Gabriel Roeder Smith & Company
Consultants & Actuaries

FIRE AND POLICE PENSION FUND, SAN ANTONIO

REPORT OF AN ACTUARIAL AUDIT

Final Actuarial Audit Report in Accordance with Section 802.1012(h) of the Texas Government Code

NOVEMBER 6, 2013

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
5605 N. MacArthur Blvd.
Suite 870
Irving, TX 75038-2631
469.524.0000 phone
469.524.0003 fax
www.gabrielroeder.com

November 6, 2013

Mr. Andre DeLeon, CPA
Controller
City of San Antonio
Finance Department
Riverview Towers
111 Soledad, Fifth Floor
San Antonio, TX 78205

Re: Final Actuarial Audit Report in Accordance with Section 802.1012(h) of the Texas Government Code

Dear Mr. DeLeon:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the October 1, 2012 Actuarial Valuation of the Fire and Police Pension Fund, San Antonio (SAFPPF). The following documents are intended to demonstrate that the City of San Antonio (the City) has complied with Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems with total assets of at least $100 million.

The following four documents will constitute the final actuarial audit report, as required by Section 802.1012(h) of the Texas Government Code:

1. This cover letter,
2. Preliminary draft of the actuarial audit report, dated September 17, 2013, and
3. Retained actuary response to the preliminary draft of the actuarial audit report, dated October 10, 2013.

Following the delivery of the preliminary draft of the actuarial audit report to SAFPPF on September 17, 2013, GRS requested a response to the preliminary draft, as required by Section 802.1012(g) of the Texas Government Code. The retained actuary for SAFPPF provided a response to the preliminary draft on October 10, 2013.

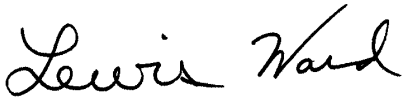
GRS is pleased to report to the City that, in our professional opinion, the October 1, 2012 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of SAFPPF.

The preliminary draft of the actuarial audit report includes suggestions to improve the overall communication of the actuarial assumptions in the October 1, 2012 actuarial valuation report. The draft report should have recommended that the retained actuary incorporate the noted enhancements into the October 1, 2013 actuarial valuation report (and not the October 1, 2012 actuarial valuation report).

The undersigned are independent actuaries and consultants. Mr. Falls is an Enrolled Actuary, a Fellow of the Society of Actuaries, and a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. Both Mr. Falls and Mr. Ward are experienced in performing valuations for large public retirement systems.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

R. Ryan Falls, FSA, FCA, MAAA, EA
Senior Consultant



Lewis Ward
Consultant

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GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

FIRE AND POLICE PENSION FUND, SAN ANTONIO

REPORT OF AN ACTUARIAL AUDIT

Preliminary Draft in Accordance with Section 802.1012(f) of the Texas Government Code

SEPTEMBER 17, 2013

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
5605 N. MacArthur Blvd.
Suite 870
Irving, TX 75038-2631
469.524.0000 phone
469.524.0003 fax
www.gabrielroeder.com

September 17, 2013

Mr. Andre DeLeon, CPA
Controller
City of San Antonio
Finance Department
Riverview Towers
111 Soledad, Fifth Floor
San Antonio, TX 78205

Dear Mr. DeLeon:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the October 1, 2012 Actuarial Valuation of the Fire and Police Pension Fund, San Antonio (SAFPPF). We are grateful to the City of San Antonio (the City) staff, SAFPPF staff, and The Segal Company (Segal), the retained actuary, for their cooperation throughout the actuarial audit process.

This actuarial audit involves an independent verification and analysis of the assumptions, procedures, methods, and conclusions used by the retained actuary for SAFPPF, in the valuation of SAFPPF as of October 1, 2012, to ensure that the conclusions are technically sound and conform to the appropriate Standards of Practice as promulgated by the Actuarial Standards Board.

GRS is pleased to report to the City, in our professional opinion, the October 1, 2012 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of SAFPPF.

Throughout this report we make a number of suggestions for ways to improve the work product. We hope that the retained actuary and SAFPPF find these items helpful. Thank you for the opportunity to work on this assignment.

Mr. Falls is an Enrolled Actuary, a Fellow of the Society of Actuaries, and a Member of the American Academy of Actuaries. He meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

R. Ryan Falls, FSA, FCA, MAAA, EA
Senior Consultant

Lewis Ward
Consultant

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

The City of San Antonio (the City) engaged Gabriel, Roeder, Smith & Company (GRS) for an actuarial audit of the recent actuarial valuations, studies and reports on the Fire and Police Pension Fund, San Antonio (SAFPPF) performed by the retained actuary. The project commenced in July of 2013 when we began receiving information from SAFPPF staff.

This Actuarial Audit includes the following:

- Review and analysis of the calculation results, including an evaluation of the data used for reasonableness and consistency as well as a review of the mathematical calculations for completeness and accuracy, based on a detailed review of a representative sample of the current plan participants.
- Evaluation of the actuarial cost method and the actuarial asset valuation method in use and whether other methods may be more appropriate for SAFPPF.
- Verification of the reasonableness of the calculation of the unfunded actuarial accrued liability and the amortization period used under the actuarial cost method.
- Review the demographic and economic actuarial assumptions for consistency, reasonableness and compatibility. Such assumptions shall include, but are not limited to: mortality, retirement and separation rates, levels of pay adjustments, rates of investment return and disability factors.
- Assessment of the adherence to Actuarial Standards of Practice (ASOPs) published by the American Academy of Actuaries.
- Assessment of the adherence to the Texas Pension Review Board (PRB) Guidelines for Actuarial Soundness.
- A full replication of the October 1, 2012 actuarial valuation results was not covered under the scope of this engagement.

