JUDGES' RETIREMENT SYSTEM
OF ILLINOIS

ACTUARIAL VALUATION
AS OF JUNE 30, 1994

GOLDSTEIN & ASSOCIATES

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October 18, 1994

Board of Trustees
Judges' Retirement System of Illinois
2101 South Veterans Parkway
P.O. Box 19255
Springfield, Illinois 62794

Re: <u>Actuarial Valuation as of June 30, 1994</u>

Dear Board Members:

I am pleased to submit our actuarial report on the financial position and funding requirements of the Judges' Retirement System of Illinois based on the actuarial valuation as of June 30, 1994.

The report consists of 12 Sections and 2 Appendices as follows:

I would be pleased to discuss any aspects of this report with you and other interested persons.

Respectfully submitted,

Sandor Goldstein

Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 93-3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Judges' Retirement System of Illinois as of June 30, 1994. The purpose of the valuation was to determine the financial position and funding requirements of the retirement system. This report is intended to present the results of the valuation. The results are summarized below:

1.	Total actuarial liability	$479,129,504
2.	Actuarial value of assets	207,837,018
3.	Unfunded actuarial liability	271,292,486
4.	Funded Ratio	43.4%
5.	State contribution requirement for FY 96 under Public Act 88-0593	$ 12,129,000
6.	Actuarial present value of credited projected benefits	$479,129,504

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the retirement system. The membership of the system as of June 30, 1994, on which the valuation was based, is summarized in Exhibit 1. It can be seen that there were 836 active members, 399 members receiving retirement annuities, and 274 members receiving survivor's annuities included in the valuation. The total active payroll as of June 30, 1994 was $72,331,746.

Exhibit 1

Summary of Membership Data

1. Number of Members	
(a) Active Members	
(i) Vested	567
(ii) Non-vested	269
(b) Members Receiving	
(i) Retirement Annuities	399
(ii) Survivor's Annuities	274
(c) Inactive Members	41
2. Annual Salaries (Active Members)	
(a) Total Salary	$ 72,331,746
(b) Average Salary	86,521
3. Total Accumulated Employee Contributions of Active Members	$ 64,576,037
4. Annual Annuity Payments	
(a) Retirement Annuities	$ 21,391,806
(b) Survivor's Annuities	6,149,996

Assets. The asset value used for the valuation was based on the asset information contained in the statement of assets as of June 30, 1994 prepared by the system. For purposes of the valuation, the book value of the assets of the system (assets valued at cost), less the amount of liabilities, was used. The resulting actuarial value of assets was $207,837,018. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial value of Assets

1. Cash	$ 5,967,371
2. Receivables	217,006
3. Investments - Held in the Illinois State Board of Investment Commingled Fund, at Cost	201,873,106
4. Equipment	18,434
5. Total Assets	$208,075,917
6. Liabilities	238,899
7. Actuarial Value of Assets (5-6)	$207,837,018

C. RETIREMENT SYSTEM PROVISIONS

The actuarial valuation was based on the provisions of the retirement system in effect as of June 30, 1994 as provided in Article 18 of the Illinois Pension Code. There have been no changes in benefit provisions since the June 30, 1993 valuation. A summary of the principal provisions of the system in effect as of June 30, 1994 is provided in Appendix 1.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

Actuarial Assumptions

The same actuarial assumptions that were used for the June 30, 1993 actuarial valuation were used for the June 30, 1994 actuarial valuation. These actuarial assumptions were based on an experience analysis of the system over the five-year period 1987-1992. The major actuarial assumptions used for the current valuation are summarized below:

Mortality Rates. The UP-1984 Mortality Table was used for the valuation.

Termination Rates. The following is a sample of the termination rates that were used:

Age	Rate of Termination
30	.066
35	.033
40	.013
45	.005
50	.003
55	.000

Disability Rates. The following is a sample of the disability rates that were used for the valuation:

Age	Rate of Disability
30	.00057
35	.00064
40	.00083
45	.00115
50	.00170
55	.00000

Retirement Rates. Rates of retirement for each age from 55 to 75 based on the recent experience of the system were used. The following are samples of the rates of retirement that were used:

Age	Rate of Retirement
55	.051
60	.127
65	.058
70	.104
75	1.000

The above retirement rates are equivalent to an average retirement age of approximately 66.

