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Registers of Deeds' Supplemental Pension Fund Principal Results of Actuarial Valuation as of December 31, 2017

October 25, 2018 Board of Trustees Meeting

Larry Langer, ASA, FCA, EA, MAAA
Jonathan Craven, ASA, FCA, EA, MAAA





Summary of Results

Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
Funded Ratio
Employer Contributions
Benefit Enhancement
Additional Disclosures
Projections

The table below provides a summary of the results developed in this valuation compared to the prior valuation.

Valuation Results as of	December 31, 2017	December 31, 2016
Active Members		
Number**	100	100
Active Deferred**	1	N/A
Reported Compensation	\$ 6,448,113	\$ 5,810,850
Valuation Compensation***	\$ 6,883,965	\$ 6,540,811
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	100	103
Annual Allowances	\$ 1,798,650	\$ 1,852,650
Assets		
Actuarial Value (AVA)	\$ 49,431,313	\$ 48,875,624
Market Value	\$ 48,913,662	\$ 48,233,622
Actuarial Accrued Liability (AAL)	\$ 30,851,153	\$ 31,627,960
Unfunded Accrued Liability (AAL-AVA)	\$ (18,580,160)	\$ (17,247,664)
Funded Ratio (AVA/AAL)****	160.2%	154.5%

** As of the valuation date, there were 100 members serving as RODs. One former Register of Deeds is an active employee in the Local Governmental Employees' Retirement System.

** The Funded Ratio on a Market Value of Assets basis is 158.5% and 152.5% at December 31, 2017 and 2016.

A detailed summary of the membership data used in this valuation is provided in Section 3 and Appendix B.

ROD is a rather well funded plan.

Actual contributions to support the Fund are equal to 1.5% of the monthly receipts collected pursuant to Article 1 of Chapter 161 of the General Statutes (about \$844,000 for calendar year 2017). This level of funding has resulted in the high funded ratio of this plan.



Employer Contributions

The table below provides a summary of the Actuarially Determined Employer Contribution (ADEC) for FYE June 30, 2020 and 2019.

Contributions for Fiscal Year Ending	June 30, 2020	June 30, 2019
Actuarially Determined Employer Contribution		
Normal Cost	\$ 1,077,295	\$ 921,347
Accrued Liability	\$ (1,077,295)	\$ (921,347)
Total	\$ 0	\$ 0
Liquidation Period	N/A*	N/A*

*If the actuarially determined employer contribution (ADEC) is based on 12 year amortization of the unfunded accrued liability, the ADEC is less than \$0, which is not a permissible result. Therefore, the accrued liability contribution has been set such that the total employer ADEC equals \$0.

A detailed summary of the membership data used in this valuation is provided in Section 3 and Appendix B.

Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
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Certification

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Cavanaugh Macdonald performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. Results prior to December 31, 2017 were provided by the prior consulting actuary.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary



Cavanaugh Macdonald
CONSULTING, LLC

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Registers of Deeds' Supplemental Pension Fund

Report on the Annual Valuation
Prepared as of
December 31, 2017

October 2018





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 18, 2018

Board of Trustees
North Carolina Local Governmental Employees' Retirement System
3200 Atlantic Avenue
Raleigh, NC 27604

Members of the Board:

We submit herewith our report on the actuarial valuation of the Registers of Deeds' Supplemental Pension Fund (referred to as RODSPF or "the Fund"), prepared as of December 31, 2017. The report has been prepared in accordance with North Carolina General Statute 161-50. Information contained in our report for plan years prior to December 31, 2017 is based upon valuations performed by the prior actuary.

The primary purpose of the valuation report is to determine the required employer contribution rates, to describe the current financial condition of the Fund, and to analyze changes in such condition. In addition, the report provides information that the Office of the State Controller (OSC) requires for its Comprehensive Annual Financial Report (CAFR) and it summarizes census data. Use of this report for any other purposes or by anyone other than OSC and its auditors, or North Carolina Retirement Systems Division and Department of State Treasurer Staff may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. Because of the risk of misinterpretation of actuarial results, you should ask Cavanaugh Macdonald Consulting (CMC) to review any statement you wish to make on the results contained in this report. CMC will not accept any liability for any such statement made without prior review.

The valuation is based upon membership data and financial information as furnished by the Retirement Systems Division and the Financial Operations Division and as summarized in this report. Although reviewed for reasonableness and consistency with the prior valuation, these elements have not been audited by CMC and we cannot certify as to the accuracy and completeness of the data supplied. Sometimes assumptions are made by CMC to interpret membership data that is imperfect. The valuation is also based on benefit and contribution provisions as presented in this report. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, or that conditions have changed since the calculations were made, you should contact the authors of this actuarial report prior to relying on this information.

