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Registers of Deeds' Supplemental Pension Fund Principal Results of Actuarial Valuation as of December 31, 2018

October 31, 2019 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	12/31/2018	12/31/2017
Active Members		
Number**	100	100
Active Deferred**	1	1
Reported Compensation	\$ 6,539,270	\$ 6,448,113
Valuation Compensation***	\$ 7,127,497	\$ 6,883,965
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	100	100
Annual Allowances	\$ 1,798,650	\$ 1,798,650
Assets		
Actuarial Value (AVA)	\$ 49,665,163	\$ 49,431,313
Market Value	\$ 47,930,669	\$ 48,913,662
Actuarial Accrued Liability (AAL)	\$ 30,558,606	\$ 30,851,153
Unfunded Accrued Liability (AAL-AVA)	\$ (19,106,557)	\$ (18,580,160)
Funded Ratio (AVA/AAL)****	162.5%	160.2%

** 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 156.8% and 158.5% at December 31, 2018 and 2017.

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 \$856,000 for calendar year 2018). 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, 2021 and 2020.

Contributions for Fiscal Year Ending	6/30/2021	6/30/2020
Actuarially Determined Employer Contribution		
Normal Cost	\$ 1,084,772	\$ 1,077,295
Accrued Liability*	\$ (1,084,772)	\$ (1,077,295)
Total	\$ 0	\$ 0
Liquidation Period	29 years	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
Funded Ratio
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Projections



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, 2018

October 2019





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 16, 2019

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, 2018. 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 Actuarial Standards of Practice (ASOP).



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 of 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'.

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

A handwritten signature in blue ink, appearing to be 'Jonathan T. Craven'.

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, 2018, 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	12/31/2018	12/31/2017
Active Members		
Number**	100	100
Active Deferred**	1	1
Reported Compensation	\$ 6,539,270	\$ 6,448,113
Valuation Compensation***	\$ 7,127,497	\$ 6,883,965
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	100	100
Annual Allowances	\$ 1,798,650	\$ 1,798,650
Assets		
Actuarial Value (AVA)	\$ 49,665,163	\$ 49,431,313
Market Value	\$ 47,930,669	\$ 48,913,662
Actuarial Accrued Liability (AAL)	\$ 30,558,606	\$ 30,851,153
Unfunded Accrued Liability (AAL-AVA)	\$ (19,106,557)	\$ (18,580,160)
Funded Ratio (AVA/AAL)****	162.5%	160.2%
Contributions for Fiscal Year Ending	6/30/2021	6/30/2020
Actuarially Determined Employer Contribution		
Normal Cost	\$ 1,084,772	\$ 1,077,295
Accrued Liability*	\$ (1,084,772)	\$ (1,077,295)
Total	\$ 0	\$ 0
Liquidation Period	29 years	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 156.8% at December 31, 2018.



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, 2018.
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, 2018 upon which the valuation was based.

Table 2: Active Member Data

Group	Member Count*	Average Age	Average Service	Reported Compensation
Males	26	54.04	11.00	\$ 1,794,509
Females	75	55.64	19.49	\$ 4,744,761
Total	101	55.23	17.31	\$ 6,539,270

* 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	15	73.76	\$ 270,000
Females	85	71.36	\$ 1,528,650
Total	100	71.72	\$ 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, 2018.

Table 4: Allocation of Investments by Category for the Register of Deeds' Supplemental Pension Fund as of December 31, 2018

Cash and Receivables	0.3%
Fixed Income	99.7%
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, 2018.

The results of the valuation show that the Fund has total prospective liabilities of \$37,818,074 of which \$21,486,527 is for the prospective benefits payable on account of retired members currently receiving benefits and \$16,331,547 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 \$7,259,468, leaves \$30,558,606 as the actuarial accrued liability (AAL). The Fund has present assets of \$49,665,163 resulting in an unfunded actuarial accrued liability (UAAL) equal to \$(19,106,557).

The valuation indicates that employer normal cost for the year totals \$1,084,772, 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 \$(1,084,772), resulting in an actuarially determined contribution of \$0 for fiscal year ending June 30, 2021.



