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FENNEMORE CRAIG, P.C.
Norman D. James (No. 006901)
Jay L. Shapiro (No. 014650)
3003 N. Central Ave.
Suite 2600
Phoenix, Arizona 85012
Attorneys for Chaparral City Water Company

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF CHAPARRAL CITY WATER COMPANY, INC., AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES FOR UTILITY SERVICE BASED THEREON.	DOCKET NO: W-02113A-07-0551 **NOTICE OF FILING REJOINDER TESTIMONY**

Chaparral City Water Company ("Company") hereby submits this Notice of Filing Rejoinder Testimony in the above-referenced matter. Specifically filed herewith is Company's Rejoinder Testimony, which includes the following testimonies, along with supporting schedules and/or exhibits:

1. Rejoinder Testimony of Thomas J. Bourassa (Rate Base, Income Statement, Revenue Requirement, Rate Design); and

2. Rejoinder Testimony of Thomas J. Bourassa (Cost of Capital).

DATED this 4th day of December, 2008.

FENNEMORE CRAIG, P.C.

Arizona Corporation Commission
DOCKETED
DEC -4 2008
DOCKETED BY

By Norman D. James
Norman D. James
Jay L. Shapiro
3003 North Central Avenue, Suite 2600
Phoenix, Arizona 85012
Attorneys for Chaparral City Water Company

ORIGINAL and thirteen (13) copies of the foregoing were filed this 4th day of December, 2008, with:

Docket Control
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ 85007

Copy of the foregoing was hand delivered this 4th day of December, 2008, to:

Teena Wolfe, Administrative Law Judge
Hearing Division
Arizona Corporation Commission
1200 W. Washington St.
Phoenix, AZ 85007

Robin Mitchell, Esq.
Legal Division
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

Daniel W. Pozefsky, Esq.
Residential Utility Consumer Office
1110 W. Washington Street, Ste. 200
Phoenix, AZ 85007

Copy of the foregoing mailed this 4th day of December, 2008, to

Craig A. Marks, Esq.
10645 N. Tatum Blvd.
Suite 200-676
Phoenix, AZ 85028

By: Marie San Jose

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FENNEMORE CRAIG, P.C.
Norman D. James (No. 006901)
Jay L. Shapiro (No. 014650)
3003 N. Central Avenue
Suite 2600
Phoenix, Arizona 85012
Attorneys for Chaparral City
Water Company, Inc.

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF CHAPARRAL CITY WATER COMPANY, INC., AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES FOR UTILITY SERVICE BASED THEREON.	DOCKET NO. W-02113A-07-0551

REJOINDER TESTIMONY OF

THOMAS J. BOURASSA

(RATE BASE, INCOME STATEMENT,

REVENUE REQUIREMENT, RATE DESIGN)

December 4, 2008

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I. INTRODUCTION, PURPOSE AND SUMMARY.

Q. PLEASE STATE YOUR NAME AND ADDRESS?

A. My name is Thomas J. Bourassa and my business address is 139 W. Wood Drive, Phoenix, AZ 85029.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THE INSTANT CASE?

A. Yes, my direct and rebuttal testimony were submitted in support of the initial application and the rebuttal filing in this docket by Chaparral City Water Company ("CCWC" or "Company").

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. I will provide rejoinder testimony in response to the surrebuttal filings by Arizona Corporation Commission Utilities Division Staff ("Staff") and the Residential Utility Consumer Office ("RUCO"). This first volume of my rejoinder testimony relates to rate base, income statement and rate design for CCWC. In a second, separate volume of my testimony, I also present an update to the Company's requested cost of capital as well as provide responses to Staff and RUCO on the cost of capital and rate of return applied to the fair value rate base, and the determination of operating income.

Q. BESIDES RUCO, HAS EITHER OF THE OTHER TWO INTERVENORS SUBMITTED PREFILED TESTIMONY IN THIS RATE CASE?

A. Not to my knowledge.

Q. WHAT IS THE REVENUE INCREASE THAT THE COMPANY IS PROPOSING IN THIS REJOINDER TESTIMONY?

A. The Company is proposing a total revenue requirement of $10,410,741, which constitutes an increase in revenues of $2,910,741, or 38.72% over test year revenues.

