



**CITY OF MEDFORD
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 1998

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Report Summary:

Highlights

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
<u>Contributions</u>		
Funding Schedule FY 1999	\$6,054,000	\$6,286,734
Funding Schedule FY 2000	6,294,250	6,581,363
<u>Funded Ratios</u>		
GAS No. 25	56.6%	61.0%
<u>Participants</u>		
Actives	694	724
Inactives	59	93
Retirees and Beneficiaries	538	545
Disabled Retirees	<u>108</u>	<u>105</u>
Total	1,399	1,467
<u>Payroll</u>		
Payroll of Active Members	\$21,111,508	\$24,409,774
Average Payroll	30,420	33,715
<u>Normal Cost</u>		
Employer	1,480,530	1,846,581
Employee	1,449,361	1,865,402
Administrative Expenses	<u>N/A</u>	<u>225,000</u>
Total	2,929,891	3,936,983
<u>Actuarial Accrued Liabilities</u>		
Actives	52,546,536	63,919,099
Retirees, Beneficiaries, Disabled, and Inactives	<u>59,124,677</u>	<u>74,438,150</u>
Total	111,671,213	138,357,249
<u>Actuarial Value of Assets</u>	<u>63,223,198</u>	<u>84,451,719</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$48,448,015	\$53,905,530

Introduction

This report presents the City of Medford actuarial valuation findings as of January 1, 1998, under the Commonwealth of Massachusetts Retirement System.

The actuarial valuation is based on:

- Provisions of the General Laws of the Commonwealth of Massachusetts (principally Chapter 32) as of January 1, 1998, and Chapter 399 of the 1992 General Laws
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employees' Retirement Administration Commission by the City of Medford Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation also includes the contributions required under the provisions of Chapter 697 as interpreted by the Public Employees' Retirement Administration Commission (PERAC).

The valuation and appropriation forecast are prepared in accordance with Chapter 32 as of January 1, 1998. They account for:

- The passage of Chapter 306 regarding handling of administrative expenses
- The increased employee contribution rate of 9.0% of earnings effective for all future employees hired after July 1, 1996
- Annual cost-of-living adjustments (COLA) of 3.0% beginning July 1, 1998

The valuation and forecast do not account for:

- Any other subsequent changes in the law
- Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

The analysis outlined below does not consider the impact of COLA. The adoption of Chapter 17 of the Acts of 1997 (COLA bill) increased accrued liabilities by about \$14.2 million and increased the normal cost by about \$425,000 or 1.7% of payroll.

During the two years since the last actuarial valuation the total required appropriation has increased as a dollar amount and as a percentage of total payroll. The increases are the result of net favorable actuarial experience during the preceding two years. The primary components of favorable experience included salary increases that were less than the assumed rate and an annual investment return that exceeded the 7.5% assumption. These effects were partially offset by changes in the actuarial assumptions described below.

The actuarial assumptions have been changed to reflect current trends and in anticipation of future experience. The Mortality Table has been changed from the 1984 Unisex Mortality Table with females set back 4 years to the 1983 Group Annuity Mortality Table. The disability tables have been changed to tables that more accurately reflect recent history. The retirement tables have been changed to an experience-based withdrawal table (shown in Exhibit 5). Finally, a \$225,000 load has been added directly to employer normal cost to account for administrative expenses replacing the explicit expense fund appropriation deposited separately to the Fund.

Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Superannuation	\$2,929,891	\$2,411,043
Death		233,663
Disability		454,338
Terminations		187,468
COLA	N/A	425,471
Administrative Expenses	<u>N/A</u>	<u>225,000</u>
Total Normal Cost	2,929,891	3,936,983
% of Pay	13.9%	16.1%
Employee Contributions	1,449,361	1,865,402
% of Pay	6.9%	7.6%
Employer Normal Cost	\$1,480,530	\$2,071,581
% of Pay	7.0%	8.5%

Present Value of Actuarial Accrued Liabilities

The present value of actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Actives		
Superannuations	\$45,966,916	\$53,131,044
Death	2,659,044	3,080,603
Disability	4,202,918	2,458,214
Terminations	(282,342)	(511,652)
COLA	N/A	5,760,890
Inactives		
Retirees	59,124,677	48,490,758
Disabled Retirees		16,984,704
Inactives		524,253
COLA	<u>N/A</u>	<u>8,438,435</u>
Total	\$111,671,213	\$138,357,249

Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactivees as well as all benefits earned and expected to be earned in the coming years by the actives. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table III

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Actives		
Superannuation	\$62,553,020	\$78,266,264
Death	4,988,751	5,530,107
Disability	11,344,752	7,323,545
Terminations	1,292,246	1,644,011
COLA	N/A	9,276,229
Inactives		
Retirees	59,124,677	48,490,758
Disabled Retirees		16,984,704
Inactives		524,253
COLA	<u>N/A</u>	<u>8,438,435</u>
Total	\$139,303,446	\$176,478,306

Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Cash equivalents	\$444,154	\$246,780
Short term investments	3,617,916	6,547,300
Fixed income securities	26,669,778	31,677,682
Equities	23,241,359	36,353,303
Other	2,647,597	2,935,123
International	2,611,347	3,635,787
Accounts receivable	4,106,448	3,680,846
Accounts payable	(652,184)	(1,118,389)
Accrued income	<u>536,783</u>	<u>493,287</u>
Total Market Value	\$63,223,198	\$84,451,719

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL and the UAAL will be eliminated. Thereafter annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table V.

Table V

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Actuarial Accrued Liability	\$111,671,213	\$138,357,249
Actuarial Assets	<u>63,223,198</u>	<u>84,451,719</u>
Unfunded Actuarial Accrued Liability	\$48,448,015	\$53,905,530
Funded Status	56.6%	61.0%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the total unfunded actuarial accrued liability by June 30, 2024
\$ 27,983,252 over 26 years with 4.5 % increasing payments
- Increasing amortization of the total unfunded actuarial accrued liability by June 30, 2007
\$ 19,352,739 over 9 years with 4.5 % increasing payments
- Level amortization of the Veteran's Bill liability by June 30, 2011
\$ 263,264 over 13 years
- Increasing amortization of COLA liability by June 30, 2028
\$ 14,199,325 over 30 years with 4.5 % increasing payments
- Level amortization of the accumulated actuarial (gains)/losses by June 30, 2013
\$ (7,893,050) over 15 years
- Interest adjustment for payments contributed monthly over fiscal year.

The pension appropriation is shown in Table VI.

Table VI

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
Normal cost	\$1,480,530	\$2,071,581
Amortization payment of initial active liability	1,372,787	1,499,118
Amortization payment of inactive liability	2,199,262	2,401,649
Amortization payment of ERI	80,943	0
Amortization payment of Veterans Bill	30,138	30,138
Amortization payment of COLA liability	0	692,513
Amortization payment of current (gains)/losses	<u>N/A</u>	<u>(831,797)</u>
Total cost	\$5,163,660	\$5,863,202
% of Pay	24.5%	24.0%
Fiscal 1999 cost	\$6,054,000	\$6,286,734
Fiscal 2000 cost	\$6,294,250	\$6,581,363

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028. Payments are assumed to be spread over the fiscal year.

The employer total cost is expected to fluctuate slightly for the next 30 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost increase represents about 25.8% of payroll and will decrease to 9.1% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 6% thereafter. The decrease in the cost as a percentage of payroll is a result of replacing members contributing 5.0%, 7.0%, and 8.0% with those contributing 9.0%. The plan will achieve full funding as of June 30, 2028, as mandated.

Appropriation Forecast
(amounts in thousands)

Fiscal Year Ending	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
1999	\$24,410	\$1,865	\$2,221	\$4,066	\$6,287	25.8	61.0
2000	25,508	1,974	2,294	4,287	6,581	25.8	62.6
2001	26,656	2,090	2,369	4,519	6,888	25.8	64.3
2002	27,856	2,211	2,446	4,761	7,207	25.9	66.1
2003	29,109	2,339	2,526	5,014	7,539	25.9	68.0
2004	30,419	2,475	2,607	5,278	7,885	25.9	70.0
2005	31,788	2,617	2,691	5,554	8,245	25.9	72.1
2006	33,218	2,768	2,777	5,843	8,620	25.9	74.3
2007	34,713	2,926	2,865	6,144	9,010	26.0	76.6
2008	36,275	3,094	2,956	2,633	5,589	15.4	78.9
2009	37,908	3,270	3,049	2,790	5,839	15.4	79.6
2010	39,613	3,457	3,144	2,954	6,098	15.4	80.3
2011	41,396	3,653	3,242	3,126	6,368	15.4	81.1
2012	43,259	3,860	3,342	3,273	6,615	15.3	81.9
2013	45,206	4,078	3,445	3,460	6,905	15.3	82.7
2014	47,240	4,308	3,550	4,548	8,098	17.1	83.6
2015	49,366	4,551	3,658	4,752	8,410	17.0	84.9
2016	51,587	4,807	3,768	4,966	8,734	16.9	86.1
2017	53,908	5,076	3,880	5,190	9,070	16.8	87.4
2018	56,334	5,360	3,995	5,423	9,419	16.7	88.7
2019	58,869	5,659	4,113	5,667	9,780	16.6	90.0
2020	61,519	5,974	4,233	5,922	10,155	16.5	91.4
2021	64,287	6,307	4,355	6,189	10,544	16.4	92.7
2022	67,180	6,657	4,480	6,467	10,948	16.3	94.1
2023	70,203	7,025	4,608	6,758	11,366	16.2	95.5
2024	73,362	7,414	4,738	7,063	11,800	16.1	96.9
2025	76,663	7,823	4,870	2,332	7,202	9.4	98.3
2026	80,113	8,254	5,004	2,437	7,441	9.3	98.7
2027	83,718	8,708	5,141	2,547	7,688	9.2	99.1
2028	87,486	9,186	5,280	2,661	7,941	9.1	99.6
2029	91,422	9,599	5,518	0	5,518	6.0	100.0
2030	95,536	10,031	5,766	0	5,766	6.0	100.0

