



RETIREMENT PLAN FOR EMPLOYEES OF GBRA

ACTUARIAL VALUATION

AS OF JANUARY 1, 2019

OCTOBER 18, 2019



Rudd and Wisdom, Inc.

Rudd and Wisdom, Inc.

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October 18, 2019

GBRA Retirement and Benefit Committee
Guadalupe-Blanco River Authority
933 E. Court Street
Seguin, Texas 78155

Re: Actuarial Valuation as of January 1, 2019

Dear Committee Members:

Enclosed is the report of the Actuarial Valuation of the Retirement Plan for Employees of the Guadalupe-Blanco River Authority as of January 1, 2019. The purpose of this report is to present the actuarial condition of the plan as of January 1, 2019 and to recommend the GBRA minimum contribution for the plan year ending December 31, 2019.

Changes in Plan Provisions

Effective December 31, 2018, the plan was amended to be frozen and to provide a supplemental benefit in addition to the frozen accrued benefit as of December 31, 2018. The supplemental benefit is designed to make up for the difference between (1) the projected benefit if the plan were to continue as it was before the amendment and (2) the sum of (a) the frozen accrued benefit in the plan and (b) the employer-funded portion of the benefit in the Texas County and District Retirement System (TCDRS) plan that began January 1, 2019. Plan provisions are outlined and summarized in Section V of this report.

Review of Actuarial Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. We analyze the economic assumptions every year. As the result of our overall review and our economic assumptions analysis, we have selected actuarial assumptions that we consider to be reasonable and appropriate for the plan for the long term future. Their selection complies with the applicable actuarial standards of practice. The actuarial methods and assumptions selected for this actuarial valuation are different from those used in the prior actuarial valuation of the ongoing plan. However, the assumptions are the same as those used in the special actuarial analysis as of December 31, 2017 of the plan as if it had been frozen on that date, with the exception of the mortality assumption.

The mortality assumption was changed from the RP-2000 Combined Healthy Mortality Tables projected to 2024 with Scale AA to the PubG-2010 (general employees) total dataset mortality tables for employees and for retirees, projected for mortality improvement generationally using

the projection scale MP-2018. The rationale for the change is to use the results of a new, first-ever study of the mortality of public employee pension plan participants by the Society of Actuaries. The new mortality assumption is more appropriate for the plan for the long-term future than the prior assumption.

Funding Policy

With the freezing of this plan and the adoption of the new plan in TCDRS for all employees, a new funding policy for this plan is needed. We have been told that the GBRA management intends to fully fund the plan over 10 years beginning January 1, 2019. They expect to contribute more in the first few years than the minimum required amount to fully fund the plan with level dollar contributions over that 10-year period. GBRA will contribute at least the minimum amount each year, usually in December, that will amortize the unfunded actuarial liability (UAL) over the closed 10-year period. Since the plan is frozen, there is no normal cost.

Recommended Contribution

Based on the funding policy above, we recommend a minimum contribution of \$653,540 for the plan year ending December 31, 2019 payable as of that date. Based on this actuarial valuation, this recommended annual contribution as a level dollar amount is expected to amortize the UAL of \$4,643,707 over the 10-year period that began January 1, 2019. This assumes there will be no future gains or losses or changes in assumptions. To the extent that there are future changes, the future valuations will modify the required contribution amount.

Changes in the Unfunded Actuarial Liability

In comparing this year's valuation to last year's valuation, the UAL decreased from \$5,140,374 to \$4,643,707 for the following reasons:

- The passing of one year with the experience following the assumptions would have resulted in a decrease in the UAL of \$464,423 because the contributions available to amortize the UAL were more than the assumed interest on the UAL for the plan year.
- The investment rate of return for 2018, net of all investment-related expenses paid by the plan, was (4.66)% based on the audited market value of assets for the plan year ending December 31, 2018. However, based on the smoothed actuarial value of assets from last year's valuation to this valuation, the net investment rate of return was 3.24%. Since that rate of return is less than the assumed rate of 7%, the UAL was increased by \$1,114,255 due to the adverse actuarial investment experience.
- The amending of the plan to freeze it as of December 31, 2018 and to add supplemental benefit provisions, along with all noninvestment experience, decreased the UAL by \$3,505,051.
- The change in the mortality assumptions increased the UAL by \$1,516,036.
- The change in the investment return assumption increased the UAL by \$842,516.