This actuarial audit will satisfy the requirements of Section 802.1012 of the Texas Government Code which requires an actuarial audit of public retirement systems in Texas with total assets of at least $100 million.

Summary of Findings

Based on our review, the actuarial valuations, studies, and reports of SAFPPF are reasonable, used appropriate assumptions, complied with Actuarial Standards of Practice, and complied with the Texas PRB Guidelines for Actuarial Soundness. We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the October 1, 2012 actuarial valuation.

Actuarial Assumptions

- In order to improve the overall completeness of the next actuarial experience review report, we recommend that the retained actuary provide more context to the assumptions for accrued sick leave, marriage after retirement, and spousal beneficiary load. Each of these assumptions are reasonable, as stated, but the actuarial experience review report provides very little framework

for how the assumptions were developed. Additional framework for the assumption setting will allow the retained actuary to better monitor these assumptions in the future and make modifications, as needed.

- At the next experience study, we recommend that the retained actuary consider the suggested approaches for developing the recommended assumptions for retirement rates and the productivity and merit components of the salary scale assumption.

Actuarial Methods and Funding Policy

- We have no recommendations regarding the application of the actuarial methods and funding policy.

Actuarial Valuation Results

- We recommend that the retained actuary incorporate the following enhancements into their valuation of active participants: use the appropriate projected average pay in the calculation of future death and disability benefits, and apply the sick leave assumption to all service in the calculation of the present value of benefits at the member's attained age.

Content of Valuation Report

- In order to improve the ability of the report to communicate the assumptions, methods and plan provisions incorporated into the October 1, 2012 actuarial valuation, we recommend that the retained actuary incorporate the noted enhancements to the October 1, 2012 actuarial valuation report.

SECTION II

GENERAL ACTUARIAL AUDIT PROCEDURE

General Actuarial Audit Procedure

At the commencement of this engagement, GRS requested the information necessary to thoroughly review the work product of the retained actuary. Specifically, GRS received and reviewed the following items:

- Actuarial report as of October 1, 2012,
- Presentation to the Board regarding the October 1, 2012 actuarial valuation,
- Presentation to the Board regarding the economic assumptions, dated September 25, 2012,
- Actuarial Experience Review for the period October 1, 2004 through September 30, 2009, dated October 20, 2010,
- A full set of census data for plan participants and beneficiaries as of October 1, 2012 used by the retained actuary for the actuarial valuation,
- SAFPPF's Statement of Investment Objectives and Manager Mandates, most recently reviewed and updated by the Board in June 2013,
- SAFPPF Pension Law, as amended on October 1, 2009,
- Detailed calculations from the retained actuary for a sampling of 11 active plan participants as of October 1, 2012, and
- Detailed calculations from the retained actuary for a sampling of 11 inactive plan participants as of October 1, 2012.

In performing our review, we:

- Reviewed the plan document and applicable statutes to understand the benefits provided by SAFPPF,
- Reviewed the appropriateness of the actuarial assumptions,
- Reviewed the actuarial valuation reports, and
- Reviewed the detailed liability calculation of the sample lives to ensure that the calculations were consistent with the stated plan provisions, actuarial methods and assumptions.

The entire review, which follows, is based on our review of this information and subsequent correspondence with the retained actuary for clarification and further documentation.

Key Actuarial Concepts

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement plan using the set of actuarial assumptions adopted by the Board. It is designed to simulate all of the dynamics of such a retirement plan for each current participant of the plan, including:

- Accrual of future service,
- Changes in compensation,
- Leaving the plan through retirement, disability, withdrawal, or death, and
- Determination of and payment of benefits from the plan.

This simulated dynamic is applied to each active member in the plan and results in a set of expected future benefit payments for that member. Discounting those future payments for the likelihood of survival at the assumed rate of investment return produces the Total Present Value of Plan Benefits

(TPV) for that participant. The actuarial cost method will allocate this TPV between the participant's past service (actuarial accrued liability) and future service (future normal costs).

Guidelines for Actuarial Soundness

During our actuarial audit of SAFPPF, we reviewed the actuarial valuation of SAFPPF from the perspective of the Texas PRB Guidelines for Actuarial Soundness, as adopted September 28, 2011. The Guidelines are:

1. The funding of a pension plan should reflect all plan obligations and assets.
2. The allocation of the normal cost portion of the contributions should be level or declining as a percent of payroll over all generations of taxpayers, and should be calculated under applicable actuarial standards.
3. Funding of the unfunded actuarial accrued liability should be level or declining as a percent of payroll over the amortization period.
4. Funding should be adequate to amortize the unfunded actuarial accrued liability over a period not to exceed 40 years, with 15 to 25 years being a more preferable target. Benefit increases should not be adopted if all plan changes being considered cause a material increase in the amortization period and if the resulting amortization period exceeds 25 years.
5. The choice of assumptions should be reasonable, and should comply with applicable actuarial standards.