The valuation is further based on the actuarial valuation assumptions, approved by the Board of Trustees, as presented in this report. We believe that these assumptions are appropriate and reasonable and also comply with the requirements of GASB Statement No. 67. We prepared this valuation in accordance with the requirements of this standard and in accordance with all applicable ASOPs.



The latest assumptions were adopted for use beginning with the December 31, 2015 actuarial valuation, based on the experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on April 21, 2016. The economic assumptions with respect to investment yield, salary increase and inflation have been based upon a review of the existing portfolio structure as well as recent and anticipated experience.

Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities. In various places in the report the results also show funded ratios and unfunded liabilities based upon varying sets of assumptions as well as market values of assets as that is required for certain disclosure information required per accounting rules or statutes. Where this has been done it has been clearly indicated.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Such changes in law may include additional costs resulting from future legislated benefit improvements or cost-of-living pension increases or supplements, which are not anticipated in the actuarial valuation. Because of limited scope, CMC performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information.

We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Sincerely,

A handwritten signature in blue ink, appearing to be "LL", written in a cursive style.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to be "Jonathan T. Craven", written in a cursive style.

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary



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Section 1: Summary of Principal Results

1. This report, prepared as of December 31, 2017, presents the results of the actuarial valuation of the system. For convenience of reference, the principal results of the valuation and a comparison with the results of the previous valuation are summarized below.

Table 1: Summary of Principal Results

Valuation Results as of	December 31, 2017	December 31, 2016
Active Members		
Number**	100	100
Active Deferred**	1	N/A
Reported Compensation	\$ 6,448,113	\$ 5,810,850
Valuation Compensation***	\$ 6,883,965	\$ 6,540,811
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	100	103
Annual Allowances	\$ 1,798,650	\$ 1,852,650
Assets		
Actuarial Value (AVA)	\$ 49,431,313	\$ 48,875,624
Market Value	\$ 48,913,662	\$ 48,233,622
Actuarial Accrued Liability (AAL)	\$ 30,851,153	\$ 31,627,960
Unfunded Accrued Liability (AAL-AVA)	\$ (18,580,160)	\$ (17,247,664)
Funded Ratio (AVA/AAL)****	160.2%	154.5%
Contributions for Fiscal Year Ending	June 30, 2020	June 30, 2019
Actuarially Determined Employer Contribution		
Normal Cost	\$ 1,077,295	\$ 921,347
Accrued Liability	\$ (1,077,295)	\$ (921,347)
Total	\$ 0	\$ 0
Liquidation Period	N/A*	N/A*

* If the actuarially determined employer contribution (ADEC) is based on 12 year amortization of the unfunded accrued liability, the ADEC is less than \$0, which is not a permissible result. Therefore, the accrued liability contribution has been set such that the total employer ADEC equals \$0.

** As of the valuation date, there were 100 members serving as registers of deeds. One former register of deeds is an active employee in the Local Governmental Employees' Retirement System (LGERS) and consequently ineligible to receive a benefit from the RODSPF until retirement from LGERS.

*** Reported compensation adjusted to reflect the assumed rate of pay increase prior to the valuation date.

**** The Funded Ratio on a Market Value of Assets basis is 158.5% at December 31, 2017.



Section 1: Summary of Principal Results

2. Tables summarizing the membership of the system as of the valuation date are shown in Section 2.
3. An allocation of investments by category is shown in Section 3.
4. Comments on the valuation results are provided in Section 4.
5. Comments on the experience and actuarial gains/losses during the valuation year are provided in Section 5.
6. Accounting information to be disclosed in the financial statements of the System and the employer is provided in Section 6.
7. Appendix A of this report presents a summary of the results of the valuation, including present and prospective assets and liabilities of the Fund as of December 31, 2017.
8. Appendix B of this report presents the development of the actuarial value of assets.
9. Appendix C of this report outlines the full set of actuarial assumptions and methods employed.
10. Appendix D gives a summary of the benefit and contribution provisions of the system.
11. Appendix E provides the projection of cash flows used to determine the discount rate under GASB Statement No. 67.
12. Appendix F provides detailed tabulations of the membership of the system as of the valuation date.



Section 2: Membership Data

Data regarding the membership of the system for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the system as of December 31, 2017 upon which the valuation was based.