Variability in Future Actuarial Measurement

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- Plan experience differing from that anticipated by the current economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements;
- Changes in economic or demographic assumptions; and
- Changes in plan provisions.


Analysis of the potential range of such future measurements resulting from the possible sources of measurement variability is typically outside the scope of an annual actuarial valuation. However, if requested, additional analysis could be provided.

Summary

As a result of our January 1, 2019 actuarial valuation of the GBRA Retirement Plan, we recommend a minimum contribution of at least \$653,540 for the plan year ending December 31, 2019. This minimum recommended year end contribution is based on a funding policy which is expected to be an adequate contribution arrangement. The actuarial valuation of the plan reported herein has been performed in accordance with appropriate actuarial methodology, actuarial code of conduct and actuarial standards of practice, and in accordance with funding guidelines established by the Texas Pension Review Board applicable to Texas public employee retirement systems.

Respectfully submitted,

RUDD AND WISDOM, INC.



Mark R. Fenlaw, F.S.A.



Rebecca B. Morris, A.S.A.

MRF/RBM:nlg

Enclosures

cc: Mr. Randy Staats
Ms. Susan Hubbert



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Section I – GBRA Retirement Plan

Certification of Actuarial Valuation (As of January 1, 2019)

At the request of the GBRA Retirement and Benefit Committee, we have performed an actuarial valuation of the plan as of January 1, 2019. The purpose of this report is to present the actuarial condition of the plan as of January 1, 2019 and to recommend a contribution for the January 1, 2019 to December 31, 2019 plan year based on a funding policy which is expected to be an adequate contribution arrangement.

We have relied on and based our valuation on employee data, pensioner data, and asset data provided by GBRA. The financial information we received for the plan year was from the final draft of the financial report of the plan as of December 31, 2018. We have used the actuarial methods and assumptions described in Section IV of this report. The actuarial valuation has been performed on the basis of the plan benefits described in Section V.

To the best of our knowledge, no material biases exist with respect to any imperfections in the census data provided. We have not audited the data provided but have reviewed it for reasonableness and consistency relative to the census data received for the January 1, 2018 actuarial valuation.

All current employees eligible to participate in the plan as of the valuation date and all other individuals who either are now receiving a monthly benefit or will later receive a vested deferred monthly benefit under the plan have been included in the valuation. Further, all plan benefits have been considered in the development of plan costs.

To the best of our knowledge, the actuarial information supplied in this report is complete and accurate. In our opinion the assumptions used, both in the aggregate and individually, are reasonably related to the experience of the plan and to reasonable expectations. The assumptions represent a reasonable estimate of anticipated experience of the plan over the long-term future, and their selection complies with the applicable actuarial standards of practice.

We certify that we are members of the American Academy of Actuaries who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Mark R. Fenlaw

Mark R. Fenlaw, F.S.A.

Rebecca B. Morris

Rebecca B. Morris, A.S.A.



Section II – Summary of Actuarial Valuations

	January 1, 2018	January 1, 2019
1. Participant Census at Valuation Date		
a. Covered employees	88	79
b. Vested terminated due deferred benefit	41	43
c. Retirees and beneficiaries in pay status	<u>81</u>	<u>88</u>
d. Total	210	210
2. Projected Active Participant Compensation for Plan Year Following the Valuation Date	\$ 6,450,100	N/A
3. Actuarial Present Value of Future Benefits		
a. Active participants	\$ 21,854,387	\$ 15,947,143
b. Inactive participants	<u>15,924,687</u>	<u>19,597,055</u>
c. Total	\$ 37,779,074	\$ 35,544,198
4. Actuarial Present Value of Future Normal Cost	\$ 2,182,244	\$ 0
5. Actuarial Liability (Item 3e – Item 4)	\$ 35,596,830	\$ 35,544,198
6. Actuarial Value of Assets	\$ 30,456,456	\$ 30,900,491
7. Unfunded Actuarial Liability (UAL) (Item 5 – Item 6)	\$ 5,140,374	\$ 4,643,707
8. GBRA Minimum Contribution to be Paid December 31		
a. Normal cost	\$ 303,800	\$ 0
b. UAAL amortization	<u>824,249</u>	<u>653,540</u>
c. Total	\$ 1,128,049	\$ 653,540
9. Funded Ratio (Item 6 ÷ Item 5)¹	85.6%	86.9%