Q. HOW DOES THIS COMPARE WITH THE COMPANY'S REBUTTAL FILING?

A. In the rebuttal filing, the Company requested a total revenue requirement of $10,495,967, an increase in revenues of $2,990,957, or 39.85%. The difference arises from acceptance of a number of additional rate base and income statement adjustments proposed by RUCO and Staff plus a few additional adjustments from the Company.

Q. PLEASE SUMMARIZE THE PROPOSED REVENUE REQUIREMENTS AND RATE INCREASES FOR THE COMPANY, STAFF, AND RUCO AT THIS STAGE OF THE PROCEEDING?

A. The proposed revenue requirements and proposed rate increases are as follows:

	Revenue Requirement	Revenue Incr.	% Increase
Company - Rebuttal	$10,495,100	$2,990,957	39.85%
Staff - Surrebuttal	Unknown	Unknown	Unknown
RUCO - Surrebuttal	$8,649,488	$1,144,478	15.25%
Company Rejoinder	$10,410,741	$2,905,731	38.72%

Q. MR. BOURASSA, WHY ARE STAFF'S NUMBERS LISTED AS "UNKNOWN"?

A. Because Staff did not provide any schedules with its surrebuttal filing.

Q. DOES THAT MEAN THAT STAFF'S SURREBUTTAL REVENUE REQUIREMENT AND REVENUE INCREASE HAVE NOT CHANGED FROM ITS DIRECT FILING?

A. I cannot say for certain one way or another. It appears that Staff has accepted at least one of the Company's rebuttal adjustments that would alter its revenue requirement and recommended rate increase and rates. *See* Surrebuttal Testimony of Marvin E. Millsap ("Millsap Sb.") at 6.

II. RATE BASE.

A. Rejoinder OCRB Rate Base Adjustments.

Q. WOULD YOU PLEASE DISCUSS THE COMPANY'S PROPOSED REJOINDER ORIGINAL COST RATE BASE, AND IDENTIFY ANY ADJUSTMENTS YOU HAVE ACCEPTED FROM STAFF AND/OR RUCO?

A. The Company's rejoinder rate base adjustments to OCRB are shown on Rejoinder Schedules B-2, pages 2 through 4. Rejoinder Schedule B-2, page 1, shows the rebuttal OCRB. Schedule B-2, page 2, summarizes the adjustments made to the OCRB.

Rejoinder OCRB adjustment number 1, as shown on B-2, page 3, accepts RUCO's adjustment to plant-in-service for general office post test year plant. *See* Surrebuttal Testimony of Timothy J. Coley ("Coley Sb." at 6). The "post test year" plant was recorded in the first week of January 2007 and I believe this is just a timing problem. And while I believe that the "post test year" should be included in rate base as it was used and useful at the end of the test year, revenue neutral, and necessary to serve the year-end level of customers, the Company has accepted the adjustment to help eliminate issues between the parties.

Rejoinder OCRB adjustment number 2, as shown on B-2, page 4, accepts RUCO's adjustment to accumulated depreciation for general office post test year plant. *Id.* The adjustment is zero because there was no depreciation recorded as of the end of the test year.

B. Reconstruction Cost Rate Base Adjustments.

Q. WOULD YOU PLEASE DISCUSS THE COMPANY'S REJOINDER ADJUSTMENTS TO THE RCRB?

A. The Company's rejoinder rate base adjustments to RCRB are shown on Rejoinder

Schedules B-3, pages 2 through 4. Rejoinder Schedule B-3, page 1, shows the rebuttal RCRB. The rejoinder B-3 adjustments reflect the rebuttal B-2 adjustments at the reconstruction cost level.

Rejoinder RCRB adjustment number 1, as shown on B-3, page 3, accepts RUCO's adjustment to RCN plant-in-service for general office post test year plant and corresponds to the OCRB adjustment number 1 discussed above.

