

The following graph shows a comparison of the current expected, actual, and proposed rates of withdrawal for actives.





The charts below provide our recommended changes to this assumption and the resulting A/E (actual to expected) ratio.

### COMPARATIVE RATES OF WITHDRAWAL

YEARS OF SERVICE	RATES OF WITHDRAWAL	
	Present	Proposed
10 & Under	15.00%	17.50%
11-13	11.00%	15.00%
14-19	8.00%	9.50%
20 & Over	13.00%	14.50%

### COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS BASED ON PROPOSED RATES

YEARS OF SERVICE	NUMBER OF WITHDRAWALS PROPOSED RATES		
	Actual	Expected	Ratio of Actual to Expected
10 & Under	5,270	4,696.0	1.122
55	817	699.3	1.168
60	833	742.2	1.122
63 & Over	1,446	1,325.0	1.091
<b>TOTAL</b>	<b>8,366</b>	<b>7,462.5</b>	<b>1.121</b>



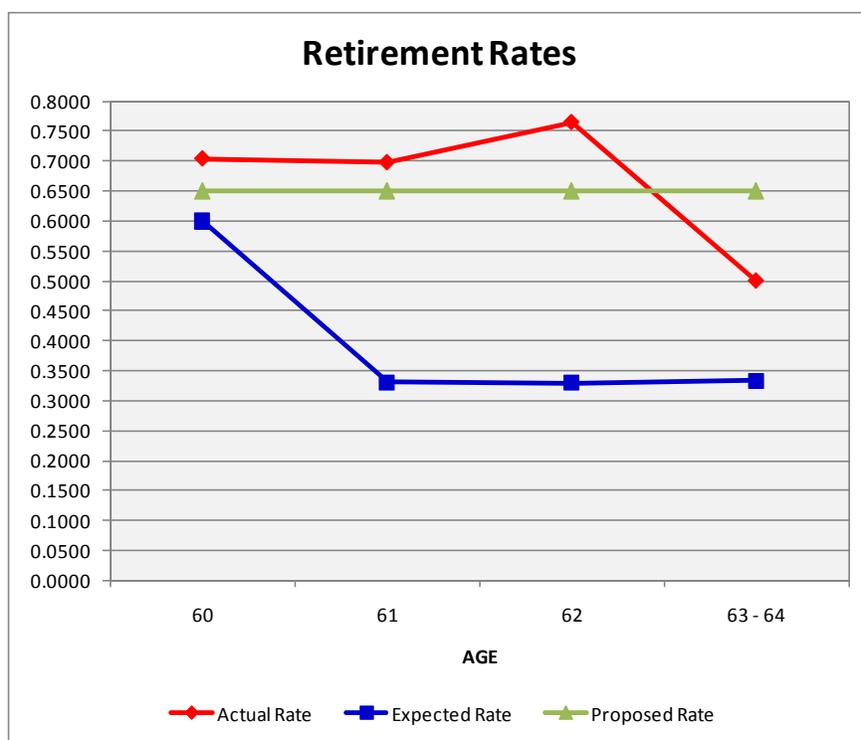
## RATES OF RETIREMENT

### COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS

AGE	NUMBER OF SERVICE RETIREMENTS CURRENT RATES		
	Actual	Expected	Ratio of Actual to Expected
60	88	75.0	1.173
61	30	14.2	2.113
62	13	5.6	2.321
63	3	1.7	1.765
64	0	0.3	0.000
65 & Over	1	2.0	0.500
<b>TOTAL</b>	<b>135</b>	<b>98.8</b>	<b>1.366</b>

The analysis of the experience reflects that the current assumed rates of retirement under-anticipate retirements. We recommend adjustment to the rates to reflect the experience as well as maintain a reasonable degree of margin.

The following graph shows a comparison of the present and actual rates of service retirements.





The following table shows a comparison of the present and proposed rates of service retirement.