¹ The funded ratio is not appropriate for assessing either the need for or the amount of future contributions or the adequacy of the funding policy of an ongoing plan. However, for a frozen plan, a funded ratio of 100% or more would indicate that contributions could cease. Subsequent experience would determine whether or not any additional contributions might be required.

Section III – Plan Asset Information

Summary of Assets as of January 1, 2019

Investment Category	Market Value*	Allocation Percent
1. Equities		
a. Domestic large cap	\$ 8,945,366	31.1%
b. Domestic small cap	1,850,794	6.4
c. Developed international	2,725,168	9.5
d. Emerging markets	<u>1,108,141</u>	<u>3.9</u>
	14,629,469	50.9
2. Fixed Income		
a. Global	3,211,739	11.2
b. Emerging market	1,812,424	6.3
c. Domestic bank loans	1,334,296	4.6
d. Domestic core	1,010,892	3.5
e. Distressed debt	<u>874,822</u>	<u>3.1</u>
	8,244,173	28.7
3. Alternatives		
a. Hedge fund	2,735,614	9.5
b. Real estate (timberland)	978,537	3.4
c. Private real estate	<u>990,489</u>	<u>3.5</u>
	4,704,640	16.4
4. Cash and Cash Equivalents	<u>1,153,421</u>	<u>4.0</u>
5. Grand Total	\$ 28,731,703	100.0%

* The amounts by investment category (items 1-3) are from the December 31, 2018 report by the plan's investment consultant. Item 4 is the balancing item to bring the grand total to equal the amount of the assets in the plan's audited financial report for the year ending December 31, 2018 (item 5).



**Statement of Changes in Audited Assets
for the Years Ended December 31, 2018 and 2017**

	<u>12/31/2018</u>	<u>12/31/2017</u>
Additions		
1. Contributions		
a. Employer	\$ 1,128,049	\$ 1,067,716
b. Employees	<u>0</u>	<u>0</u>
c. Total	\$ 1,128,049	\$ 1,067,716
2. Investment Income		
a. Interest and dividends	\$ 614,968	\$ 504,872
b. Net appreciation in fair value	<u>(1,990,681)</u>	<u>3,898,938</u>
c. Total	\$ (1,375,713)	\$ 4,403,810
3. Other Additions	<u>0</u>	<u>0</u>
Total Additions	\$ (247,664)	\$ 5,471,526
Deductions		
4. Benefit Payments	\$ 1,644,165	\$ 1,397,727
5. Expenses		
a. Investment-related	\$ 15,118	\$ 67,524
b. General administrative ¹	<u>0</u>	<u>0</u>
c. Total	\$ 15,118	\$ 67,524
Total Deductions	\$ 1,659,283	\$ 1,465,251
Net Increase in Assets	\$ (1,906,947)	\$ 4,006,275
Market Value of Assets (Plan Net Position)		
Beginning of Year	\$ 30,638,650	\$ 26,632,375
End of Year	\$ 28,731,703	\$ 30,638,650
Rate of Return		
Net of Investment-Related Expenses	(4.66)%	16.72%
Gross	(4.62)%	17.00%
Investment-Related Expenses (Direct)	0.04%	0.28%

¹ GBRA pays all administrative expenses and investment consultant fees from other than plan assets.