Salary Increase. A salary increase assumption of 6.0% per year, compounded annually, was used. This 6% salary increase assumption can be considered to consist of a general increase component of 5% per year, 4.5% of which is attributable to inflation, and a seniority/merit component of 1% per year.

Interest Rate. An interest rate assumption of 8.0% per year, compounded annually, was used. This interest rate assumption can be considered to consist of an inflation component of 4.5% per year and a real rate of return of 3.5% per year.

Marital Status. It was assumed that 75% of active members will be married at the time of retirement.

Spouse's Age. The age of the spouse was assumed to be 4 years younger than the age of the employee.

Actuarial Cost Method

The projected unit credit actuarial cost method was used for the June 30, 1994 valuation. Actuarial gains and losses are reflected in the unfunded actuarial liability. This is the same actuarial cost method that was used for the June 30, 1993 valuation.

E. ACTUARIAL LIABILITY

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 2.)

As of June 30, 1994, the total actuarial liability is $479,129,504, the actuarial value of assets is $207,837,018, and the unfunded actuarial liability is $271,292,486. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 43.4%.

Exhibit 3

Actuarial Liability As of June 30, 1994

1.	Actuarial Liability For Active Members	
	(a) Basic retirement annuity	$126,984,621
	(b) Annual increase in retirement annuity	33,767,257
	(c) Pre-retirement survivor's annuity	28,106,207
	(d) Post-retirement survivor's annuity	17,192,766
	(e) Withdrawal benefits	1,114,128
	(f) Disability benefits	1,380,192
	(g) Total	$208,545,171
2.	Actuarial Liability For Members Receiving Benefits	
	(a) Retirement annuities	$205,914,725
	(b) Survivor annuities	51,063,800
	(c) Total	$256,978,525
3.	Actuarial Liability For Inactive Members	$ 13,605,808
4.	Total Actuarial Liability	$479,129,504
5.	Actuarial Value of Assets	$207,837,018
6.	Unfunded Actuarial Liability	$271,292,486
7.	Funded Ratio	43.4%

F. EMPLOYER'S NORMAL COST

The employer's share of the normal cost for the year beginning July 1, 1994 is developed in Exhibit 4. For the year beginning July 1, 1994, the total normal cost is determined to be $19,077,271. Employee contributions are estimated to be $7,956,492. The resulting employer's share of the normal cost is $11,120,779.

Based on a payroll of $72,331,746, the employer's share of the normal cost can be expressed as 15.37% of payroll.

Exhibit 4

Employer's Normal Cost For Year Beginning July 1, 1994

		Dollar Amount	Percent of Payroll
1.	Basic retirement annuity	$11,285,704	15.60%
2.	Annual increase in retirement annuity	3,041,408	4.21
3.	Pre-retirement survivor's annuity	2,837,456	3.92
4.	Post-retirement survivor's annuity	1,310,141	1.81
5.	Withdrawal benefits	154,305	.21
6.	Disability benefits	145,681	.20
7.	Administrative expenses	302,576	.42
8.	Total normal cost	$19,077,271	26.37%
9.	Employee contributions	7,956,492	11.00
10.	Employer's share of normal cost	$11,120,779	15.37%

Note. The above figures are based on total active payroll of $72,331,746 as of June 30, 1994.

G. LEVEL DOLLAR EXPENSE REQUIREMENT UNDER APB OPINION NO. 8

Accounting Principles Board Opinion No. 8, Accounting for the Costs of Pension Plans (APB Opinion No. 8) established certain standards for determining an employer's annual expense requirement under a pension plan. The minimum requirement for amortizing the unfunded liability specified under APB Opinion No. 8 is a 40-year amortization period and level dollar annual payments. The expense requirement under APB Opinion No. 8 for the year beginning July 1, 1994 is determined as follows:

	Annual Amount	Percent of Payroll
Employer's normal cost	$11,120,779	15.37%
Annual amount to amortize the unfunded actuarial liability over 40 years through level dollar payments	21,816,369	30.17
Total expense requirement	$32,937,148	45.54%

Expense Requirement For Fiscal Year Ended June 30, 1994

Based on the results of our June 30, 1993 actuarial valuation and payroll of $71,727,793 as of June 30, 1993, we have determined the minimum pension expense for Fiscal Year 1994 under APB Opinion No. 8 to be $31,719,450, or 44.22% of covered payroll.