### COMPARATIVE RATES OF RETIREMENT

AGE	RATES OF SERVICE RETIREMENT	
	Present	Proposed
60	60.0%	65.0%
61	33.3%	65.0%
62	33.3%	65.0%
63	33.3%	65.0%
64	33.3%	65.0%
65 & Over	100.0%	100.0%

### COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS BASED ON PROPOSED RATES OF RETIREMENT

AGE	NUMBER OF SERVICE RETIREMENTS PROPOSED RATES		
	Actual	Expected	Ratio of Actual to Expected
60	88	81.3	1.082
61	30	28.0	1.071
62	13	11.1	1.171
63	3	3.3	0.909
64	0	0.7	0.000
65 & Over	1	2.0	0.500
<b>TOTAL</b>	<b>135</b>	<b>126.4</b>	<b>1.068</b>



## **RATES OF MORTALITY**

### **Post-Retirement Mortality Rates**

Since the Pension Fund has minimal post-retirement mortality experience, we recommend that the rates of post-retirement mortality be revised to the same mortality tables used for the Employees' Retirement System of Georgia. The recommended table for service retirements and beneficiaries of deceased member is the RP-2000 Combined Mortality Table.

### **Pre-Retirement Mortality**

Since the Pension Fund has minimal pre-retirement mortality experience, we recommend that the rates of mortality in active service be changed to the same mortality table that is used for post-retirement mortality, which is the RP-2000 Combined Mortality Table.



## **Section V**

### **Other Assumptions and Methods**

**ADMINISTRATIVE EXPENSES:** There is currently no assumption made for administrative expenses. We recommend adding the budgeted expenses for the fiscal year to the normal cost.

**AMORTIZATION METHOD:** Since the Fund was recently established, the asset balances and funding levels are low. In order to increase these levels and provide stronger funding of the Fund, we recommend that the maximum period used to amortize the unfunded accrued liability be set at 20 years using the current level dollar amortization method

**ASSETS:** Currently the actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 1/7 of the difference between market value and expected actuarial value. We recommend maintaining the current smoothing method.

**VALUATION COST METHOD:** Currently the valuation uses the entry age actuarial cost method. This is the most widely used cost method of large public sector plans and has demonstrated the highest degree of stability as compared to alternative methods. We recommend no change to this assumption.



**APPENDIX A**

**Historical June CPI (U) Index**

Year	CPI (U)	Year	CPI (U)
1959	29.10	1985	107.60
1960	29.60	1986	109.50
1961	29.80	1987	113.50
1962	30.20	1988	118.00
1963	30.60	1989	124.10
1964	31.00	1990	129.90
1965	31.60	1991	136.00
1966	32.40	1992	140.20
1967	33.30	1993	144.40
1968	34.70	1994	148.00
1969	36.60	1995	152.50
1970	38.80	1996	156.70
1971	40.60	1997	160.30
1972	41.70	1998	163.00
1973	44.20	1999	166.20
1974	49.00	2000	172.40
1975	53.60	2001	178.00
1976	56.80	2002	179.90
1977	60.70	2003	183.70
1978	65.20	2004	189.70
1979	72.30	2005	194.50
1980	82.70	2006	202.90
1981	90.60	2007	208.35
1982	97.00	2008	218.82
1983	99.50	2009	215.69
1984	103.70		



## APPENDIX B

### Capital Market Assumptions and Asset Allocation

#### Real Rates of Return and Standard Deviations by Asset Class

Asset Class	Expected Real Rate of Return	Standard Deviation
Fixed Income	6.0%	8.0%
US Large Stocks	9.5%	21.5%
US Mid Stocks	13.0%	24.5%
US Small Stocks	16.0%	34.0%
Int'l Developed Mkt Stocks	9.5%	22.5%
Int'l Emerging Mkt Stocks	14.0%	28.0%

#### Asset Class Correlation Coefficients

Asset Class	Fixed Income	US Large Stocks	US Mid Stocks	US Small Stocks	Int'l Dev Mkt Stocks	Int'l EM Mkt Stocks
Fixed Income	1.00					
US Large Stocks	0.20	1.00				
US Mid Stocks	0.20	0.90	1.00			
US Small Stocks	0.20	0.85	0.90	1.00		
Int'l Developed Mkt Stocks	0.15	0.70	0.60	0.60	1.00	
Int'l Emerging Mkt Stocks	0.15	0.55	0.60	0.60	0.65	1.00

#### Asset Allocation Targets

Asset Class	Asset Allocation
Fixed Income	30.0%
US Large Stocks	39.7%
US Mid Stocks	3.7%
US Small Stocks	1.6%
Int'l Developed Mkt Stocks	18.9%
Int'l Emerging Mkt Stocks	6.1%