Development of Actuarial Value of Assets

Calculation of Actuarial Investment Gain/(Loss) Based on Market Value for Plan Years				
	2018	2017	2016	2015
1. Market Value of Assets as of Beginning of Year	\$ 30,638,650	\$ 26,632,375	\$ 25,768,160	\$ 25,316,487
2. Employer Contributions	1,128,049	1,067,716	1,338,202	1,733,464
3. Benefit Payments	(1,644,165)	(1,397,727)	(1,124,173)	(841,560)
4. Expected Investment Return ¹	<u>2,087,160</u>	<u>1,815,346</u>	<u>1,764,425</u>	<u>1,826,085</u>
5. Expected Market Value of Assets as of End of Year	\$ 32,209,694	\$ 28,117,710	\$ 27,746,614	\$ 28,034,476
6. Actual Market Value of Assets as of End of Year	<u>28,731,703</u>	<u>30,638,650</u>	<u>26,632,375</u>	<u>25,768,160</u>
7. Actuarial Investment Gain/(Loss)	\$ (3,477,991)	\$ 2,520,940	\$ (1,114,239)	\$ (2,266,316)
8. Market Value Rate of Return Net of Expenses	(4.66)%	16.72%	2.58%	(1.75)%
9. Rate of Actuarial Investment Gain/(Loss)	(11.66)%	9.72%	(4.42)%	(9.00)%

¹ Assuming (1) uniform distribution of payments during the plan year, (2) recommended contributions at the end of the plan year, (3) 7% expected rate of return for 2018, 2017, and 2016, and 7.25% for 2015, and (4) supplemental contributions of \$700,000 on July 31, 2015, and \$300,000 on December 31, 2016.

Deferred Actuarial Investment Gains/(Losses) to be Recognized in Future Years			
Plan Year	Investment Gain/(Loss)	Deferral Percentage	Deferred Gain/(Loss) Amount as of 12/31/2018
2018	\$(3,477,991)	80%	\$ (2,782,393)
2017	2,520,940	60%	1,512,564
2016	(1,114,239)	40%	(445,696)
2015	(2,266,316)	20%	<u>(453,263)</u>
Total			\$ (2,168,788)

Actuarial Value of Assets as of December 31, 2018	
10. Market Value of Assets as of December 31, 2018	\$ 28,731,703
11. Deferred Gain/(Loss) to be Recognized in Future	<u>(2,168,788)</u>
12. Actuarial Value of Assets as of December 31, 2018 (Item 10 – Item 11)	\$ 30,900,491
13. Write Up/(down) of Assets (Item 12 – Item 10)	\$ 2,168,788

Section IV – Actuarial Methods and Assumptions

A. Actuarial Methods

1. Actuarial Cost Method

For a frozen plan, no actuarial cost method is required. The primary calculations are the actuarial present value of future benefits of benefits in pay status and of deferred benefits. The unfunded actuarial liability (UAL) is the amount by which the present value of future benefits exceeds the current plan assets. The UAL is recalculated each time a valuation is performed. Experience gains and losses, which represent deviations of the UAL from its expected value based on the prior valuation, are determined at each valuation and are amortized as part of the newly calculated UAL.

2. Amortization Method

The UAL would be amortized with level dollar payments over a 10-year closed period beginning January 1, 2019, with the annual payment at the end of each year. Additional payments may be made in accordance with the funding policy determined by GBRA.

3. Actuarial Value of Assets Method

All assets are valued at market value, with an adjustment made to uniformly spread actuarial gains or losses (as measured by actual market value investment return vs. expected market value investment return) over a five-year period.

B. Actuarial Assumptions

1. Mortality

PubG-2010 (general employees) total dataset mortality tables for employees and for retirees (sex distinct), projected for mortality improvement generationally using the projection scale MP-2018.

2. Termination

There is no need for assumed termination rates with a frozen plan. For the frozen benefit, all employees are assumed to have terminated employment as of December 31, 2018. For the supplemental benefit, all employees are assumed to work for GBRA to the later of December 31, 2019 and the end of the year of attaining age 65.

3. Investment Return

Current and future plan assets are assumed to reflect an annual investment return of 6.75% net of investment-related expenses. See item B.9 for administrative expenses.