Table 2: Active Member Data

Group	Member Count*	Average Age	Average Service	Reported Compensation
Males	24	55.49	12.63	\$ 1,728,011
Females	77	55.47	19.62	\$ 4,720,102
Total	101	55.47	17.96	\$ 6,448,113

* As of the valuation date, there were 100 members serving as registers of deeds. One former register of deeds is an active employee in the Local Governmental Employees' Retirement System (LGERS) and consequently ineligible to receive a benefit under the RODSPF until retirement from LGERS.

Table 3: Data for Members Currently Receiving Benefits

Group	Member Count	Average Age	Annual Retirement Allowances
Males	13	72.89	\$ 234,000
Females	87	70.73	\$ 1,564,650
Total	100	71.01	\$ 1,798,650



Section 3: Asset Allocation

The following table shows an allocation of investments by category for the Register of Deeds' Supplemental Pension Fund as of December 31, 2017.

Table 4: Allocation of Investments by Category for the Register of Deeds' Supplemental Pension Fund as of December 31, 2017

Allocation of Investments by Category	
Cash and Receivables	0.2%
Fixed Income	99.8%
Public Equity	0.0%
Other*	<u>0.0%</u>
Total	100.0%

* Real Estate, Alternatives, Inflation and Credit.



Section 4: Comments on Valuation

Appendix A of this report presents a summary of the results of the valuation, including present and prospective assets and liabilities of the Fund as of December 31, 2017.

The results of the valuation show that the Fund has total prospective liabilities of \$38,157,063 of which \$21,995,470 is for the prospective benefits payable on account of retired members currently receiving benefits and \$16,161,593 is for the prospective benefits payable on account of present active members. From these liabilities subtracting the present value of future normal cost contributions of \$7,305,910, leaves \$30,851,153 as the actuarial accrued liability (AAL). The Fund has present assets of \$49,431,313 resulting in an unfunded actuarial accrued liability (UAAL) equal to \$(18,580,160).

The valuation indicates that employer normal cost for the year totals \$1,077,295, which is the annual cost of benefits accruing in the current year under the actuarial funding method, and also includes the amount required for administrative expenses. The payment required to amortize the UAAL is \$(1,077,295), resulting in an actuarially determined contribution of \$0 for fiscal year ending June 30, 2020.



Section 5: Comments on Experience and Gains/Losses

The following table shows a detailed reconciliation of the change in unfunded accrued liability since the prior valuation.

Table 5: Reconciliation of Change in Unfunded Accrued Liability Since the Prior Valuation
(in millions)

Unfunded Actuarial Accrued Liability as of 12/31/2016	\$ (17.2)
Change due to Transition to New Actuary	(1.2)
Unfunded Actuarial Accrued Liability as of 12/31/2016 after Transition	(18.4)
Normal Cost during 2017 (Including Admin Expenses)	1.0
Reduction due to Actual Contributions during 2017	(0.8)
Interest of UAAL, Normal Cost, and Contributions	(0.7)
Asset (Gain) / Loss	0.3
Actuarial Accrued Liability (Gain) / Loss	-
Impact of Assumption Changes	-
Unfunded Actuarial Accrued Liability as of 12/31/2017	\$ (18.6)

Commentary: During 2017, there was a transition from the prior actuary to CMC, resulting in valuation programing, modifications and differences in methodologies, such as payroll increase timing, that decreased the UAAL by \$1.2 million. In addition, asset loss during the year increased the UAAL by \$0.3 million.



Section 6: Accounting Information

The section contains the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for fiscal year ending June 30, 2018 based on a valuation date of December 31, 2017.

Please note GASB Statement No. 67 (Financial Reporting for Pension Plans) is applicable for fiscal years ending 2014 and later.

The June 30, 2018 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2017, based on the assumptions, methods and plan provisions described in this report. The actuarial cost method used to develop the total pension liability is the Entry Age Normal Cost method, as required by GASB Statement No. 67.

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide a distribution of the number of employees by type of membership.

**Table 6: Number of Active and Retired Participants
as of December 31, 2017**

Group	Number
Retired Members and survivors of deceased members currently receiving benefits	100
Terminated members and survivors of deceased members entitled to benefits but not year receiving benefits	0
Active Participants	101
Total	201



Section 6: Accounting Information

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide the schedule of changes in Net Pension Liability (Asset).