H. STATE CONTRIBUTION REQUIREMENTS

Senate Bill 533, which was signed into law on August 22, 1994 as Public Act 88-0593, enacted the following funding plan for the system:

For fiscal years 2011 through 2045, the minimum State contribution to the system for each fiscal year shall be an amount determined by the system to be sufficient to bring the total assets of the system up to 90% of the total actuarial liabilities by the end of fiscal year 2045. In making these determinations, the required State contribution shall be calculated as a level percentage of payroll over the years through 2045. For fiscal years 1996 through 2010, the State contribution, as a percentage of the applicable payroll shall be increased in equal annual increments so that by fiscal year 2011, the State is contributing at the required rate.

Based on the June 30, 1994 actuarial valuation, we have determined the required State contributions under this plan for fiscal year 1996. We have also estimated required contributions for fiscal years 1997 through 2000 as well as for fiscal years 2005 and 2010. The required State contribution rates and amounts are as follows:

Fiscal Year	Projected Payroll	Required State Contribution as a Percent of Payroll	Required State Contribution as a Dollar Amount
1996	$ 75,996,000	15.96%	$ 12,129,000
1997	80,139,000	16.98	13,608,000
1998	84,731,000	18.00	15,252,000
1999	89,692,000	19.02	17,059,000
2000	95,070,000	20.04	19,052,000
2005	125,544,000	25.14%	31,562,000
2010	162,952,000	30.24	49,277,000

Method of Calculation

The contribution requirements shown above have been determined using the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation. However, in order to determine the contribution requirements, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, normal costs, and payroll were estimated over the 50-year period from 1996 through 2045 by projecting the membership of the system over the 50-year period, taking into account the impact of new entrants to the system over the 50-year period.

In order to make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the system. The assumptions regarding the profile of new entrants to the system was based on the recent experience of the system with regard to new entrants. The size of the active membership of the system was assumed to remain constant over the 50-year projection period.

I. RECONCILIATION OF CHANGE IN UNFUNDED LIABILITY

The net actuarial experience during the period July 1, 1993 to June 30, 1994 resulted in an increase in the system's unfunded actuarial liability of $12,145,816. This increase in unfunded liability is a result of several kinds of gains and losses as illustrated in Exhibit 5.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to $30,828,924, whereas the actual employer contribution for the year amounted to $10,766,000. Thus, the employer contribution for the year fell short of meeting normal cost plus interest on the unfunded liability by $20,062,924. Had all aspects of the system's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The net rate of investment return earned by the assets of the system, based on assets valued at cost, was approximately 8.9% in comparison with the assumed rate of investment return of 8.0%. This resulted in a decrease in the unfunded liability of $1,821,209. Salaries increased at an average rate of approximately 2.3%, in comparison with an assumed rate of 6.0%, resulting in a decrease in the unfunded liability of $7,818,990.

The various other aspects of the system's experience resulted in a net increase in the unfunded liability of $1,723,091.

The aggregate financial experience of the system resulted in an increase in the unfunded liability of $12,145,816.

Exhibit 5

Reconciliation of Change in Unfunded Liability
Over the Period July 1, 1993 to June 30, 1994

1.	Unfunded actuarial liability as of 7/1/93	$259,146,670
2.	Employer contribution requirement of normal cost plus interest on the unfunded liability for the period 7/1/93 to 6/30/94	30,828,924
3.	Actual employer contribution for the year	10,766,000
4.	Increase in unfunded liability due to employer contributions being less than normal cost plus interest on unfunded liability	20,062,924
5.	Decrease in unfunded liability due to investment return higher than assumed	1,821,209
6.	Decrease in unfunded liability due to salary increases lower than assumed	7,818,990
7.	Increase in unfunded liability due to other sources	1,723,091
8.	Net increase in unfunded liability for the year (4-5-6+7)	$ 12,145,816
9.	Unfunded actuarial liability as of 6/30/94 (1+8)	$271,292,486

J. ACTUARIAL PRESENT VALUE OF CREDITED PROJECTED BENEFITS

Governmental Accounting Standards Board (GASB) Statement No. 5, entitled Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Governmental Employers, establishes standards of disclosure of pension information by public employee retirement systems.

GASB Statement No. 5 requires the disclosure of the actuarial present value of credited projected benefits as the standardized measure of the accrued pension obligation. This measure represents the discounted value of the amount of benefits estimated to be payable in the future as a result of employee service to date, computed by attributing an equal benefit amount to each year of service of the employee.