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 Actuarial Accrued Liability Since the Prior Valuation
(in millions)

Unfunded Actuarial Accrued Liability as of 12/31/2017	\$ (18.6)
Normal Cost during 2018 (Including Admin Expenses)	1.1
Reduction due to Actual Contributions during 2018	(0.9)
Interest of UAAL, Normal Cost, and Contributions	(0.7)
Asset (Gain) / Loss	0.7
Actuarial Accrued Liability (Gain) / Loss	(0.7)
Impact of Assumption Changes	-
Unfunded Actuarial Accrued Liability as of 12/31/2018	\$ (19.1)

Commentary: During 2018, there was an asset loss during the year that increased the UAAL by \$0.7 million. This loss was offset by a liability gain of \$0.7 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, 2019 based on a valuation date of December 31, 2018.

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

The June 30, 2019 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2018, 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, 2018**

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, 2019
Total Pension Liability	
Service Cost	\$ 1,117,000
Interest	1,133,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(770,000)
Change of Assumptions	0
Benefit Payments, including Refund of Member Contributions	(1,754,000)
Net Change in Total Pension Liability	\$ (274,000)
Total Pension Liability - Beginning of Year	\$ 31,068,000
Total Pension Liability - End of Year	\$ 30,794,000
Plan Fiduciary Net Position	
Employer Contributions	\$ 950,000
Member Contributions	0
Net Investment Income	3,721,000
Benefit Payments, including Refund of Member Contributions	(1,754,000)
Administrative Expenses	(12,000)
Other	0
Net Change in Fiduciary Net Position	\$ 2,905,000
Plan Fiduciary Net Position - Beginning of Year	\$ 47,631,000
Plan Fiduciary Net Position - End of Year	\$ 50,536,000

Table 8: Net Pension Liability (Asset)

Calculation as of	June 30, 2019	June 30, 2018
Total Pension Liability	\$ 30,794,000	\$ 31,068,000
Plan Fiduciary Net Position	\$ 50,536,000	\$ 47,631,000
Net Pension Liability (Asset)	\$ (19,742,000)	\$ (16,563,000)
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	164.11%	153.31%



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, 2019 to Changes in the Discount Rate**

	1% Decrease	Current	1% Increase
Discount Rate	2.75%	3.75%	4.75%
Net Pension Liability (Asset)	(16,319,000)	(19,742,000)	(22,636,000)

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	12/31/2018
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period *	29 years
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.



Section 7: Risk

Measuring pension obligations and actuarially determined contributions requires the use of assumptions regarding future economic and demographic experience. Whenever assumptions are made about future events, there is risk that actual experience will differ from expected. Actuarial valuations include the risk that actual future measurements will deviate from expected future measurements due to actual experience that is different than the actuarial assumptions. The primary areas of risk in this actuarial valuation are:

- Investment Risk – the potential that investment returns will be different than expected.
- Longevity and Other Demographic Risks – the potential that mortality or other demographic experience will be different than expected.
- Interest Rate Risk – To the extent market rates of interest affect the expected return on assets, there is a risk of change to the discount rate which determines the present value of liabilities and actuarial valuation results.
- Contribution Risk – The potential that actual contributions are different than the actuarially determined contributions.

Annual actuarial valuations are performed for RSD which re-measure the assets and liabilities and compute a new actuarially determined contribution. RSD also has experience studies performed every five years to analyze the discrepancies between actuarial assumptions and actual experience and determine if the actuarial assumptions need to be changed. Annual actuarial valuations and periodic experience studies are practical ways to monitor and reassess risk.