Rejoinder RCRB adjustment number 2, as shown on B-3, page 4, accepts RUCO's adjustment to RCN accumulated depreciation for general office post test year plant and corresponds to the OCRB adjustment number 2 discussed above.

C. <u>Rejoinder To Staff On Rate Base.</u>

Q. WHAT RATE BASE ISSUES REMAIN IN DISPUTE BETWEEN THE COMPANY AND STAFF?

A. Again, I cannot say for certain given that Staff has only addressed two rate base issues in its surrebuttal filing—treatment of the FHSD settlement proceeds and accumulated depreciation. Staff ignores my rebuttal testimony on the issues related to errors contained in Staff's accumulated depreciation adjustments, which impact the determination of the Company's rate base. *See* Rebuttal Testimony of Thomas J. Bourassa ("Bourassa Rb.") at 9. And even where Staff does address CCWC's rebuttal rate base testimony, the testimony lacks any specificity whatsoever. *See e.g.,* Millsap Sb. at 2, 4-5.

Q. PLEASE COMMENT ON STAFF'S RESPONSE TO YOUR REBUTTAL TESTIMONY, ON PAGE 11, CONCERNING THE ACCUMULATED DEPRECIATION ADJUSTMENT TO GENERAL OFFICE TRANSPORTATION EQUIPMENT.

A. While CCWC may have indicated that the accumulated transportation equipment was $43,666.60, in the Company's direct filing, transportation equipment was

included as fully depreciated. Bourassa Rb. at 11. It has no impact on rate base.

Q. WHY IS THERE A DIFFERENCE BETWEEN THE RESPONSE TO A DATA REQUEST BY THE COMPANY ON ACCUMULATED DEPRECIATION AND THE AMOUNT INCLUDED IN THE FILING AND THE COMPANY'S WORKPAPERS?

A. I do not know at this time. I am not sure if the information contained in the data response was the tax basis or book basis. The information provided to me by the Company during preparation of the application indicated that general office transportation equipment was fully depreciated for book purposes. This information was included in the Company's work papers provided to Staff, and the data request response appears to be a mistake. The amount of accumulated depreciation is included in the Company's proposed accumulated depreciation for general office equipment. As per the Company's direct filing, general office transportation equipment was fully depreciated. Bourassa Rb. at 11.

Q. WHAT IS STAFF'S RESPONSE TO CCWC'S REBUTTAL TESTIMONY ON THE TREATMENT OF THE FHSD SETTLEMENT PROCEEDS?

A. Summed up, Staff's testimony appears to be that it is right for reasons that are not identified and that Staff does not need to provide support or address prior decisions that provide guidance on how to treat these proceeds because every case stands on its own. Millsap Sb. at 2.

Q. DO YOU AGREE WITH MR. MILLSAP?

A. No, I believe Mr. Millsap's view is overstated. I am not a lawyer, so I am not in a position to debate the precedential effect of prior Commission decisions from a legal perspective. But clearly the Commission relies on ratemaking treatments followed in prior cases. For example, we have been using a method of determining property tax expense from case to case for water and sewer

companies. *Chaparral City Water Company,* Decision No. 68176 (September 30, 2005), at 13-15; *Black Mountain Sewer Corporation,* Decision No. 69164 (December 5, 2006), at 10-12; *Rio Rico Utilities*, Decision No. 67279 (October 5, 2004), at 8; *Arizona Water Company*, Decision No. 64282 (December 28, 2001) at 12-13; *Bella Vista Water Company*, Decision No. 65350 (November 1, 2002), at 16; *Arizona-American Water Company*, Decision No. 67093 (June 30, 2004), at 9-10. The Commission has relied on the treatment of post test year plant in past rate cases to decide what to do in other cases, and the Commission also routinely looks at rate case expenses in prior cases to determine an appropriate level of this expense in new case. *See, e.g., Chaparral City Water Company,* Decision No. 68176 (September 30, 2005); *Rio Rico Utilities, Inc.*, Decision No. 67279 (October 5, 2004); *Bella Vista Water Company*, Decision No. 65350 (November 1, 2002). Staff's recommendations regarding the use of account specific depreciation rates are regularly adopted by the Commission. *Chaparral City Water Company,* Decision No. 68176 (September 30, 2005), at 15. Another example of precedential effect includes the treatment of purchased wastewater capacity in the Black Mountain Sewer case. *See* Decision 69164 (December 5, 2006) at 8. It is misleading and inconsistent of Staff to say that every case stands on its own, implying that past decisions have no role in this or any other rate case.