4. Earnings Progression

There is no need to recognize projected earnings after 2018 for the frozen benefit as of December 31, 2018. However, the supplemental benefit is based on a projected Plan benefit if the Plan were to continue with its provisions in effect just before December 31, 2018. In addition, the supplemental benefit is based on a projected benefit in the TCDRS plan that was effective January 1, 2019. For both of those projected benefits, the earnings were projected to increase 2.75% per year.

5. Retirement Rates

All participating employees are assumed to work for GBRA to the later of December 31, 2019 and the end of the year of attaining age 65.

6. Disability

None were assumed.

7. Inflation Component in Investment Return Assumption

2.75%

8. Form of Payment

- a. Current pensioners: Actual form of payment.
- b. Future pensioners: Normal form of payment (10 years certain and life).
- c. Monthly benefits are payable the first of each month.

9. Administrative Expenses

The expenses will continue to be paid by GBRA and not from Plan assets.

Section V - Outline of Principal Plan Eligibility and Benefit Provisions Reflected in the Actuarial Valuation as of January 1, 2019

1. Identifying Data

- a. Plan name: Retirement Plan for Employees of Guadalupe-Blanco River Authority
- b. Type of plan: Defined benefit
- c. Plan sponsor: Guadalupe-Blanco River Authority
- d. Plan Year: January 1 – December 31

2. Participation

- a. Minimum Age: none
- b. Maximum Age at Hire: none
- c. Service: 1 year in which 1,000 or more hours are completed
- d. Employee Classification: All except a Leased Employee or an independent contractor
- e. Hire Date: first employed by the plan sponsor before January 1, 2011

3. Contributions

- a. Participant: none required
- b. Employer: all amounts necessary to adequately finance plan benefits

4. Eligibility for Retirement

- a. Normal Retirement: age 65
- b. Early Retirement: age 55 plus 15 years of vesting service

5. Retirement Benefit Monthly Amounts

- a. Normal Retirement: 1.30% of average monthly compensation per year of credited service
- b. Late Retirement: same as Normal Retirement increased by 5/9% for every month late retirement follows normal retirement
- c. Early Retirement:
 - 1) With Satisfaction of Rule of 85 (age and Accrual Service equal to eighty-five (85) or more years and age of sixty (60) or more years): amount equal to monthly normal retirement benefit accrued at early retirement date
 - 2) Without Satisfaction of Rule of 85: amount equal to monthly normal retirement benefit accrued at early retirement date reduced by 5/12% for every month early retirement precedes normal retirement
- d. Disability: amount payable at normal retirement age assuming continuation of service from date of disability to normal retirement age, but based on average monthly compensation at the date of disability

6. Normal Form of Monthly Payment

- 10 years certain and life; other actuarially equivalent monthly payment forms are available

7. **Frozen DB Benefit**

The plan was frozen as of December 31, 2018 and no additional benefits will accrue. All active participants became 100% vested in their accrued benefit as of that date, referred to as the Frozen DB Benefit. It is payable in the normal form of payment at normal retirement age. It was calculated using the normal retirement benefit formula but using the amount of credited service and the average monthly compensation as of December 31, 2018. It excluded any unused sick leave.

This benefit is payable following termination of employment and upon either (a) reaching normal retirement age or (b) satisfying an early retirement or other commencement of benefit provision. It will be actuarially reduced if the participant's termination is prior to his or her normal retirement date.

8. **Supplemental Benefit**

Participants with a Frozen DB Benefit are eligible for a Supplemental Benefit. This benefit is designed in an attempt to make up for the difference, if any, between (a) the projected benefit of the plan if the plan were to continue as it was before being frozen and (b) the sum of the Frozen DB Benefit and the employer-funded portion of the benefit in the TCDRS plan. It includes unused sick leave as described in item 12.

9. **Pre-retirement Death Benefits**

Payment of benefit which is actuarially equivalent to the present value of the participant's Frozen DB Benefit and Supplemental Benefit.