**APPENDIX C**

**TABLE 1 -RATES OF SEPARATION FROM ACTIVE SERVICE**

AGE	Rates of Withdrawal				Death		Retirement
	Service				Male	Female	
	0-10	11-13	14-19	20+			
19	0.17500	0.15000	0.09500	0.14500	0.000331	0.000190	
20	0.17500	0.15000	0.09500	0.14500	0.000345	0.000191	
21	0.17500	0.15000	0.09500	0.14500	0.000357	0.000192	
22	0.17500	0.15000	0.09500	0.14500	0.000366	0.000194	
23	0.17500	0.15000	0.09500	0.14500	0.000373	0.000197	
24	0.17500	0.15000	0.09500	0.14500	0.000376	0.000201	
25	0.17500	0.15000	0.09500	0.14500	0.000376	0.000207	
26	0.17500	0.15000	0.09500	0.14500	0.000378	0.000214	
27	0.17500	0.15000	0.09500	0.14500	0.000382	0.000223	
28	0.17500	0.15000	0.09500	0.14500	0.000393	0.000235	
29	0.17500	0.15000	0.09500	0.14500	0.000412	0.000248	
30	0.17500	0.15000	0.09500	0.14500	0.000444	0.000264	
31	0.17500	0.15000	0.09500	0.14500	0.000499	0.000307	
32	0.17500	0.15000	0.09500	0.14500	0.000562	0.000350	
33	0.17500	0.15000	0.09500	0.14500	0.000631	0.000394	
34	0.17500	0.15000	0.09500	0.14500	0.000702	0.000435	
35	0.17500	0.15000	0.09500	0.14500	0.000773	0.000475	
36	0.17500	0.15000	0.09500	0.14500	0.000841	0.000514	
37	0.17500	0.15000	0.09500	0.14500	0.000904	0.000554	
38	0.17500	0.15000	0.09500	0.14500	0.000964	0.000598	
39	0.17500	0.15000	0.09500	0.14500	0.001021	0.000648	
40	0.17500	0.15000	0.09500	0.14500	0.001079	0.000706	
41	0.17500	0.15000	0.09500	0.14500	0.001142	0.000774	
42	0.17500	0.15000	0.09500	0.14500	0.001215	0.000852	
43	0.17500	0.15000	0.09500	0.14500	0.001299	0.000937	
44	0.17500	0.15000	0.09500	0.14500	0.001397	0.001029	
45	0.17500	0.15000	0.09500	0.14500	0.001508	0.001124	
46	0.17500	0.15000	0.09500	0.14500	0.001616	0.001223	
47	0.17500	0.15000	0.09500	0.14500	0.001734	0.001326	
48	0.17500	0.15000	0.09500	0.14500	0.001860	0.001434	
49	0.17500	0.15000	0.09500	0.14500	0.001995	0.001550	
50	0.17500	0.15000	0.09500	0.14500	0.002138	0.001676	
51	0.17500	0.15000	0.09500	0.14500	0.002449	0.001852	
52	0.17500	0.15000	0.09500	0.14500	0.002667	0.002018	
53	0.17500	0.15000	0.09500	0.14500	0.002916	0.002207	
54	0.17500	0.15000	0.09500	0.14500	0.003196	0.002424	
55	0.17500	0.15000	0.09500	0.14500	0.003624	0.002717	
56	0.17500	0.15000	0.09500	0.14500	0.004200	0.003090	
57	0.17500	0.15000	0.09500	0.14500	0.004693	0.003478	
58	0.17500	0.15000	0.09500	0.14500	0.005273	0.003923	
59	0.17500	0.15000	0.09500	0.14500	0.005945	0.004441	
60	0.17500	0.15000	0.09500	0.14500	0.006747	0.005055	0.65000
61	0.17500	0.15000	0.09500	0.14500	0.007676	0.005814	0.65000
62	0.17500	0.15000	0.09500	0.14500	0.008757	0.006657	0.65000
63	0.17500	0.15000	0.09500	0.14500	0.010012	0.007648	0.65000
64	0.17500	0.15000	0.09500	0.14500	0.011280	0.008619	0.65000
65	0.17500	0.15000	0.09500	0.14500	0.012737	0.009706	1.00000
66	0.17500	0.15000	0.09500	0.14500	0.014409	0.010954	1.00000
67	0.17500	0.15000	0.09500	0.14500	0.016075	0.012163	1.00000
68	0.17500	0.15000	0.09500	0.14500	0.017871	0.013445	1.00000
69	0.17500	0.15000	0.09500	0.14500	0.019802	0.014860	1.00000
70	0.17500	0.15000	0.09500	0.14500	0.022206	0.016742	1.00000
71	0.17500	0.15000	0.09500	0.14500	0.024570	0.018579	1.00000
72	0.17500	0.15000	0.09500	0.14500	0.027281	0.020665	1.00000
73	0.17500	0.15000	0.09500	0.14500	0.030387	0.022970	1.00000
74	0.17500	0.15000	0.09500	0.14500	0.033900	0.025458	1.00000
75	0.17500	0.15000	0.09500	0.14500	0.037834	0.028106	1.00000