Appendix A: Results of the Valuation

Valuation Results as of	12/31/2018
1. Present Value of Future Benefits	
a. Members Currently Receiving Benefits	\$ 21,486,527
b. Active Members	\$ 16,331,547
c. Total Present Value of Future Benefits	\$ 37,818,074
2. Present Value of Future Normal Cost Contributions	\$ 7,259,468
3. Actuarial Accrued Liability (AAL): (1) - (2)	\$ 30,558,606
4. Actuarial Value of Assets	\$ 49,665,163
5. Unfunded Actuarial Accrued Liability (UAAL): (3) - (4)	\$ (19,106,557)



Appendix B: Development of Actuarial Value of Assets

Asset Data as of	12/31/2018
Beginning of Year Market Value of Assets	\$ 48,913,662
Contributions	855,737
Benefit Payments and Administrative Expenses	\$ (1,792,928)
Net Cash Flow	\$ (937,191)
Expected Investment Return	\$ 1,816,852
Expected End of Year Market Value of Assets	\$ 49,793,323
End of Year Market Value of Assets	\$ 47,930,669
Excess of Market Value Over Expected Market Value	\$ (1,862,654)
80% of 2018 Asset Gain/(Loss)	\$ (1,490,123)
60% of 2017 Asset Gain/(Loss)	(89,357)
40% of 2016 Asset Gain/(Loss)	176,962
20% of 2015 Asset Gain/(Loss)	(331,976)
Total Deferred Asset Gain/(Loss)	\$ (1,734,494)
Preliminary End of Year Actuarial Value of Assets	\$ 49,665,163
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	\$ 49,665,163
Estimated Net Investment Return on Actuarial Value	2.39%
Estimated Net Investment Return on Market Value	-0.09%

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 2018 of 2.39% and a recognized actuarial asset loss of \$665,000 during 2018.



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							
<u>Age</u>	<u>Service</u>						
	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>
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							
<u>Age</u>	<u>Service</u>						
	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>
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 Annuity 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 annuity 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 Annuity 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 and added to normal cost.

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: Calculation of investment return no longer net of administrative expenses.



Appendix D: Summary of Main Benefit 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 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.

For Registers of Deeds who began service September 10, 2009 or later, the benefit is minimum of (A,B):

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).

B = \$1,500.

Note: For valuation purposes, all members are valued under the pre-2009 provisions due to the immateriality of the difference in benefits

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
2019	\$ 47,931	\$ 0	\$ 0	\$ 1,854	\$ 72	\$ 1,762	\$ 47,766
2020	47,766	0	0	1,889	72	1,755	47,561
2021	47,561	0	0	1,919	71	1,747	47,317
2022	47,317	0	0	1,957	71	1,737	47,026
2023	47,026	0	0	1,992	71	1,725	46,689
2024	46,689	0	0	2,033	70	1,712	46,298
2025	46,298	0	0	2,072	69	1,696	45,853
2026	45,853	0	0	2,133	69	1,679	45,330
2027	45,330	0	0	2,157	68	1,659	44,764
2028	44,764	0	0	2,186	67	1,637	44,147
2029	44,147	0	0	2,204	66	1,613	43,490
2030	43,490	0	0	2,208	65	1,589	42,805
2031	42,805	0	0	2,214	64	1,563	42,091
2032	42,091	0	0	2,200	63	1,536	41,363
2033	41,363	0	0	2,177	62	1,510	40,634
2034	40,634	0	0	2,138	61	1,483	39,918
2035	39,918	0	0	2,088	60	1,457	39,227
2036	39,227	0	0	2,029	59	1,432	38,571
2037	38,571	0	0	1,966	58	1,409	37,956
2038	37,956	0	0	1,903	57	1,387	37,383
2039	37,383	0	0	1,829	56	1,367	36,864
2040	36,864	0	0	1,752	55	1,349	36,406
2041	36,406	0	0	1,673	55	1,333	36,012
2042	36,012	0	0	1,595	54	1,320	35,683
2043	35,683	0	0	1,519	54	1,309	35,419
2044	35,419	0	0	1,437	53	1,301	35,229
2045	35,229	0	0	1,354	53	1,295	35,117
2046	35,117	0	0	1,276	53	1,292	35,081
2047	35,081	0	0	1,196	53	1,292	35,125
2048	35,125	0	0	1,117	53	1,295	35,250
2049	35,250	0	0	1,041	53	1,302	35,458
2050	35,458	0	0	966	53	1,311	35,750
2051	35,750	0	0	894	54	1,323	36,125
2052	36,125	0	0	825	54	1,338	36,583
2053	36,583	0	0	759	55	1,357	37,126
2054	37,126	0	0	696	56	1,378	37,753
2055	37,753	0	0	636	57	1,403	38,463
2056	38,463	0	0	579	58	1,431	39,257
2057	39,257	0	0	525	59	1,461	40,135
2058	40,135	0	0	475	60	1,495	41,095
2059	41,095	0	0	427	62	1,532	42,137
2060	42,137	0	0	383	63	1,572	43,263
2061	43,263	0	0	342	65	1,615	44,470
2062	44,470	0	0	304	67	1,661	45,760
2063	45,760	0	0	269	69	1,710	47,132
2064	47,132	0	0	237	71	1,762	48,586
2065	48,586	0	0	207	73	1,817	50,123
2066	50,123	0	0	180	75	1,875	51,743
2067	51,743	0	0	156	78	1,936	53,445
2068	53,445	0	0	134	80	2,000	55,232
2069	55,232	0	0	114	83	2,068	57,102
2070	57,102	0	0	97	86	2,138	59,058
2071	59,058	0	0	81	89	2,212	61,099
2072	61,099	0	0	68	92	2,288	63,228
2073	63,228	0	0	56	95	2,368	65,445
2074	65,445	0	0	46	98	2,452	67,752
2075	67,752	0	0	38	102	2,538	70,151
2076	70,151	0	0	30	105	2,628	72,644
2077	72,644	0	0	24	109	2,722	75,232
2078	75,232	0	0	19	113	2,819	77,919
2079	77,919	0	0	15	117	2,920	80,707
2080	80,707	0	0	12	121	3,024	83,598