These key actuarial concepts will be discussed in more detail throughout this report.

SECTION III

ACTUARIAL ASSUMPTIONS

Actuarial Assumptions

Overview

The actuarial valuation report contains a description of the actuarial assumptions which were used in the actuarial valuation as of October 1, 2012. Additionally, the retained actuary published an actuarial experience report, dated October 20, 2010. We have reviewed this detail in order to assess the reasonableness of the assumptions used in the actuarial valuation.

The set of actuarial assumptions is one of the foundations upon which an actuarial valuation is based. An actuarial valuation is, essentially, a statistical projection of the amount and timing of future benefits to be paid under the retirement plan. In any statistical projection, assumptions as to future events will drive the process. Actuarial valuations are no exception.

It is important to understand the nature of the retirement plan and the plan sponsor when assessing the reasonableness of the actuarial assumptions. No projection of future events can be labeled as "correct" or "incorrect". However, there is a "range of reasonableness" for each assumption. We evaluate individual elements as follows:

- Whether or not they fall within the range of reasonableness, and
- If they fall within that range, whether they are reasonable for the actuarial valuation of the plan.

Actuarial assumptions for the valuation of retirement plans are of two types: (i) demographic assumptions, and (ii) economic assumptions. We have assessed the reasonableness of both types as part of this actuarial audit.

Demographic Assumptions

General

These assumptions simulate the movement of participants into and out of plan coverage and between status types. Key demographic assumptions are:

- turnover among active members,
- retirement patterns among active members, and
- healthy retiree mortality.

In addition, there are a number of other demographic assumptions with less substantial impact on the results of the process, such as:

- disability incidence and mortality among disabled benefit recipients,
- mortality among active members,
- distribution of form of payment selection, and
- percent of active members who are married and the relationship of the ages of participants and spouses.

Demographic assumptions for a retirement plan such as SAFPPF are normally established by statistical studies of recent actual experience, called experience studies. Such studies underlie the assumptions used in the valuations.

Once it is determined whether or not an assumption needs adjustment, setting the new assumption depends upon the extent to which the current experience is an indicator of the long-term future. The measurement of experience is normally affected by simply counting occurrences of an event. For example, in reviewing retirement patterns, an actuary might count the number of actual retirees among males aged 50 with 20 years of service. These retirements would be compared against the number of total people in that group to generate a raw rate of retirement for that group.

- Full credibility may be given to the current experience. Under this approach the new assumptions are set very close to recent experience.
- Alternatively, the recent experience might be given only partial credibility. Thus, the new assumptions may be set by blending the recent experience with the prior assumption.
- If recent experience is believed to be atypical of the future, such knowledge is taken into account.

Finally, it may be determined that the size of the plan does not provide a large enough sample to make the data credible. In such cases, the experience of the plan may be disregarded and the assumption is set based upon industry standards for similar groups.

Actuarial Experience Review Report

We believe that the actuarial experience review report, dated October 20, 2010, did a good job, in most cases of, describing each assumption, providing context for the basis of each assumption, and outlining the reason for the proposed assumption going forward.

In order to improve the overall completeness of the next actuarial experience review report, we recommend that the retained actuary provide more context to the assumptions for accrued sick leave, marriage after retirement, and spousal beneficiary load. Each of these assumptions appears to be reasonable as stated, but the actuarial experience review report provides very little framework for how the assumptions were developed. Additional framework for the assumption setting will allow the retained actuary to better monitor these assumptions in the future and make modifications, as needed.

We have additional recommendations concerning the selection of the retirement rates and the productivity and merit components of the salary scale assumption. These recommendations will be discussed in the following sections.

Observations on Assumptions

Overall, it appears that the current demographic assumptions are reasonable. Below, we offer general observations and considerations for the retained actuary based on our experiences with similar plans.

Retirement – Members are eligible to retire after 20 years of service. The rates at which participants are assumed to retire are based on the member's service. The current assumption was developed to be consistent with the actual experience for police and fire members, separately, over the most recent

experience study period. We noted that the actual number of police officer retirements exceeded the assumed number of retirements both before and after the assumption change. Typically, this assumption is set such that the assumed number of retirements is more than that actual number of retirements to add a level of conservatism into the retirement assumption.

Although we believe that the retirement rate assumption is reasonable for SAFPPF, we would recommend that the retained actuary include some conservatism in the retirement assumption for police officers in the next experience review.

Turnover – The rates at which members are assumed to withdraw (or turnover) prior to eligibility for retirement are based on the member's age. The current assumption was developed to be consistent with the actual experience for police and fire members, separately, over the most recent experience study period. We believe that the turnover rate assumption is appropriate for SAFPPF.

Mortality – The most important demographic assumption is mortality because this assumption is a predictor of how long pension payments will be made. The current mortality assumption for each type of plan member (i.e., active members, healthy retirees, and disability retirees) is generally based on the 1994 Group Annuity Mortality (94GAM) table. Specifically, healthy male plan members are assumed to have mortality in accordance with the base 94GAM table. This assumption does not explicitly include a provision for mortality improvement in the future. However, the valuation report indicates that the tables contain a "provision appropriate to reasonably reflect future mortality improvement." Additionally, the actuarial experience review report indicates that "the proposed tables allow for a 9% margin between actual experience and expected deaths." Additionally, healthy female plan members and disabled plan members are assumed to have mortality in accordance with a modification of the base 94GAM table.