* Calendar basis

** As of beginning of the Fiscal Year

GAS No. 25 and GAS No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GAS Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VII.

Table VII

	<u>January 1, 1996</u>	<u>January 1, 1998</u>
(1) Actuarial Accrued Liability	\$111,671,213	\$138,357,249
(2) Actuarial Value of Assets	<u>63,223,198</u>	<u>84,451,719</u>
(3) Unfunded Actuarial Accrued Liability	48,448,015	53,905,530
(4) Funded Ratio (2)/(1)	56.6%	61.0%
(5) Covered Payroll	\$21,111,508	\$24,409,774
(6) UAAL as a percentage of payroll: (3)/(5)	229.5%	220.8%
(7) Annual Required Contribution (ARC)		\$6,286,734
(8) Net Pension Obligation		\$0

**PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by PricewaterhouseCoopers LLP as of January 1, 1998.

The normal cost for employees on that date was:	\$1,865,402	7.6% of pay
The normal cost for the employer was:	1,846,581	7.6% of pay
The actuarial liability for active members was:		\$63,919,099
The actuarial liability for retired members was:		74,438,150
Total actuarial accrued liability:		138,357,249
System assets as of that date:		84,451,719
Unfunded actuarial accrued liability:		\$53,905,530

The ratio of system's assets to total actuarial liability was 61.0%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	7.5%
Rate of Salary Increase:	5.0%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b-a)/c
01/01/98	\$84,451,719	\$138,357,249	\$53,905,530	61.0%	\$24,409,774	220.8%
01/01/96	63,223,198	111,671,213	48,448,015	56.6%	21,111,508	229.5%
01/01/95	54,680,640	109,664,599	54,983,959	49.9%	20,746,363	265.0%

Attach Copy of Current Approved Funding Schedule

EXHIBITS

Age/Service Distribution with Salary as of January 1, 1998

Attained Age	Average Salary									Total
	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
< 20	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	3	0	0	0	0	0	0	0	0	3
	23,432	0	0	0	0	0	0	0	0	23,432
25-29	49	0	0	0	0	1	0	0	0	50
	25,794	0	0	0	0	33,669	0	0	0	25,951
30-34	28	11	11	0	0	0	0	0	0	50
	29,051	36,763	32,037	0	0	0	0	0	0	31,405
35-39	33	12	31	1	0	0	0	0	0	77
	28,301	40,123	47,017	25,447	0	0	0	0	0	37,642
40-44	32	14	36	14	6	1	0	0	0	103
	19,650	37,837	44,551	54,890	38,079	31,632	0	0	0	36,805
45-49	31	18	22	28	16	8	2	0	0	125
	21,001	26,291	35,799	48,268	43,355	38,460	36,915	0	0	34,708
50-54	23	14	22	18	16	18	3	0	0	114
	24,550	22,209	21,302	44,117	53,945	43,931	39,568	0	0	34,306
55-59	11	8	24	8	10	15	5	3	0	84
	19,619	21,738	19,161	32,176	39,125	51,327	48,183	31,990	0	31,012
60-64	4	4	18	9	5	14	10	3	0	67
	18,323	30,892	30,034	31,718	30,671	37,515	54,611	44,699	0	35,548
65-69	1	5	9	2	1	9	3	5	0	35
	7,099	20,858	23,550	29,832	6,655	40,517	41,092	39,563	0	30,726
70+	0	0	5	3	3	3	1	0	2	17
	0	0	21,687	39,250	29,587	13,394	63,393	0	42,956	29,672
Average Salary	215	86	178	83	57	69	24	11	2	725
	24,290	30,250	33,656	44,094	42,549	41,503	48,593	38,898	42,956	33,715