Table 7: Schedule of Changes in Net Pension Liability (Asset)

Calculation as of	June 30, 2018
Total Pension Liability	
Service Cost	\$ 1,086,000
Interest	1,157,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(1,125,000)
Change of Assumptions	0
Benefit Payments, including Refund of Member Contributions	(1,793,000)
Net Change in Total Pension Liability	\$ (675,000)
Total Pension Liability - Beginning of Year	\$ 31,743,000
Total Pension Liability - End of Year	\$ 31,068,000
Plan Fiduciary Net Position	
Employer Contributions	\$ 856,000
Member Contributions	0
Net Investment Income	(230,000)
Benefit Payments, including Refund of Member Contributions	(1,793,000)
Administrative Expenses	(14,000)
Other	0
Net Change in Fiduciary Net Position	\$ (1,181,000)
Plan Fiduciary Net Position - Beginning of Year	\$ 48,812,000
Plan Fiduciary Net Position - End of Year	\$ 47,631,000

Table 8: Net Pension Liability (Asset)

Calculation as of	June 30, 2018	June 30, 2017
Total Pension Liability	\$ 31,068,000	\$ 31,743,000
Plan Fiduciary Net Position	\$ 47,631,000	\$ 48,812,000
Net Pension Liability (Asset)	\$ (16,563,000)	\$ (17,069,000)
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	153.31%	153.77%



Section 6: Accounting Information

The table below is the sensitivity of the net pension liability to changes in the discount rate.

Table 9: Sensitivity of the Net Pension Liability (Asset) at June 30, 2018 to Changes in the Discount Rate

	1% Decrease	Current	1% Increase
Discount Rate	2.75%	3.75%	4.75%
Net Pension Liability (Asset)	(13,059,000)	(16,563,000)	(19,518,000)

The discount rate used to measure the total pension liability was 3.75%. The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the current funding policy. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Please see Appendix E for additional detail.

The table below provides the methods and assumptions used to calculate the actuarially determined contribution rate.

Table 10: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2017
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period	N/A*
Asset Valuation Method	Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period (not greater than 120% of market value and not less than 80% of market value)
Actuarial Assumptions	
Investment Rate of Return	3.75%
Projected Salary Increases	3.50% - 7.75%
** Includes Inflation of	3.00%
*** Includes inflation of and productivity of	3.50%
Cost-of-Living Adjustments	N/A

* If the actuarially determined employer contribution (ADEC) is based on 12 year amortization of the unfunded accrued liability, the ADEC is less than \$0, which is not a permissible result. Therefore, the accrued liability contribution has been set such that the total employer ADEC equals \$0.



Appendix A: Results of the Valuation

Valuation Results as of	December 31, 2017
1. Present Value of Future Benefits	
a. Members Currently Receiving Benefits	\$ 21,995,470
b. Active Members	\$ 16,161,593
c. Total Present Value of Future Benefits	\$ 38,157,063
2. Present Value of Future Normal Cost Contributions	\$ 7,305,910
3. Actuarial Accrued Liability (AAL): (1) - (2)	\$ 30,851,153
4. Actuarial Value of Assets	\$ 49,431,313
5. Unfunded Actuarial Accrued Liability (UAAL): (3) - (4)	\$ (18,580,160)



Appendix B: Development of Actuarial Value of Assets

Asset Data as of	December 31, 2017
Beginning of Year Market Value of Assets	\$ 48,233,622
Contributions	844,228
Benefit Payments	\$ (1,806,150)
Net Cash Flow	\$ (961,922)
Expected Investment Return	\$ 1,790,891
Expected End of Year Market Value of Assets	\$ 49,062,591
End of Year Market Value of Assets	\$ 48,913,662
Excess of Market Value Over Expected Market Value	\$ (148,929)
80% of 2017 Asset Gain/(Loss)	\$ (119,143)
60% of 2016 Asset Gain/(Loss)	265,444
40% of 2015 Asset Gain/(Loss)	(663,952)
20% of 2014 Asset Gain/(Loss)	N/A
Total Deferred Asset Gain/(Loss)	\$ (517,651)
Preliminary End of Year Actuarial Value of Assets	\$ 49,431,313
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	\$ 49,431,313
Estimated Net Investment Return on Actuarial Value	3.14%
Estimated Net Investment Return on Market Value	3.44%

Commentary: The actuarial value of assets smooths investment gains/losses resulting in less volatility in the employer contribution. The asset valuation method recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period.

The continued deferral of losses resulted in an actuarial value of asset return for calendar year 2017 of 3.14% and a recognized actuarial asset loss of \$297,000 during 2017.