**TABLE 2**  
**RATES OF MORTALITY FOR MEMBERS RETIRED ON ACCOUNT OF SERVICE**  
**AND BENEFICIARIES OF DECEASED MEMBERS**

AGE	MALES	FEMALES	AGE	MALES	FEMALES
19	0.000331	0.000190	71	0.024570	0.018579
20	0.000345	0.000191	72	0.027281	0.020665
21	0.000357	0.000192	73	0.030387	0.022970
22	0.000366	0.000194	74	0.033900	0.025458
23	0.000373	0.000197	75	0.037834	0.028106
24	0.000376	0.000201	76	0.042169	0.030966
25	0.000376	0.000207	77	0.046906	0.034105
26	0.000378	0.000214	78	0.052123	0.037595
27	0.000382	0.000223	79	0.057927	0.041506
28	0.000393	0.000235	80	0.064368	0.045879
29	0.000412	0.000248	81	0.072041	0.050780
30	0.000444	0.000264	82	0.080486	0.056294
31	0.000499	0.000307	83	0.089718	0.062506
32	0.000562	0.000350	84	0.099779	0.069517
33	0.000631	0.000394	85	0.110757	0.077446
34	0.000702	0.000435	86	0.122797	0.086376
35	0.000773	0.000475	87	0.136043	0.096337
36	0.000841	0.000514	88	0.150590	0.107303
37	0.000904	0.000554	89	0.166420	0.119154
38	0.000964	0.000598	90	0.183408	0.131682
39	0.001021	0.000648	91	0.199769	0.144604
40	0.001079	0.000706	92	0.216605	0.157618
41	0.001142	0.000774	93	0.233662	0.170433
42	0.001215	0.000852	94	0.250693	0.182799
43	0.001299	0.000937	95	0.267491	0.194509
44	0.001397	0.001029	96	0.283905	0.205379
45	0.001508	0.001124	97	0.299852	0.215240
46	0.001616	0.001223	98	0.315296	0.223947
47	0.001734	0.001326	99	0.330207	0.231387
48	0.001860	0.001434	100	0.344556	0.237467
49	0.001995	0.001550	101	0.358628	0.244834
50	0.002138	0.001676	102	0.371685	0.254498
51	0.002449	0.001852	103	0.383040	0.266044
52	0.002667	0.002018	104	0.392003	0.279055
53	0.002916	0.002207	105	0.397886	0.293116
54	0.003196	0.002424	106	0.400000	0.307811
55	0.003624	0.002717	107	0.400000	0.322725
56	0.004200	0.003090	108	0.400000	0.337441
57	0.004693	0.003478	109	0.400000	0.351544
58	0.005273	0.003923	110	0.400000	0.364617
59	0.005945	0.004441	111	0.400000	0.376246
60	0.006747	0.005055	112	0.400000	0.386015
61	0.007676	0.005814	113	0.400000	0.393507
62	0.008757	0.006657	114	0.400000	0.398308
63	0.010012	0.007648	115	0.400000	0.400000
64	0.011280	0.008619	116	0.400000	0.400000
65	0.012737	0.009706	117	0.400000	0.400000
66	0.014409	0.010954	118	0.400000	0.400000
67	0.016075	0.012163	119	0.400000	0.400000
68	0.017871	0.013445	120	1.000000	1.000000
69	0.019802	0.014860			
70	0.022206	0.016742			