Q. BUT MR. BOURASSA, YOU WOULD AGREE WOULDN'T YOU, THAT EVERY CASE HAS ITS OWN UNIQUE FACTS AND CIRCUMSTANCES?

A. There may be some limited exceptions to this, but yes, each rate case presents a unique set of facts. But that doesn't mean that we abandon prior decisions that provide guidance on how rates should be determined. Regulated utilities rely on these decisions to operate their systems, maintain their books and records, and prepare rate filings. I believe that the Commission should try to rely on prior cases

and apply them on a consistent basis to the facts presented in each case. And where it doesn't, I believe the Commission should provide a reasoned basis for deviating from the treatment afforded in the past in situations where the facts were materially similar.

Q. WHAT ABOUT MR. MILLSAP'S CLAIM THAT THE COMPANY DIDN'T SEEK COMMISSION GUIDANCE ON THE TREATMENT OF THE SETTLEMENT PROCEEDS?

A. This is somewhat ironic. First, I suspect that had the Company come in and asked for this so-called guidance, Staff would have argued and the Commission would have ruled that the issue needs to be decided in a rate case. In my experience, when guidance is sought regarding issues outside of a rate case, both Staff and this Commission have rarely, if ever, provided a guaranteed regulatory treatment and often state that regulatory treatment will be decided in the next rate proceeding. And if the Commission were to provide the guidance Mr. Millsap implies we should have obtained (Sb. at 2), I should think it obvious that the Arizona Water Company-Eastern Group decision we have relied on all along would have been at the center of that discussion. It should also be recalled that the same argument Staff is making here was rejected in that case. Bourassa Rb. at 14 (*citing* Decision No. 66849 at 35). The bottom line, in my opinion, is we haven't seen any adequate explanations from Staff because Staff lacks any legitimate basis or support for rejection of the Company's recommended sharing of the settlement proceeds.

Q. HOW DO YOU RESPOND TO MR. MILLSAP'S TESTIMONY REGARDING THE AMORTIZATION OF THE SETTLEMENT PROCEEDS?

A. It is a matter of opinion as to whether the amortization should follow a half-year convention or a full-year convention. My recommendation to use a half-year

convention for computing amortization is consistent with the treatment of depreciation for plant-in-service and contributions-in-aid of construction. Had I used a full-year convention, the amortized portion of the settlement proceeds would have been lower and the rate base higher. So, ratepayers are benefiting from a lower rate base and lower revenue requirement from the Company's choice to use a half-year convention.

Q. DOES STAFF ACCEPT ANY OF THE COMPANY'S REBUTTAL RATE BASE ADJUSTMENTS IN ITS SURREBUTTAL?

A. No.

Q. DO STAFF AND THE COMPANY CONTINUE TO DISAGREE ON THE ALLOCATION FACTOR USED FOR ALLOCATING GENERAL OFFICE PLANT AND ACCUMULATED DEPRECIATION?

A. Yes. I agree with Staff that the 4-factor general office allocation rate of 4.0 percent recommended by Staff is better matched to the test year. However, as I have stated, I have used RUCO's proposed lower allocation rate of 2.8 percent to try to help eliminate issues between the parties. Bourassa Rb. at 10-11.

At this point, this appears to be a dispute between Staff and RUCO.