Appendix C: Actuarial Assumptions and Methods

Assumptions are based on the experience investigation prepared as of December 31, 2014 and adopted by the Board of Trustees on April 21, 2016 for use beginning with the December 31, 2015 annual actuarial valuation.

Interest Rate: 3.75% per annum, compounded annually.

Inflation: Both general and wage inflation are assumed to be 3.00% per annum.

Real Wage Growth: 0.50% per annum.

Separations From Active Service: Representative values of the assumed rates of separation from active service are as follows:

<u>Service</u>	<u>Annual Rate of Withdrawal</u>	
	<u>Male</u>	<u>Female</u>
0	.1850	.2050
1	.1550	.1750
2	.1300	.1500
3	.1050	.1250
4	.0850	.1050

<u>Age</u>	<u>Annual Rates of</u>					
	<u>Withdrawal and Vesting*</u>		<u>Base Mortality**</u>		<u>Disability</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	.0750	.1000	.0005	.0002	.0004	.0005
30	.0600	.0900	.0005	.0002	.0005	.0005
35	.0450	.0650	.0005	.0003	.0005	.0005
40	.0400	.0500	.0006	.0004	.0030	.0020
45	.0400	.0450	.0010	.0007	.0040	.0030
50	.0400	.0450	.0017	.0011	.0060	.0035
55	.0400	.0450	.0028	.0017	.0080	.0060
60	.0400	.0450	.0047	.0024	.0080	.0060
65			.0083	.0037		
69			.0125	.0057		

* These rates apply only after five years of membership in the system.

** Base mortality rates as of 2014.



Appendix C: Actuarial Assumptions and Methods

Retirements: Representative values of the assumed rates of retirement from active service are as follows:

Males							
Service							
Age	5	10	15	20	25	30	35
50				0.0300	0.0700	0.2750	0.1500
55				0.0500	0.1000	0.2500	0.1500
60	0.1000	0.1000	0.1000	0.1000	0.2750	0.3000	0.2500
65	0.3000	0.3000	0.3000	0.3000	0.3500	0.3500	0.3500
70	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Females							
Service							
Age	5	10	15	20	25	30	35
50				0.0450	0.0600	0.3000	0.2000
55				0.0600	0.0850	0.3000	0.2000
60	0.1100	0.1100	0.1100	0.1100	0.3000	0.3500	0.2500
65	0.3500	0.3500	0.3500	0.3500	0.3500	0.3500	0.3500
70	0.1500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Salary Increases: Representative values of the assumed annual rates of future salary increase are as follows:

Service	Annual Rate of Salary Increase
0	7.75%
5	6.00
10	4.95
15	4.20
20	3.75
25	3.50
30	3.50
35	3.50
40	3.50
45	3.50
50	3.50



Appendix C: Actuarial Assumptions and Methods

Deaths After Retirement: Representative values of the assumed post-retirement mortality rates as of 2014 prior to any mortality improvements are as follows:

Age	<u>Annual Rate of Death after Retirement</u>			
	Retirees (Healthy at Retirement)		Retirees (Disabled at Retirement)	
	Male	Female	Male	Female
55	.0066	.0029	.0241	.0143
60	.0089	.0041	.0274	.0168
65	.0127	.0064	.0326	.0207
70	.0193	.0102	.0416	.0279
75	.0309	.0165	.0559	.0406
80	.0604	.0404	.0789	.0604

Deaths After Retirement (Healthy Members at Retirement): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table. Rates for male members are multiplied by 115% for ages 50-78 and by 135% for ages greater than 78. Rates for female members are multiplied by 79% for ages 50-78 and by 116% for ages greater than 78. The RP- 2014 annuitant tables have no rates prior to age 50. The RP-2014 Total Data Set Employee Mortality Table (with no adjustments) is used for ages less than 50.

Death After Retirement (Disabled Members at Retirement): Mortality rates are based on the RP-2014 Total Data Set for Disabled Annuitants Mortality Table. Rates for male members are multiplied by 103% for all ages. Rates for female members are multiplied by 99% for all ages.

Deaths Prior to Retirement: Mortality rates are based on the RP-2014 Total Data Set Employee Mortality Table.

Mortality Projection (Non-Disabled): All mortality rates are projected from 2014 using generational improvement with Scale MP-2015.

Timing of Assumptions: All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year.

Administrative Expenses: Assumed to be 0.15% of the market value of assets at the beginning of each calendar year.

Reported Compensation: Calendar year compensation as furnished by the system's office.

Valuation Compensation: Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date.

Actuarial Cost Method: Entry age normal cost method.

Normal Cost: Normal cost rate reflects the impact of new entrants during the year.