This is an established mortality assumption and is reasonable for this purpose.

Disability Incidence – Very little retirement plan experience generally exists in order to set a reasonable assumption based on actual retirement plan experience. The current assumption for disability incidence is reasonable for this purpose.

Economic Assumptions

General

These assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase. All economic assumptions are built upon an underlying inflation assumption.

Inflation

Inflation refers to mean price inflation as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It primarily impacts investment return and salary increases.

The current explicit inflation assumption is 3.50%. We consider this assumption to be within the reasonable range. Many economists forecast inflation rates lower than the current 3.50% assumption, but these forecasts are often for shorter periods than are necessary in preparing an actuarial valuation.

Investment Return

The investment return assumption is one of the principal assumptions in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date to determine the liabilities of the retirement plan. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. The current assumption incorporates inflation of 3.50% per annum, plus an annual real rate of return of 4.00%, net of investment fees paid from the trust, for an assumed nominal rate of return of 7.50%.

We believe an appropriate approach to reviewing an investment return assumption is to determine the median expected portfolio return given the retirement plan's target allocation and a given set of capital market assumptions. Per the Statement of Investment Objectives and Manager Mandates, most recently reviewed and updated by the Board in June 2013, SAFPPF's current target asset allocation is:

Asset Class	Target
Large Cap U.S. Equities	15%
Small Cap U.S Equities	3%
Developed International Equities	15%
Emerging International Equities	6%
Hedge Funds	10%
Private Equity	7%
Risk Parity	5%
High Yield	7%
Bank Loans	6%
Emerging Market Debt	7%
Private Debt	7%
Real Estate	9%
Real Assets	3%
Cash	0%
Total	100%

Because GRS is a benefits consulting firm and does not develop or maintain its own capital market assumptions, we reviewed assumptions developed and published by the following investment consulting firms:

- JP Morgan
- NEPC
- PCA
- Mercer
- RV Kuhns
- Towers Watson
- SunGuard
- HewittEnnisKnupp

These investment consulting firms periodically issue reports that describe their capital market assumptions That is, their estimates of expected returns, volatility, and correlations. While these assumptions are developed based upon historical analysis, many of these firms also incorporate forward looking adjustments to better reflect near-term expectations. The estimates for core

investments (i.e. fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds.

Given SAFPPF's current target asset allocation and the investment firms' capital market assumptions for 2013, the development of the average nominal return, net of investment fees paid from the trust, is provided in the following table:

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	*Estimated* Investment Fees Paid from the Trust	Expected Nominal Return Net of Expenses (6)-(7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	6.59%	3.00%	3.59%	3.50%	7.09%	0.50%	6.59%
2	7.01%	2.50%	4.51%	3.50%	8.01%	0.50%	7.51%
3	7.05%	2.40%	4.65%	3.50%	8.15%	0.50%	7.65%
4	7.81%	3.00%	4.81%	3.50%	8.31%	0.50%	7.81%
5	7.35%	2.50%	4.85%	3.50%	8.35%	0.50%	7.85%
6	7.65%	2.30%	5.35%	3.50%	8.85%	0.50%	8.35%
7	7.99%	2.51%	5.48%	3.50%	8.98%	0.50%	8.48%
8	8.62%	2.50%	6.12%	3.50%	9.62%	0.50%	9.12%
Average	7.51%	2.59%	4.92%	3.50%	8.42%	0.50%	7.92%

We determined, for each firm, the expected nominal return rate based on SAFPPF's target allocation and then subtracted that firm's expected inflation to arrive at their expected real return in column (4). Then we added back SAFPPF's current 3.50% inflation assumption and subtracted an estimated 0.50% for investment fess paid from the trust to get an expected nominal return net of expenses. As the table shows, the resulting average arithmetic one-year return of the eight firms is 7.92%.

In addition to examining the expected one-year return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net return that could be expected to be produced by the investment portfolio. Therefore, the following table provides the 25th, 50th, and 75th percentiles of the 20-year geometric average of the expected nominal return, net of investment fees paid from the trust, as well as the probability of exceeding the current 7.50% assumption.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding
	25th	50th	75th	7.50%*
(1)	(2)	(3)	(4)	(5)
1	4.60%	6.10%	7.62%	26.7%
2	4.90%	6.76%	8.65%	39.6%
3	5.92%	7.27%	8.63%	45.4%
4	5.33%	7.12%	8.94%	44.3%
5	5.25%	7.11%	9.00%	44.4%
6	5.77%	7.62%	9.50%	51.7%
7	5.78%	7.70%	9.64%	52.7%
8	6.65%	8.44%	10.26%	63.7%
Average	**5.53%**	**7.26%**	**9.03%**	**46.1%**

* SAFPPF's current return assumption net of expenses is 7.50%.