Retiree Distribution as of January 1, 1998

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	1	1	0	16,145	16,145
45-49	0	0	0	0	0	0
50-54	1	2	3	6,350	10,357	16,707
55-59	5	6	11	84,023	56,731	140,754
60-64	26	15	41	651,581	120,439	772,020
65-69	42	54	96	904,119	528,206	1,432,325
70-74	66	77	143	1,328,172	658,135	1,986,307
75-79	49	67	116	692,313	385,600	1,077,913
80-84	22	51	73	252,228	345,469	597,697
85-89	6	28	34	68,917	187,163	256,080
90-94	5	15	20	59,160	114,093	173,253
95-99	0	5	5	0	34,162	34,162
Total	222	321	543	4,046,863	2,456,500	6,503,362
Average (Age/Payment)	72.8	75.9	74.6	18,229	7,653	11,977
Frequency Percent	40.9	59.1	100	62.2	37.8	100

Disabled Retiree Distribution as of January 1, 1998

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	3	0	3	109,107	0	109,107
45-49	9	0	9	229,416	0	229,416
50-54	12	0	12	285,579	0	285,579
55-59	15	0	15	297,053	0	297,053
60-64	12	0	12	289,231	0	289,231
65-69	19	0	19	465,220	0	465,220
70-74	18	1	19	388,977	2,095	391,072
75-79	8	1	9	114,748	11,295	126,044
80-84	5	0	5	61,088	0	61,088
85-89	2	0	2	15,554	0	15,554
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	103	2	105	2,255,973	13,391	2,269,364
Average (Age/Payment)	64	74.3	64.2	21,903	6,695	21,613
Frequency Percent	98.1	1.9	100	99.4	0.6	100

EXHIBIT 4 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 1998, and does not take into account any subsequent changes.

1. Administration

Each of the 107 contributory retirement systems for public employees for the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts general laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporaries, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers and firefighters

For members in more than one group, participation will be proportional.

3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<u>Date of Hire</u>	<u>Member Contribution Rate</u>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later	9.0% of Salary
plus	
1979 and Later	2.0% of Salary in excess of \$30,000

5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. Service Retirement

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), the following conditions are to be met:

- (i) completion of 20 years of service
- (ii) for an employee prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) if an employee is a State police officer (Group 3), attainment of age 50

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For Group 3 (State police), the benefit is 50% of the participant's final year's rate of regular salary, plus an additional 1% for each year of service in excess of 20 years.

In addition, for veterans (all groups) there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years of service.

8. **Deferred Vested Retirement**

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after 6 years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with between five and ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. **Accidental Disability**

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. **Ordinary Disability**

a. **Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

b. **Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

11. **Survivor Benefits**

a. **Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. **Non-Occupational Death:**

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. **Cost-of-Living Increases**

In accordance with the adoption of Chapter 17 of the Acts of 1997 the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum pension benefit on which a COLA may be granted is \$12,000.

All COLA's granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. **Postretirement Death Benefits**

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A – Life annuity
- (ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 5 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. **Member Data**

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. **Valuation Date**

January 1, 1998.

3. **Actuarial Cost Method**

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. **Rate of Investment Return**

It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.5% per annum.

5. **Salary Scale**

It is assumed that salaries including longevity will increase at a rate of 5.0% per year.

6. **Cost-of-Living Increases**

Cost-of-living increases have been assumed to be 3% of the lesser of the pension amount and \$12,000 per year.

7. **\$30,000 Pay Cap**

The \$30,000 salary cap no longer applies for purposes of benefit determination.

8. **Value of Investments**

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC).

9. **Annual Rate of Withdrawal Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.1200	0.0208
30	0.0555	0.0165
40	0.0231	0.0056
50	0.0146	0.0000

10. **Annual Rate of Mortality**

It is assumed that both preretirement and postretirement mortality are represented by the 1983 Group Annuity Mortality Table (with margin) for males and females. Mortality for disabled members is represented by the 1983 Annuity Mortality Table set forward ten years for all disabled members.

11. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
50	0.0000	0.1000
51	0.0000	0.0200
52	0.0000	0.0200
53	0.0000	0.0200
54	0.0000	0.0200
55	0.1255	0.2500
56	0.0321	0.0500
57	0.0310	0.0500
58	0.0334	0.0500
59	0.0348	0.0500
60	0.0784	0.2500
61	0.0692	0.0500
62	0.1511	0.0500
63	0.1071	0.0500
64	0.1037	0.0500
65	0.3568	1.0000
66	0.2214	1.0000
67	0.2159	1.0000
68	0.2164	1.0000
69	0.2536	1.0000
70	1.0000	1.0000

12. **Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.00015	0.00050
30	0.00028	0.00114
40	0.00055	0.00434
50	0.00153	0.00750

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. **Family Composition**

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

14. **Administrative Expenses**

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 1998 is \$225,000 and is anticipated to increase at 4.5% per year.

EXHIBIT 6 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. **Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. **Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. **Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. **Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the City of Medford Contributory Retirement System contributing as of January 1, 1998, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost is reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

PricewaterhouseCoopers LLP

Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 96-4086

December 1998