Appendix C: Actuarial Assumptions and Methods

Asset Valuation Method: Actuarial value, as developed in Appendix B. The actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Changes Since Prior Valuation: None.



Appendix D: Summary of Main Plan Provisions

The Registers of Deeds' Supplemental Pension Fund was established October 1, 1987 for all county registers of deeds who are retired from the Local Governmental Employees' Retirement System or an equivalent locally sponsored plan.

Benefits

Service Retirement Pension

Conditions for Pension	Retirement from the Local Governmental Employees' Retirement System or equivalent locally sponsored plan with 10 or more years of service as a register of deeds.
Amount of Pension	<p>For Registers of Deeds who began service before September 10, 2009, the benefit payable for the life of the member only, equal to 75% of the equivalent annual salary immediately preceding retirement computed on the latest monthly base rate. Maximum benefit is \$1,500 per month.</p> <p>For Registers of Deeds who began service September 10, 2009 or later, the benefit is minimum of (A,B):</p> <p style="padding-left: 40px;">A = 75% of equivalent annual salary immediately preceding retirement computed on the latest monthly base rate (minus maximum pension from LGERS or equivalent locally sponsored plan).</p> <p style="padding-left: 40px;">B = \$1,500.</p> <p>Note: For valuation purposes, all members are valued under the pre-2009 provisions due to the immateriality of the difference in benefits</p>

Deferred Vested Retirement Pension

Conditions for Pension	Separation from service after completing at least 10 years of service as a register of deeds.
Amount of Pension	Service Retirement Pension described above commencing upon retirement with the Local Governmental Retirement System.

Contributions

Employer Contributions	1.5% of the monthly receipts collected pursuant to Article 1 of Chapter 161 of the General Statutes.
Employee Contributions	None.
Changes Since Prior Valuation	None.



Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-1: Projection of Fiduciary Net Positions

(in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2018	\$ 48,914	\$ 0	\$ 0	\$ 1,860	\$ 73	\$ 1,798	\$ 48,778
2019	48,778	0	0	1,887	73	1,793	48,612
2020	48,612	0	0	1,920	73	1,786	48,404
2021	48,404	0	0	1,953	73	1,778	48,156
2022	48,156	0	0	1,991	72	1,768	47,860
2023	47,860	0	0	2,026	72	1,756	47,518
2024	47,518	0	0	2,066	71	1,742	47,123
2025	47,123	0	0	2,105	71	1,727	46,673
2026	46,673	0	0	2,168	70	1,709	46,144
2027	46,144	0	0	2,189	69	1,688	45,574
2028	45,574	0	0	2,213	68	1,667	44,960
2029	44,960	0	0	2,224	67	1,643	44,312
2030	44,312	0	0	2,218	66	1,619	43,646
2031	43,646	0	0	2,218	65	1,594	42,957
2032	42,957	0	0	2,198	64	1,569	42,264
2033	42,264	0	0	2,166	63	1,543	41,578
2034	41,578	0	0	2,121	62	1,519	40,913
2035	40,913	0	0	2,067	61	1,495	40,279
2036	40,279	0	0	2,005	60	1,472	39,686
2037	39,686	0	0	1,937	60	1,451	39,140
2038	39,140	0	0	1,872	59	1,432	38,642
2039	38,642	0	0	1,795	58	1,415	38,204
2040	38,204	0	0	1,716	57	1,400	37,831
2041	37,831	0	0	1,635	57	1,387	37,527
2042	37,527	0	0	1,555	56	1,377	37,293
2043	37,293	0	0	1,478	56	1,370	37,129
2044	37,129	0	0	1,395	56	1,365	37,044
2045	37,044	0	0	1,312	56	1,364	37,040
2046	37,040	0	0	1,230	56	1,365	37,119
2047	37,119	0	0	1,150	56	1,370	37,283
2048	37,283	0	0	1,071	56	1,377	37,534
2049	37,534	0	0	995	56	1,388	37,870
2050	37,870	0	0	921	57	1,402	38,295
2051	38,295	0	0	850	57	1,419	38,807
2052	38,807	0	0	781	58	1,440	39,407
2053	39,407	0	0	716	59	1,463	40,095
2054	40,095	0	0	654	60	1,490	40,871
2055	40,871	0	0	595	61	1,520	41,735
2056	41,735	0	0	540	63	1,554	42,686
2057	42,686	0	0	488	64	1,590	43,725
2058	43,725	0	0	439	66	1,630	44,851
2059	44,851	0	0	393	67	1,673	46,064



Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-1: Projection of Fiduciary Net Positions (continued)

(in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2060	46,064	0	0	350	69	1,720	47,364
2061	47,364	0	0	311	71	1,769	48,751
2062	48,751	0	0	275	73	1,822	50,225
2063	50,225	0	0	241	75	1,878	51,787
2064	51,787	0	0	210	78	1,937	53,436
2065	53,436	0	0	182	80	1,999	55,172
2066	55,172	0	0	157	83	2,064	56,997
2067	56,997	0	0	134	85	2,133	58,910
2068	58,910	0	0	114	88	2,205	60,913
2069	60,913	0	0	96	91	2,281	63,007
2070	63,007	0	0	80	95	2,360	65,192
2071	65,192	0	0	66	98	2,442	67,469
2072	67,469	0	0	54	101	2,527	69,841
2073	69,841	0	0	44	105	2,616	72,308
2074	72,308	0	0	36	108	2,709	74,873
2075	74,873	0	0	28	112	2,805	77,538
2076	77,538	0	0	22	116	2,905	80,304
2077	80,304	0	0	17	120	3,009	83,175
2078	83,175	0	0	13	125	3,117	86,154
2079	86,154	0	0	10	129	3,228	89,242
2080	89,242	0	0	8	134	3,344	92,445
2081	92,445	0	0	6	139	3,464	95,765
2082	95,765	0	0	4	144	3,588	99,205
2083	99,205	0	0	3	149	3,717	102,771
2084	102,771	0	0	2	154	3,851	106,466
2085	106,466	0	0	1	160	3,989	110,294
2086	110,294	0	0	1	165	4,133	114,261
2087	114,261	0	0	1	171	4,282	118,370
2088	118,370	0	0	0	178	4,436	122,628



Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-2: Actuarial Value of Projected Benefit Payments
(in thousands)

Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments		
					Funded Payments at 3.75%	Unfunded Payments at 3.87%	Using Single Discount Rate of 3.75%
2018	\$ 48,914	\$ 1,860	\$ 1,860	\$ 0	\$ 1,763	\$ 0	\$ 1,763
2019	48,778	1,887	1,887	0	1,723	0	1,723
2020	48,612	1,920	1,920	0	1,691	0	1,691
2021	48,404	1,953	1,953	0	1,657	0	1,657
2022	48,156	1,991	1,991	0	1,629	0	1,629
2023	47,860	2,026	2,026	0	1,598	0	1,598
2024	47,518	2,066	2,066	0	1,570	0	1,570
2025	47,123	2,105	2,105	0	1,542	0	1,542
2026	46,673	2,168	2,168	0	1,530	0	1,530
2027	46,144	2,189	2,189	0	1,490	0	1,490
2028	45,574	2,213	2,213	0	1,451	0	1,451
2029	44,960	2,224	2,224	0	1,406	0	1,406
2030	44,312	2,218	2,218	0	1,352	0	1,352
2031	43,646	2,218	2,218	0	1,303	0	1,303
2032	42,957	2,198	2,198	0	1,244	0	1,244
2033	42,264	2,166	2,166	0	1,182	0	1,182
2034	41,578	2,121	2,121	0	1,116	0	1,116
2035	40,913	2,067	2,067	0	1,048	0	1,048
2036	40,279	2,005	2,005	0	979	0	979
2037	39,686	1,937	1,937	0	912	0	912
2038	39,140	1,872	1,872	0	849	0	849
2039	38,642	1,795	1,795	0	785	0	785
2040	38,204	1,716	1,716	0	723	0	723
2041	37,831	1,635	1,635	0	664	0	664
2042	37,527	1,555	1,555	0	609	0	609
2043	37,293	1,478	1,478	0	558	0	558
2044	37,129	1,395	1,395	0	508	0	508
2045	37,044	1,312	1,312	0	460	0	460
2046	37,040	1,230	1,230	0	416	0	416
2047	37,119	1,150	1,150	0	375	0	375
2048	37,283	1,071	1,071	0	336	0	336
2049	37,534	995	995	0	301	0	301
2050	37,870	921	921	0	269	0	269
2051	38,295	850	850	0	239	0	239
2052	38,807	781	781	0	212	0	212
2053	39,407	716	716	0	187	0	187
2054	40,095	654	654	0	165	0	165
2055	40,871	595	595	0	145	0	145
2056	41,735	540	540	0	126	0	126
2057	42,686	488	488	0	110	0	110
2058	43,725	439	439	0	95	0	95
2059	44,851	393	393	0	82	0	82



Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-2: Actuarial Value of Projected Benefit Payments (continued)
(in thousands)

Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments		
					Funded Payments at 3.75%	Unfunded Payments at 3.87%	Using Single Discount Rate of 3.75%
2060	46,064	350	350	0	71	0	71
2061	47,364	311	311	0	61	0	61
2062	48,751	275	275	0	51	0	51
2063	50,225	241	241	0	44	0	44
2064	51,787	210	210	0	37	0	37
2065	53,436	182	182	0	31	0	31
2066	55,172	157	157	0	25	0	25
2067	56,997	134	134	0	21	0	21
2068	58,910	114	114	0	17	0	17
2069	60,913	96	96	0	14	0	14
2070	63,007	80	80	0	11	0	11
2071	65,192	66	66	0	9	0	9
2072	67,469	54	54	0	7	0	7
2073	69,841	44	44	0	6	0	6
2074	72,308	36	36	0	4	0	4
2075	74,873	28	28	0	3	0	3
2076	77,538	22	22	0	2	0	2
2077	80,304	17	17	0	2	0	2
2078	83,175	13	13	0	1	0	1
2079	86,154	10	10	0	1	0	1
2080	89,242	8	8	0	1	0	1
2081	92,445	6	6	0	1	0	1
2082	95,765	4	4	0	0	0	0
2083	99,205	3	3	0	0	0	0
2084	102,771	2	2	0	0	0	0
2085	106,466	1	1	0	0	0	0
2086	110,294	1	1	0	0	0	0
2087	114,261	1	1	0	0	0	0
2088	118,370	0	0	0	0	0	0



Appendix F: Detailed Tabulations of the Data

Table F-1: The Number and Average Reported Compensation of Active Members Distributed by Age and Service as of December 31, 2017

Age	Years of Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
35 to 39	0	1	1	0	0	0	0	0	0	0	0	2
	0	42,815	91,904	0	0	0	0	0	0	0	0	67,359
40 to 44	0	1	2	2	3	0	0	0	0	0	0	8
	0	54,297	55,416	55,192	59,648	0	0	0	0	0	0	56,807
45 to 49	0	2	1	5	4	3	4	0	0	0	0	19
	0	67,549	46,011	75,215	65,833	72,252	63,007	0	0	0	0	67,858
50 to 54	0	4	1	1	4	4	4	2	0	0	0	20
	0	68,074	48,503	93,135	64,740	56,262	66,106	84,536	0	0	0	66,572
55 to 59	0	2	1	4	1	2	1	3	3	0	0	17
	0	69,914	87,299	56,755	55,553	57,425	61,068	71,703	60,317	0	0	63,628
60 to 64	0	1	4	4	2	0	5	3	1	2	2	22
	0	77,443	60,016	53,596	57,746	0	69,600	67,801	88,340	56,366	0	63,630
65 to 69	0	1	1	1	2	1	1	1	0	0	0	8
	0	97,180	76,600	52,169	94,373	50,197	63,043	62,316	0	0	0	73,781
70 & Up	0	0	2	0	1	0	0	2	0	0	0	5
	0	0	66,315	0	60,231	0	0	53,286	0	0	0	59,886
Total	0	12	13	17	17	10	15	11	4	2	101	
	0	68,246	64,142	63,127	65,956	60,685	65,904	68,770	67,323	56,366	65,160	



Appendix F: Detailed Tabulations of the Data

Table F-2: The Number and Annual Retirement Pensions of Retired Members and Survivors of Deceased Members Distributed by Age as of December 31, 2017

Age	Men		Women	
	Number	Allowances	Number	Allowances
51			1	\$1,500
54			1	1,500
56			1	1,500
58			1	1,500
59			3	4,500
60			2	3,000
61			4	6,000
62			3	4,500
63			1	1,500
64	1	\$1,500	3	4,500
65	3	4,500	4	6,000
66			3	4,500
67			2	3,000
68	1	1,500	8	12,000
69	1	1,500	5	7,500
70	1	1,500	4	6,000
71	1	1,500	4	6,000
72			6	9,000
73			6	9,000
75			2	3,000
76	1	1,500	1	1,500
77	1	1,500	4	5,888
78			3	4,500
79			3	4,500
81			2	3,000
82	1	1,500	1	1,500
83	1	1,500		
84			1	1,500
85			2	3,000
86			1	1,500
87			1	1,500
88			2	3,000
92			1	1,500
93			1	1,500
94	1	1,500		
Total	13	\$19,500	87	\$130,388