As the analysis shows, there is a 50% likelihood that the 20-year average net nominal return will be between 5.53% and 9.03%. This is our assessment of the best-estimate range under ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, as it currently exists. Further, the average result of all eight firms indicates there is a 46% chance that the current target asset allocation will produce an average return that exceeds 7.50% over the next 20 years.

As a point of reference, the National Association of State Retirement Administrators published a survey in March 2013 of 126 large public retirement systems which reflects the nominal assumption in use, or announced for use, as of the date of the survey. The average investment return assumption for responding systems was 7.77%.

The current investment return assumption falls within our best-estimate range and we believe that the assumption is reasonable for this purpose.

There are proposed changes to ASOP No. 27 which may significantly reduce the range from which the investment return assumption will be chosen. While these changes have not been adopted, SAFPPF may wish to discuss the possible impact of these changes with their retained actuary.

Expense Assumptions

As previously noted, the investment return assumption is stated net of expected investment fees paid from the trust. Additionally, the actuarial valuation included an explicit assumption for administrative expenses of $2,750,000 for the year beginning October 1, 2012 which is approximately equal to the actual administrative expenses of SAFPPF for the prior two years. These are reasonable procedures for accounting for anticipated plan expenses. Further, the actual rate of return calculations presented in Chart 11 of the actuarial valuation report are calculated consistently with this procedure.

Earnings Progression

In general, assumed rates of pay increase are often constructed as the total of three main components:

- Price Inflation – currently 3.50%
- Economic Productivity Increases (base pay increases above price inflation) – currently 0.75%
- Merit, Promotion, and Longevity – This portion of the salary increase assumption reflects components such as promotional increases as well as "step" increases and longevity pay. This portion of the assumption is not related to inflation.

In the context of a typical employer pay scale, pay levels are set for various employment grades, or "steps". In general, this pay scale is adjusted as follows:

- The inflation and economic productivity assumptions, collectively referred to as wage inflation, reflect the overall increases of the entire pay scale, and
- The Merit, Promotion, and Longevity increase assumption reflects movement of members through the pay scale.

In the last experience review, the retained actuary stated that the overall salary increases were in line with the assumed rates and recommended no change to the cumulative rates. During the period reviewed, the actual price inflation was significantly lower than the assumed price inflation. As a result, the actual economic productivity and merit increases observed during the experience period must have been significantly higher than the assumed increases.

The retained actuary has experience with SAFPPF and may have additional information regarding the appropriateness of the long-term expectation for salary increases above inflation. As a result, this comment is not intended to imply that the current assumption is unreasonable, but only that the retained actuary consider modifying the methodology used in selecting the recommended assumption. Since the retained actuary uses a building block approach to set the salary scale assumption (which is the preferred approach), we recommend that the retained actuary use the actual price inflation to determine the economic productivity and merit increases observed during the next experience review.

Summary

The set of actuarial assumptions and methods, taken in combination, is within the range of reasonableness and generally established in accordance with ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, ASOP No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, and the Texas PRB Guidelines for Actuarial Soundness.

We have the following recommendations regarding the actuarial assumptions:

(1) In order to improve the overall completeness of the next actuarial experience review report, we recommend that the retained actuary provide more context to the assumptions for accrued sick leave, marriage after retirement, and spousal beneficiary load. Each of these assumptions appear to be reasonable, as stated, but the actuarial experience review report provides very little framework for how the assumptions were developed. Additional framework for the assumption setting will allow the retained actuary to better monitor these assumptions in the future and make modifications, as needed.

(2) During the next experience review, we recommend that the retained actuary consider the suggested approaches for developing the proposed assumptions for retirement rates and the productivity and merit components of the salary scale assumption.

SECTION IV

ACTUARIAL METHODS AND FUNDING POLICY

Actuarial Methods and Funding Policy

Actuarial Cost Methods

The ultimate cost of SAFPPF is equal to the benefits paid plus the expenses related to operating SAFPPF. This cost is funded through contributions to SAFPPF plus the investment return on accumulated contributions which are not immediately needed to pay benefits or expenses. The projected level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, participant characteristics, investment experience, and the actuarial cost method.

An actuarial cost method is a mathematical process for allocating the dollar amount of the total present value of plan benefits (TPV) between future normal costs and actuarial accrued liability (AAL). The retained actuary uses the Entry Age Normal actuarial cost method, characterized by:

(1) Normal Cost – the level percent of payroll contribution, paid from each participant's date of hire to date of retirement, which will accumulate enough assets at retirement to fund the participant's projected benefits from retirement to death.

(2) Actuarial Accrued Liability – the assets which would have accumulated to date had contributions been made at the level of the normal cost since the date of the first benefit accrual, if all actuarial assumptions had been exactly realized, and there had been no benefit changes.

The Entry Age Normal actuarial cost method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers. The Public Fund Survey published in 2011, sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement, surveyed 126 retirement systems (mostly statewide). Over 75% of the plans reported using the Entry Age Normal actuarial cost method. Therefore, the retained actuary's stated methods for allocating the liabilities of SAFPPF are certainly in line with national trends.

We have reviewed the retained actuary's application of the Entry Age Normal actuarial cost method and we believe that the method is reasonable and appropriately applied.