In Exhibit 6, we have shown the actuarial present value of credited projected benefits in the format prescribed in GASB Statement No. 5. It can be seen that the total actuarial present value of credited projected benefits of $479,129,504 is the same as the total actuarial liability under the projected unit credit actuarial cost method.

Exhibit 6

Actuarial Present Value of Credited Projected Benefits

1.	For members in receipt of benefits and for inactive members	$270,584,333
2.	For current employees	
	Accumulated employee contributions	64,576,037
	Employer-financed vested	83,477,383
	Employer-financed non-vested	60,491,751
3.	Total actuarial present value of credited projected benefits	$479,129,504
4.	Net assets available for benefits, at cost (Market value is $228,388,761)	$207,837,018
5.	Unfunded actuarial present value of credited projected benefits	$271,292,486

K. PROJECTION OF BENEFITS, CONTRIBUTIONS, and LIABILITIES

Based on the results of the June 30, 1994 valuation and using the actuarial assumptions used for the valuation, we have projected valuation results for a 50-year period commencing with Fiscal Year 1996. We have based State contributions on the contribution requirements in the funding plan established under Public Act 88-0593. The results of our projections are shown in Exhibit 7.

EXHIBIT 7 (CONTINUED)

JUDGES' RETIREMENT SYSTEM OF ILLINOIS
TWENTY-YEAR PROJECTION OF COSTS, BENEFITS, AND LIABILITIES
(State Contributions Are Based on Public Act 88-0593)
(All Dollar Amounts in Millions)

	Fiscal Year Ending 6/30				
	2005	2010	2020	2030	2045
BASIC DATA					
1. Number of Active Members	836	836	836	836	836
2. Expected Total Payroll	$125.5	$163.0	$266.7	$433.0	$901.5
VALUATION RESULTS					
3. Actuarial Liability	$825.6	$1,106.8	$1,896.7	$3,084.7	$6,610.5
(Retired Lives Reserved)	(418.1)	(560.5)	(960.3)	($1,561.7)	($3,346.6)
4. Assets (Book)	$302.5	$460.9	$1,017.1	$2,003.7	$5,949.4
5. Unfunded Actuarial Liability	$523.1	$645.9	$879.6	$1,081.0	$661.1
(Funded Percentage)	(36.6)	(41.6)	(53.6)	(65.0)	(90.0)
6. Annual Normal Cost					
(a) Total	$ 34.9	$ 44.7	$ 73.9	$122.7	$255.1
(b) Employee Contributions	13.8	17.9	29.3	47.6	99.2
(c) Employer's Share	21.1	26.8	44.6	75.1	155.9
(% of Total Payroll)	(16.77)	(16.42)	(16.71)	(17.33)	(17.30)
7. State Contribution	$ 31.6	$ 49.3	$ 80.7	$130.9	$272.6
(% of Total Payroll)	(25.14)	(30.24)	(30.24)	(30.24)	(30.24)
8. Estimated Total Expenses (Benefits, Refunds and Administrative Expenses)	$ 48.1	$ 62.6	$118.9	$198.5	$404.6
9. Accumulated Contributions (Actives and Inactives)	$124.2	$161.1	$263.2	$427.2	$889.3

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Appendix 1

Summary of Principal Provisions

1. Participation. Participation in the system is mandatory when a person first becomes a judge, unless an "Election Not to Participate" is filed by the judge within 30 days of the date of notification of this option.

2. Member Contributions. All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	7.5%
Automatic Annuity Increase	1.0
Survivor's Annuity	2.5
Total	11.0%

All judges who become participants after December 31, 1992 are required to make contributions toward the survivor's annuity unless they file an election not to participate in the survivor's annuity benefit, in which case the total participant contribution rate is 8.5% of salary.

3. Discontinuance of Contributions. A participant who becomes eligible to receive the maximum rate of annuity may elect to discontinue contributions and have his or her benefits "fixed" based upon the final rate of salary immediately prior to the effective date of such election. This election, once made, is irrevocable.

4. Retirement Annuity - Eligibility. A judge who has at least 10 years of service may retire with an unreduced retirement annuity upon attainment of age 60. A judge with at least 6 years of service may retire with an unreduced retirement annuity upon attainment of age 62.