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
2081	83,598	0	0	9	125	3,132	86,597
2082	86,597	0	0	7	130	3,245	89,705
2083	89,705	0	0	5	135	3,361	92,927
2084	92,927	0	0	3	139	3,482	96,266
2085	96,266	0	0	2	144	3,607	99,727
2086	99,727	0	0	2	150	3,737	103,312
2087	103,312	0	0	1	155	3,871	107,028
2088	107,028	0	0	1	161	4,011	110,877
2089	110,877	0	0	0	166	4,155	114,865
2090	114,865	0	0	0	172	4,304	118,996
2091	118,996	0	0	0	178	4,459	123,277
2092	123,277	0	0	0	185	4,619	127,711
2093	127,711	0	0	0	192	4,786	132,305
2094	132,305	0	0	0	198	4,958	137,065
2095	137,065	0	0	0	206	5,136	141,995
2096	141,995	0	0	0	213	5,321	147,103
2097	147,103	0	0	0	221	5,512	152,395
2098	152,395	0	0	0	229	5,711	157,877
2099	157,877	0	0	0	237	5,916	163,556
2100	163,556	0	0	0	245	6,129	169,439
2101	169,439	0	0	0	254	6,349	175,534
2102	175,534	0	0	0	263	6,578	181,849
2103	181,849	0	0	0	273	6,814	188,390
2104	188,390	0	0	0	283	7,059	195,167
2105	195,167	0	0	0	293	7,313	202,187
2106	202,187	0	0	0	303	7,576	209,460
2107	209,460	0	0	0	314	7,849	216,995
2108	216,995	0	0	0	325	8,131	224,801
2109	224,801	0	0	0	337	8,424	232,888
2110	232,888	0	0	0	349	8,727	241,265
2111	241,265	0	0	0	362	9,041	249,944
2112	249,944	0	0	0	375	9,366	258,935
2113	258,935	0	0	0	388	9,703	268,249
2114	268,249	0	0	0	402	10,052	277,899
2115	277,899	0	0	0	417	10,413	287,895
2116	287,895	0	0	0	432	10,788	298,252
2117	298,252	0	0	0	447	11,176	308,980
2118	308,980	0	0	0	463	11,578	320,095