Asset Valuation Method

Sharp short-term swings in market value can result in large fluctuations in the contributions required to fund SAFPPF. Thus, many actuaries use an asset valuation method which smoothes out these fluctuations in support of achieving level contributions. A good asset valuation method places values on a retirement plan's assets which are related to the current market value, but which will also produce a smoother pattern of costs.

ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations, provides a framework for the determination of the actuarial value of assets (AVA), emphasizing that the method should bear a reasonable relationship to the market value of assets (MVA), recognize investment gains

and losses over an appropriate time period, and avoid systematic bias that would overstate or understate the AVA in comparison to MVA.

The actuarial valuation of SAFPPF currently utilizes a smoothed asset valuation method that immediately recognizes income equal to the expected return on valuation assets, based on the assumed valuation interest rate (7.50%). The method also recognizes 20% of the difference between the expected AVA and the actual MVA each year.

The smoothing method used for the actuarial valuation of SAFPPF is common among public employee retirement systems. We feel that this method complies with ASOP No. 44. Additionally, this method is reasonable and appropriately applied for the valuation.

Funding Policy

Based on the provisions outlined in the October 1, 2012 actuarial valuation report, the members contribute 12.32% of pay and the City contributes 24.64% of pay. According to the results of the October 1, 2012 actuarial valuation, the total contribution rate of 36.96% of pay is sufficient to amortize the unfunded actuarial accrued liability over 7.12 years.

The Texas PRB Guidelines for Actuarial Soundness indicate that funding should be adequate to amortize the unfunded actuarial accrued liability over a period not to exceed 40 years, with 15 to 25 years a more preferable target. As a result, the contribution policy as of October 1, 2012 complies with the PRB's Guidelines.

Summary

We believe that the actuarial methods and funding policy are reasonable and appropriately applied. As a result, we have no recommendations regarding the application of the actuarial methods and funding policy.

SECTION V

ACTUARIAL VALUATION RESULTS

Actuarial Valuation Results

Benefits

Every employer is different and every employer's retirement plan is different. Each employer has a set of workforce and financial needs that dictate the type of retirement benefit that is most appropriate for their employees. Additionally, the amount of resources available to allocate to the retirement plan will dictate the level of benefits provided by the retirement plan. Regardless of the reasons for the benefit design, the employer must understand the liability and contribution requirements associated with the benefits promised. As a result, the actuarial valuation and the resulting funding policy contribution must properly reflect the benefit structure of the retirement plan.

In general, the benefits promised by SAFPPF were reasonably incorporated in the actuarial valuation of SAFPPF.

Actuarial Valuation Results

As part of its review, GRS requested sample participant calculations from the retained actuary to ensure that the retained actuary valued the correct benefit levels, used the correct assumptions, and calculated the liabilities correctly on an individual basis.

Generally accepted actuarial standards and practices provide actuaries with the basic mathematics and frameworks for calculating the actuarial results. When it comes to applying those actuarial standards to complex calculations, differences may exist due to individual opinion on the best way to make those complex calculations. This may lead to differences in the calculated results, but these differences should not be material.

Active Participants. At the onset of the review, we requested that the retained actuary provide sample liability calculations that show probabilities of decrement by age, estimated pay and benefits by age, and values of benefits or pay by age for each decrement in sufficient detail to verify the calculation of the present value of benefits, present value of pay, accrued liability and normal cost for 11 active participants. The retained actuary provided all of the detail necessary to verify the calculation of the present value of benefits and present value of pay at attained age for all 11 members. Additionally, the retained actuary provided all of the details necessary to verify the calculation of the accrued liability and normal cost for three of the members.

We have previously noted our comments on the application of the actuarial cost method (Section IV) and the assumptions (Section III). We identified a few additional elements of the actuarial valuation of active participants that should be corrected for the next valuation. The sum of these issues should not have a material impact on the actuarial valuation of SAFPPF.

> *Final Average Pay for Death and Disability Benefits* – The average salary used to calculate the projected disability and death benefits is based on the average salary one year after the age at decrement. As a result, the average salary used to calculate the projected disability and death

benefits is different than the average salary used to calculate projected retirement benefits at the same decrement age.

In the next actuarial valuation, we recommend that the retained actuary align the average salary used for disability and death benefits with the average salary used for retirement benefits. The disability and death benefits account for a small percentage of SAFPPF's overall liability, so this modification will not have a material impact on the actuarial valuation of SAFPPF.

Application of Sick Leave Assumption – The actuarial valuation includes an assumption that "an increase for accrued sick leave equal to 1.33% for each year of service will be made to recognize inclusion of sick leave in calculating Fund benefits." It was the understanding of the retained actuary that the service data for active members provided by SAFPPF, for purposes of preparing the annual actuarial valuation, included sick leave. As a result, the retained actuary only applied the accrued sick leave assumption to future service in the calculation of the present value of future benefits at the member's attained age.

According to the staff of SAFPPF, the service data provided to the retained actuary for active members does not include any accrued sick leave. As a result, the retained actuary should apply the accrued sick leave assumption to all service in the calculation of the present value of future benefits, and not just future service. It should be noted that we believe the present value of future benefits at the member's entry age and the associated normal cost are being determined correctly with regard to the accrued sick leave assumption.

This modification to the accrued sick leave assumption will increase the actuarial accrued liability for active members, but we do not believe that the increase will be material.