A judge with at least 10 years of service may retire upon attainment of age 55, with the amount of the retirement annuity reduced 1/2 of 1% for each month that the judge is under age 60. However, the reduction does not apply if the judge has at least 28 years of service.

5. Retirement Annuity - Amount. The retirement annuity is determined according to the following formula based upon the final rate of salary:

- 3 1/2% for each of the first 10 years of service; plus
- 5% for each year of service in excess of 10

The maximum retirement annuity is 85% of the final rate of salary.

6. Automatic Increase In Retirement Annuity. Annual automatic increases of 3% of the current amount of retirement annuity are provided. The initial increase is effective in the month of January of the year next following the year in which the first anniversary of retirement occurs.

7. <u>Temporary Total Disability.</u> A member with at least 2 years of service who becomes totally disabled and unable to perform his or her duties as a judge is entitled to a temporary disability benefit equal to 50% of salary payable during the period of disability but not beyond the end of the term of office.

8. <u>Total and Permanent Disability.</u> A member with at least 10 years of service who becomes totally and permanently disabled while serving as a judge is eligible to commence receiving his or her retirement annuity without reduction regardless of age.

9. <u>Survivor's Annuity - Participation and Eligibility.</u> A married judge, an unmarried judge who becomes a participant after December 31, 1992, or a judge who marries after becoming a participant is subject to the provisions relating to the survivor's annuity unless he or she files a written notice of election not to participate in the survivor's annuity.

An active judge who is not contributing for the survivor's annuity and later marries or remarries may receive partial credit for the survivor's annuity thereby providing a pro-rated benefit for his or her spouse by contributing for the survivor's annuity benefit prospectively from the date of marriage.

A surviving spouse without children is eligible for survivor benefits at age 50 or over provided marriage to the member had been in effect for at least 1 year immediately prior to the member's death.

A surviving spouse with unmarried eligible children of the member is eligible for a survivor's annuity benefit at any age provided the above marriage requirements have been met. When all children are disqualified because of death, marriage or attainment of age 18, or age 22 in the case of a full-time student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

Remarriage prior to the attainment of age 50 shall disqualify a surviving spouse for the receipt of a survivor's annuity.

Children of the member who are under age 18 or under age 22 and a full-time student or who are over age 18 and dependent because of a physical or mental disability are eligible for survivor benefits.

If the member dies in service as a judge, the member must have at least 1 1/2 years of service credit for survivor's annuity eligibility. If death occurs after termination of service, the deceased member must have at least 10 years of service credit for survivor's annuity eligibility.

10. <u>Survivor's Annuity - Amount.</u> (a) Upon the death of an annuitant, his or her surviving spouse shall be entitled to a survivor's annuity of 66 2/3% of the annuity the annuitant was receiving immediately prior to his or her death.

(b) Upon the death of a judge while in service, the surviving spouse shall receive a survivor's annuity of 66 2/3% of the annuity earned by the judge as of the date of death, or 7 1/2% of the judge's last salary, whichever is greater.

(c) Upon the death of a former judge who had terminated service with at least 10 years of service, his or her surviving spouse shall be entitled to a survivor's annuity of 66 2/3% of the annuity earned by the deceased member as of the date of death.

(d) Upon the death of an annuitant, a judge in service, or a former judge who had terminated service with at least 10 years of service, each surviving child unmarried and under the age of 18, or age 22 in the case of a full-time student, or disabled shall be entitled to a child's annuity in an amount equal to 5% of the decedent's final salary, not to exceed in total for all such children the greater of 20% of final salary or 66 2/3% of the earned retirement annuity.

(e) Survivor's annuities are subject to annual automatic increases of 3% of the current amount of annuity.

11. Refund of Contributions. A participant who ceases to be a judge may apply for and receive a refund of his or her total contributions to the system, provided he or she is not then eligible to receive a retirement annuity.

A participant who becomes unmarried, either before or after retirement, is entitled to a refund of contributions made for the survivor's annuity.

Appendix 2

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.

2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.

3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.

4. Actuarial Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.

5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.

6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.

7. Projected Unit Credit Actuarial Cost Method. A cost method under which the projected benefits of each individual included in an actuarial valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefits allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the actuarial liability.

Under this method, the actuarial gains (losses), as they occur, generally reduce (increase) the unfunded actuarial liability.

8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.

9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.