D. <u>Rejoinder to RUCO on Rate Base.</u>

Q. WHAT RATE BASE ISSUES REMAIN IN DISPUTE BETWEEN THE COMPANY AND RUCO?

A. RUCO has changed course and now supports Staff's confiscation of one half of the proceeds from the Company's settlement with FHSD. Coley Sb. at 18-19. RUCO also has changed its position with respect to treatment of CCWC's recent acquisition of an additional allocation of CAP water. *Id.* at 21-22. RUCO also continues to assert that the Company has improperly amortized its CIAC balance and that there is a rounding error in CCWC's RCND. *Id.* at 20-21, 23-24.

Q. WHAT RATIONAL DOES RUCO OFFER FOR ACCEPTING STAFF'S POSITION?

A. RUCO claims that the FHSD settlement is different than the settlement in the Arizona Water Company-Eastern Group case because here the wells are fully depreciated. *Id.* RUCO provides no proof of this fact, nor does it make any attempt to demonstrate why it matters.

Q. DOES RUCO EXPLAIN HOW THIS FACT SUPPORTS GIVING 100% OF THE SETTLEMENT PROCEEDS OVER TO RATEPAYERS?

A. No, and I do not know why it is relevant. The Commission did not focus on this factor in the Arizona Water case, it focused on the need for a policy that motivates utilities to take action to protect the interest of both ratepayers and shareholders. Staff and RUCO's position has the opposite effect.

Q. DOES RUCO ADDRESS ANY OF THE COMPANY'S REASONS FOR PROPOSING A SHARING OF THE PROCEEDS OF THE FHSD SETTLEMENT?

A. No.

Q. WHAT CHANGE DID RUCO MAKE IN ITS POSITION REGARDING CCWC'S RECENT ACQUISITION OF AN ADDITIONAL CAP ALLOCATION?

A. RUCO now adopts Staff's position that the cost of acquiring this additional allocation should be afforded rate base treatment. However RUCO recommends that only 50% of the acquisition cost be rate based. Coley Sb. at 21.

Q. HOW DOES THE COMPANY RESPOND TO RUCO'S RECOMMENDATION?

A. CCWC disagrees. RUCO's position ignores the fact that the Company did not have the option to purchase only half of this additional allocation. Direct

Testimony of Robert Hanford ("Hanford Dt.") at 5-7; Rebuttal Testimony of Robert Hanford ("Hanford Rb.") at 5-7. You have to look at this as one asset, indivisible into distinct parts. Because CCWC could either purchase the entire 1931 acre-feet or none of this additional allocation of CAP water, if part of allocation is used and useful then it is all used and useful for purposes of rate base treatment.

Q. DOES THE COMPANY DISAGREE WITH RUCO'S COMPUTED ACCUMULATED AMORTIZATION OF CIAC?

A. Yes. RUCO believes that a composite rate of 3.3588 percent should have been used for amortizing contributions-in-aid of construction ("CIAC") from the last case to the instant case. Coley Sb. at 20. The Company disagrees. First, no specific amortization rate was authorized in Decision No. 68176. Second, in my experience, no specific amortization rate is authorized when account-specific depreciation rates are authorized. In my view, this is because the amortization rate is expected to be adjusted to match the composite depreciation rate for each year. Third, using a fixed composite rate for amortization of CIAC which may be set by the Commission over lengthy intervals between rate cases can result in significant mismatches between net plant-in-service and net contributions-in-aid of construction, which distorts the rate base because plant-in-service can depreciate faster than contributions are amortized and vice versa. Remember, CIAC is used to fund plant-in-service. Therefore, CIAC should be amortized at a rate consistent with the depreciation rate on the plant which the CIAC is assumed to be funding. In the instant case, and in the last case, the CIAC was assumed to be funding a portion of all plant-in-service, so a composite depreciation rate for all plant was used to compute amortization including operating expenses along with

depreciation expense.[1] The bottom line is it does not make sense, from a matching perspective, to keep the amortization rate fixed while the overall composite depreciation rate varies from year to year.

Q. DOES RUCO ACCEPT ANY OF THE COMPANY'S REBUTTAL RATE BASE ADJUSTMENTS IN ITS SURREBUTTAL?

A. Yes. RUCO has accepted the Company explanation of the $32,536 difference in plant found in the Company's direct filing. Bourassa Rb. at 5. Accordingly, RUCO has made an adjustment to its OCRB plant-in-service. Coley Sb. at 17.