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 3.50%	Using Single Discount Rate of 3.75%
2019	\$ 47,931	\$ 1,854	\$ 1,854	\$ 0	\$ 1,820	\$ 0	\$ 1,820
2020	47,766	1,889	1,889	0	1,787	0	1,787
2021	47,561	1,919	1,919	0	1,750	0	1,750
2022	47,317	1,957	1,957	0	1,720	0	1,720
2023	47,026	1,992	1,992	0	1,688	0	1,688
2024	46,689	2,033	2,033	0	1,660	0	1,660
2025	46,298	2,072	2,072	0	1,631	0	1,631
2026	45,853	2,133	2,133	0	1,618	0	1,618
2027	45,330	2,157	2,157	0	1,578	0	1,578
2028	44,764	2,186	2,186	0	1,541	0	1,541
2029	44,147	2,204	2,204	0	1,498	0	1,498
2030	43,490	2,208	2,208	0	1,446	0	1,446
2031	42,805	2,214	2,214	0	1,397	0	1,397
2032	42,091	2,200	2,200	0	1,339	0	1,339
2033	41,363	2,177	2,177	0	1,276	0	1,276
2034	40,634	2,138	2,138	0	1,208	0	1,208
2035	39,918	2,088	2,088	0	1,137	0	1,137
2036	39,227	2,029	2,029	0	1,066	0	1,066
2037	38,571	1,966	1,966	0	995	0	995
2038	37,956	1,903	1,903	0	928	0	928
2039	37,383	1,829	1,829	0	860	0	860
2040	36,864	1,752	1,752	0	794	0	794
2041	36,406	1,673	1,673	0	731	0	731
2042	36,012	1,595	1,595	0	671	0	671
2043	35,683	1,519	1,519	0	616	0	616
2044	35,419	1,437	1,437	0	562	0	562
2045	35,229	1,354	1,354	0	511	0	511
2046	35,117	1,276	1,276	0	464	0	464
2047	35,081	1,196	1,196	0	419	0	419
2048	35,125	1,117	1,117	0	377	0	377
2049	35,250	1,041	1,041	0	339	0	339
2050	35,458	966	966	0	303	0	303
2051	35,750	894	894	0	270	0	270
2052	36,125	825	825	0	240	0	240
2053	36,583	759	759	0	213	0	213
2054	37,126	696	696	0	188	0	188
2055	37,753	636	636	0	166	0	166
2056	38,463	579	579	0	146	0	146
2057	39,257	525	525	0	127	0	127
2058	40,135	475	475	0	111	0	111
2059	41,095	427	427	0	96	0	96
2060	42,137	383	383	0	83	0	83
2061	43,263	342	342	0	72	0	72
2062	44,470	304	304	0	61	0	61
2063	45,760	269	269	0	52	0	52
2064	47,132	237	237	0	44	0	44
2065	48,586	207	207	0	37	0	37
2066	50,123	180	180	0	31	0	31
2067	51,743	156	156	0	26	0	26
2068	53,445	134	134	0	22	0	22
2069	55,232	114	114	0	18	0	18
2070	57,102	97	97	0	15	0	15
2071	59,058	81	81	0	12	0	12
2072	61,099	68	68	0	9	0	9
2073	63,228	56	56	0	8	0	8
2074	65,445	46	46	0	6	0	6
2075	67,752	38	38	0	5	0	5
2076	70,151	30	30	0	4	0	4
2077	72,644	24	24	0	3	0	3
2078	75,232	19	19	0	2	0	2
2079	77,919	15	15	0	2	0	2
2080	80,707	12	12	0	1	0	1