10. **Basis of Actuarial Equivalence for Optional Forms of Monthly Benefit**

8% and UP84 Mortality Table set back one year

11. **Average Monthly Compensation**

Gross compensation averaged over the three consecutive complete calendar years of highest total compensation over the last ten completed calendar years of employment. Except that the year in which a member terminates shall be considered a complete calendar year of employment, and the compensation for such calendar year shall be deemed equal to the annualized rate of compensation which he actually received for such calendar year, excluding any amount paid for unused vacation or for unused sick leave or for any reason related to termination of employment, and with the portion of such calendar year following such member's termination of employment being included in determining the number of months for which such compensation was received.



12. **Unused Sick Leave**

The Supplemental Benefit is calculated using the lesser of the amount of unused sick leave as of December 31, 2018 and the amount as of termination of employment, converting the hours of unused sick leave into credited service at the rate of one month of credited service for each 173.33 hours of unusual sick leave.

Section VI - Summary of Participant Data

Participant Data Reconciliation

	Active Participants	Current Payment Status	Deferred Payment Status	Total
1. As of January 1, 2018	88	81	41	210
2. Change of status				
a. normal retirement	(1)	2	(1)	0
b. late retirement	(4)	4	0	0
c. early retirement	(1)	1	0	0
d. disability	0	0	0	0
e. death	0	0	0	0
f. nonvested termination	0	0	0	0
f. vested termination	(3)	0	3	0
h. completion of payment	0	0	0	0
i. alternate payee	0	0	0	0
j. start of survivor benefit	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
k. net changes	(9)	7	2	0
3. New participants (rehire)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
4. As of January 1, 2019	79	88	43	210



**Distribution of Active Participants
by Age and Service as of January 1, 2019**

Age	Years of Service									Total	Percent	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+			
Under 25	0	0	0	0	0	0	0	0	0	0	0	0%
25-29	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	2	0	0	0	0	0	0	0	2	3
35-39	0	2	2	0	0	0	0	0	0	0	4	5
40-44	0	1	3	4	0	0	0	0	0	0	8	10
45-49	0	0	0	7	2	1	0	0	0	0	10	13
50-54	1	1	4	1	0	2	4	0	0	0	13	16
55-59	0	0	3	1	4	1	2	6	0	0	17	21
60-64	0	0	1	1	1	1	2	6	7	0	19	24
Over 65	0	0	1	1	0	1	0	2	1	0	6	8
Total	1	4	16	15	7	6	8	14	8	0	79	100%
Percent	1%	5%	20%	19%	9%	8%	10%	18%	10%	0%	100%	

Average age = 53.6 years
Average service = 24.1 years

Section VII - Definitions

1. Actuarial Liability The Actuarial Present Value of future pension plan benefits as of the Valuation Date.

2. Actuarial Assumptions Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, termination, disablement and retirement; changes in compensation; rates of investment earnings and asset appreciation; and other relevant items.

3. Actuarially Equivalent Of equal Actuarial Present Value, determined as of a given date, with each value based on the same set of Actuarial Assumptions.

4. Actuarial Gain (Loss) A measure of the difference between actual experience and that expected based on the Actuarial Assumptions during the period between two Actuarial Valuation dates.

5. Actuarial Present Value The value of an amount or series of amounts payable or receivable at various times, determined as of a given date (the Valuation Date) by the application of the Actuarial Assumptions.

6. Actuarial Valuation The determination, as of a Valuation Date, of the Actuarial Liability, Actuarial Value of Assets and related Actuarial Present Values for a pension plan.

7. Actuarial Value of Assets The value of cash, investments and other property belonging to a pension plan, as determined by a method and used by the actuary for the purpose of an Actuarial Valuation.

8. Plan Year A 12-month period beginning January 1 and ending December 31.

9. Projected Benefits Those pension plan benefit amounts that are expected to be paid at various future times according to the Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future qualified service.

10. Overfunded Actuarial Liability The excess, if any, of the Actuarial Value of Assets over the Actuarial Liability.



11. Unfunded Actuarial Liability The excess, if any, of the Actuarial Liability over the Actuarial Value of Assets.
12. Valuation Date The date upon which the Actuarial Liability and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the beginning of a Plan Year.
13. Years to Amortize the
 Unfunded Actuarial Liability The period is determined according to GBRA's funding policy, to amortize the Unfunded Actuarial Liability with a level annual dollar contribution.