Based on our review of the other aspects of the actuarial valuation, the liability determination of active participants was reasonable and appropriately determined.

Annuitants. At the onset of the review, we requested that the retained actuary provide liability amount, benefit amount, form of benefit, age of participant, and age of beneficiary (where applicable) for 11 annuitants. The retained actuary provided all of the information we requested regarding the annuitants.

Based on our review, the liability determination of annuitants was reasonable and consistent with the stated assumptions and methods.

Summary

We believe that the valuation results were developed in a reasonable manner. In the next actuarial valuation, we recommend that the retained actuary incorporate the following enhancements into their valuation of active participants: use the appropriate projected average pay in the calculation of future death and disability benefits, and apply the sick leave assumption to all service in the calculation of the present value of benefits at the member's attained age.

SECTION VI

CONTENT OF THE VALUATION REPORT

Content of the Valuation Report

ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs, and ASOP No. 41, Actuarial Communications, provide guidance for measuring pension obligations and communicating the results. These Standards list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications. The pertinent items that should be included in an actuarial valuation report on a pension plan should include:

- The name of the person or firm retaining the actuary and the purposes that the communication is intended to serve.
- A statement as to the effective date of the calculations, the date as of which the participant and financial information were compiled, and the sources and adequacy of such information.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A summary of the participant information, separated into significant categories such as active, retired, and terminated with future benefits payable. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.
- A description of the actuarial assumptions, the cost method and the asset valuation method used. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication.

We have reviewed the actuarial valuation report prepared by the retained actuary and we have noted a few modifications to the report that would allow the report to adhere more closely with ASOP Nos. 4 and 41.

Section 4, Exhibit V, Actuarial Assumptions and Actuarial Cost Method

The presentation of actuarial methods and assumptions is generally complete and understandable. The methods described in this section are reasonable and appropriate for public retirement plans.

We do have the following suggestions to improve the overall communication of the valuation assumptions.

Mortality Rates – We have two suggestions regarding the statement of the mortality assumptions in the actuarial valuation report. First, the healthy member mortality assumption indicates that the 1994 Group Annuity Mortality Table is "loaded 25% for females." We recommend that the retained actuary expand this statement to make it clear that the rates of mortality are increased by 25% as opposed to the table being "loaded for conservatism" which would be an opposite adjustment. Secondly, we recommend that the retained actuary explicitly state the level of conservatism that is included in the current mortality assumption to account for future mortality improvement. The current summary in the actuarial valuation report complies with ASOP No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, which instructs the actuary to disclose the mortality assumption in sufficient detail to permit another qualified actuary to understand the provision made for future mortality improvement. However, the retained actuary clearly states the level of conservatism in the actuarial experience review report. It would improve the overall communication of mortality assumption in the actuarial valuation report if the retained actuary included the actual level of conservatism that is included in the current mortality assumption to account for future mortality improvement.

Termination Rates before Retirement – The actuarial valuation report clearly states the assumed rates of mortality, disability and withdrawal for active members. We recommend that the retained actuary also include a statement indicating the proportion of active members that are assumed to leave active service in the future due to disability resulting from a catastrophic injury. The valuation applies a reasonable assumption for actuarial valuation purposes. However, it would improve the overall communication of actuarial assumptions since the SAFPPF provides an enhanced benefit in these cases.

Utilization of BackDROP – The valuation report states that a specified percentage of firefighters and police officers are assumed to elect a 3½-year BackDROP at retirement. We recommend that the retained actuary expand the description of this assumption to make it clear that no active members are assumed to elect the BackDROP if their eligible BackDROP period is less than 3½-years.

Sick Leave – In order to better communicate the sick leave assumption, we recommend that the retained actuary make it clear that the assumption increases the total service at retirement by 1.33% rather than increasing the benefit by 1.33% for each year of service.

Section 4, Exhibit VI, Summary of Plan Provisions

The presentation of the major plan provisions is generally complete and understandable. We do have the following suggestion to improve the overall communication of the plan provisions.

Survivor's Pre-Retirement Death Benefit (death not in line of duty) – The actuarial valuation report currently states that the spouse is eligible for a benefit equal to the "participant's accrued benefit, with a minimum of 50% of salary and a maximum based on 27 years of service." This statement should be corrected to state that the minimum benefit is "50% of average salary." The "average salary" is being applied in the calculation of plan benefits by the retained actuary, but the description in the actuarial valuation report needs to be corrected.

Summary

In general, the actuarial valuation report complied with the applicable Actuarial Standards of Practice. In order to improve the ability of the report to communicate the assumptions, methods and plan provisions incorporated into the October 1, 2012 actuarial valuation, we recommend that the retained actuary incorporate the noted enhancements to the October 1, 2012 actuarial valuation report.

SECTION VII

SUMMARY OF FINDINGS AND FINAL REMARKS

Summary of Findings and Final Remarks

Summary of Findings

Based on our review, the actuarial valuation, studies, and reports of SAFPPF are reasonable, used reasonable assumptions, complied with Actuarial Standards of Practice, and complied with the Texas PRB Guidelines for Actuarial Soundness. We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the October 1, 2012 actuarial valuation.