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 3.50%	Using Single Discount Rate of 3.75%
2081	83,598	9	9	0	1	0	1
2082	86,597	7	7	0	1	0	1
2083	89,705	5	5	0	0	0	0
2084	92,927	3	3	0	0	0	0
2085	96,266	2	2	0	0	0	0
2086	99,727	2	2	0	0	0	0
2087	103,312	1	1	0	0	0	0
2088	107,028	1	1	0	0	0	0
2089	110,877	0	0	0	0	0	0
2090	114,865	0	0	0	0	0	0
2091	118,996	0	0	0	0	0	0
2092	123,277	0	0	0	0	0	0
2093	127,711	0	0	0	0	0	0
2094	132,305	0	0	0	0	0	0
2095	137,065	0	0	0	0	0	0
2096	141,995	0	0	0	0	0	0
2097	147,103	0	0	0	0	0	0
2098	152,395	0	0	0	0	0	0
2099	157,877	0	0	0	0	0	0
2100	163,556	0	0	0	0	0	0
2101	169,439	0	0	0	0	0	0
2102	175,534	0	0	0	0	0	0
2103	181,849	0	0	0	0	0	0
2104	188,390	0	0	0	0	0	0
2105	195,167	0	0	0	0	0	0
2106	202,187	0	0	0	0	0	0
2107	209,460	0	0	0	0	0	0
2108	216,995	0	0	0	0	0	0
2109	224,801	0	0	0	0	0	0
2110	232,888	0	0	0	0	0	0
2111	241,265	0	0	0	0	0	0
2112	249,944	0	0	0	0	0	0
2113	258,935	0	0	0	0	0	0
2114	268,249	0	0	0	0	0	0
2115	277,899	0	0	0	0	0	0
2116	287,895	0	0	0	0	0	0
2117	298,252	0	0	0	0	0	0
2118	308,980	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, 2018

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	1	0	0	0	0	0	0	0	0	0	1
	0	49,278	0	0	0	0	0	0	0	0	0	49,278
35 to 39	0	1	1	0	1	0	0	0	0	0	0	3
	0	48,232	93,926	0	56,052	0	0	0	0	0	0	66,070
40 to 44	0	1	1	1	3	1	0	0	0	0	0	7
	0	55,412	52,492	55,178	62,861	72,519	0	0	0	0	0	60,598
45 to 49	0	2	1	5	3	2	3	0	0	0	0	16
	0	71,508	37,511	75,277	65,719	75,604	72,801	0	0	0	0	70,230
50 to 54	0	4	0	3	2	4	5	1	0	0	0	19
	0	71,669	0	68,628	67,198	62,183	66,500	89,829	0	0	0	68,317
55 to 59	3	3	1	3	2	2	2	2	2	0	20	
	2,696	64,502	92,254	55,726	65,743	51,039	56,008	86,492	73,976	0	56,377	
60 to 64	0	0	3	5	2	1	4	2	2	2	21	
	0	0	59,782	57,210	60,099	71,389	64,223	73,015	77,330	59,649	63,517	
65 to 69	0	2	1	0	2	0	3	1	0	0	9	
	0	96,268	78,244	0	95,704	0	68,834	63,616	0	0	81,367	
70 & Up	0	0	1	1	0	1	0	1	0	0	4	
	0	0	72,031	61,716	0	63,871	0	54,570	0	0	63,047	
Total	3	14	9	18	15	11	17	7	4	2	100	
	2,696	69,190	67,312	64,022	67,952	64,527	66,254	75,290	75,653	59,649	65,393	

Table excludes one former register of deeds who 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.



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, 2018

Age	Men		Women	
	Number	Allowances	Number	Allowances
55			1	\$18,000
57			1	\$18,000
59			1	\$18,000
60	1	\$18,000	3	\$54,000
61			2	\$36,000
62			4	\$72,000
63			4	\$72,000
64			1	\$18,000
65	1	\$18,000	3	\$54,000
66	3	\$54,000	5	\$90,000
67			3	\$54,000
68			2	\$36,000
69	1	\$18,000	7	\$126,000
70	1	\$18,000	5	\$90,000
71	1	\$18,000	4	\$72,000
72	1	\$18,000	4	\$72,000
73			6	\$108,000
74			6	\$108,000
76			2	\$36,000
77	1	\$18,000	1	\$18,000
78	1	\$18,000	4	\$70,650
79			3	\$54,000
80			3	\$54,000
82			2	\$36,000
83	1	\$18,000	1	\$18,000
85			1	\$18,000
84	1	\$18,000		
86	1	\$18,000	2	\$36,000
87			1	\$18,000
89			2	\$36,000
93			1	\$18,000
0				
95	1	\$18,000		
Total	15	\$270,000	85	\$1,528,650