Actuarial Assumptions

(1) In order to improve the overall completeness of the next actuarial experience review report, we recommend that the retained actuary provide more context to the assumptions for accrued sick leave, marriage after retirement, and spousal beneficiary load. Each of these assumptions are reasonable, as stated, but the actuarial experience review report provides very little framework for how the assumptions were developed. Additional framework for the assumption setting will allow the retained actuary to better monitor these assumptions in the future and make modifications, as needed.

(2) At the next experience study, we recommend that the retained actuary consider the suggested approaches for developing the recommended assumptions for retirement rates and the productivity and merit components of the salary scale assumption.

Actuarial Methods and Funding Policy

(3) We have no recommendations regarding the application of the actuarial methods and funding policy.

Actuarial Valuation Results

(4) We recommend that the retained actuary incorporate the following enhancements into their valuation of active participants: use the appropriate projected average pay in the calculation of future death and disability benefits, and apply the sick leave assumption to all service in the calculation of the present value of benefits at the member's attained age.

Content of Valuation Report

(5) In order to improve the ability of the report to communicate the assumptions, methods and plan provisions incorporated into the October 1, 2012 actuarial valuation, we recommend that the retained actuary incorporate the noted enhancements to the October 1, 2012 actuarial valuation report.

Final Remarks

The auditing actuarial firm, Gabriel, Roeder, Smith & Company (GRS), is independent of the retained actuarial firm. The auditing actuaries are not aware of any conflict of interest that would impair the objectivity of this work.

We have presented many suggestions for areas where we believe the product can be improved. The retained actuary has access to information and a long history of retirement plans similar to SAFPPF. We understand that the retained actuary may agree with some of our recommendations, while rejecting others. We ask that the retained actuary and SAFPPF consider our recommendations carefully. We hope that the retained actuary and SAFPPF find these suggestions useful.

Segal Consulting

2018 Powers Ferry Road SE Suite 850 Atlanta, GA 30339-7200
T 678.306.3100 www.segalco.com

October 10, 2013

Board of Trustees
Fire and Police Pension Fund, San Antonio
11603 W. Coker Loop, Suite 201
San Antonio, Texas 78216-2820

Re: Segal's Response to Gabriel Roeder Smith & Company's Actuarial Audit

Dear Board of Trustees:

We have had the opportunity to assess the independent actuarial audit completed by Gabriel Roeder Smith & Company (GRS) for your Fund, and our specific responses are included below. We appreciate the comments that GRS provided and will consider incorporating their recommendations into future valuations and experience reviews, pending approval of the Trustees and the Plan Administrator. We concur with the audit's findings indicating that the suggested changes will not have a material impact on valuation results.

Actuarial Assumptions

GRS proposed some modifications to the presentation and development of certain actuarial assumptions. The suggested changes are as follows, with Segal's responses:

- Provide broader context surrounding the accrued sick leave, marriage after retirement and spousal beneficiary load assumptions in the next experience review, including disclosure of how these assumptions are developed. *In the next experience review, due for the five-year period ending September 30, 2014, Segal will expand the sections detailing the development of these assumptions.*
- Include conservatism in setting the retirement rates for the Fund, by setting rates to predict more retirements than actually observed. *The retirement rates were established to track as closely as possible emerging plan experience, with heavier weighting given to actual experience during the last two years of the five-year experience study period. We will consider GRS' recommendation for adding conservatism in the next experience review.*
- When setting salary scale rates, use actual price inflation to determine the economic productivity and merit increases observed. *We understand GRS' comments on the productivity and merit aspects of the salary assumptions and will consider these in the next experience review. Setting long-term salary scale rates during depressed economic times can be challenging, and Segal will discuss payroll and salary expectations with the City in addition to analyzing actual increases during the 2009-2014 study period.*

Actuarial Valuation Results

GRS suggested some modifications to the determination of liabilities for active Fund participants. These suggestions include:

- Align the average salary for death and disability benefits to that used for retirement benefits. *Segal will review, and likely modify, the salary development for projected death and disability benefits.*
- Apply the sick leave assumption to all service. *In the course of working with GRS during this audit period, we verified with Fund staff that there have been recent changes in the service data received for valuation purposes. We have reviewed the sick leave assumption with the Plan Administrator and will make appropriate changes with the next valuation. We agree with GRS that the impact will not be significant.*

Content of the Valuation Report

GRS has suggested improved wording the assumption and plan provisions sections of the actuarial valuation report. We appreciate their suggestions, and we concur that the recommended changes will enhance the valuation reports and will enable readers to more clearly understand the assumptions and provisions used for the actuarial calculations. However, we respectively disagree with GRS' recommendation that the October 1, 2012 report be revised. Segal will include any report modifications in the upcoming October 1, 2013 valuation, due to be released in January.

We look forward to discussing this with you further as we strive to continue to improve our processes and the services we provide the Board and staff of the San Antonio Fire and Police Pension Fund, as well as the plan participants you represent.

Sincerely,

Leon F. (Rocky) Joyner, Jr.,
FCA, ASA, MAAA, EA
Vice President and Consulting Actuary

Deborah K. Brigham,
FCA, ASA, MAAA, EA
Vice President and Actuary

cc: Warren J. Schott – San Antonio Fire & Police Pension Fund
R. Ryan Falls, FSA, FCA, MAAA, EA – GRS