RUCO has also adopted Staff's recommendation to capitalize certain operating expenses. Coley Sb. at 16. The Company adopted both RUCO's and Staff's recommendation on capitalized expenses in its rebuttal. Bourassa Rb. at 7. All the parties are now in agreement on capitalized expenses. RUCO has also agreed with a corresponding adjustment to accumulated depreciation for capitalized expenses. Coley Sb. at 17.

III. <u>INCOME STATEMENT.</u>

A. <u>Income Statement Adjustments.</u>

Q. WOULD YOU PLEASE DISCUSS THE COMPANY'S PROPOSED REJOINDER ADJUSTMENTS TO REVENUES AND EXPENSES AND IDENTIFY ANY ADJUSTMENTS YOU HAVE ACCEPTED FROM STAFF AND/OR RUCO?

A. The Company rejoinder adjustments are detailed on rebuttal schedule C-2, pages 1-8. The rebuttal income statement with adjustments is shown on rejoinder schedule C-1.

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[1] There are circumstances where CIAC is used to fund specific types of plant like transmission and distribution mains, reservoirs, or water treatment facilities. In those cases, and where the CIAC can be specifically traced to the plant funded, the CIAC amounts and corresponding plant depreciation rates should be used to amortize CIAC in order to insure plant and CIAC are properly matched.

In rejoinder adjustment number 1, the depreciation expense is annualized, reflecting the plant-in-service adjustments discussed above. Depreciation expense has decreased slightly from the Company's rebuttal filing due to the plant-in-service adjustment I discussed above.

Rejoinder adjustment number 2 adjusts property taxes using the Company's rejoinder proposed revenues. I continue to employ the methodology used by Staff and recognized in past Commission decisions. Bourassa Rb. at 17. Any difference between Staff and the Company with respect to property taxes is due to a difference in the parties' respective proposed revenues. RUCO continues to recommend use of 2004, 2005, and one year of proposed revenues. Coley Sb. at 10 and RUCO Surrebuttal Schedule TJC-30.

Rejoinder adjustment number 3 decreases outside services expense and reflects the Company's adoption of RUCO's proposed removal of outside service contract costs for an operator. Coley Sb. at 33. Since rebuttal, the Company has confirmed that an employee was hired to perform the services provided by the outside contractor. Since the employee labor costs were included in the Company's salaries and wages annualization, this is an appropriate adjustment.

Rejoinder adjustment number 4 removes the negative expense amount of $1,294 for general insurance and sets general insurance expense to zero. This adjustment should have been made in the rebuttal filing but was overlooked. A negative expense amount does not make sense.

Rejoinder adjustment number 7 removes lobbying expenses of $950 associated with the dues paid to the Investor Owned Arizona Water Utilities Association. The recommendation to remove this expense was made by Staff in its direct filing but was overlooked in the Company's rebuttal.

Rejoinder adjustment number 6 synchronizes interest expense with the

Company's rejoinder FVRB.

Rejoinder adjustment number 7 reflects the proposed increase in income taxes on adjusted test year expenses and proposed rejoinder revenues.

B. <u>Rejoinder to Staff on Income Statement.</u>

Q. WHAT ISSUES REMAIN IN DISPUTE WITH STAFF WITH RESPECT TO THE INCOME STATEMENT?

A. It is difficult to say. Like the testimony on rate base, Staff's response to our rebuttal testimony on the income statement is short, cursory and provides almost no detail to support Staff's position. One could conclude that because Staff has no basis to contradict the Company's rebuttal since it said virtually nothing. That said, rate case expense and Staff's normalization of certain expenses by averaging remain in dispute. Millsap Sb. at 3-6. Also in dispute is the normalization of general insurance, where Staff recommends the Company's rebuttal proposed amount of negative $1,294. Millsap Sb. at 6. Staff does not provide an explanation of why it no longer normalizes general insurance while continuing to recommend the normalization of chemicals expense and repairs and maintenance expense using expenses in years prior to the test year. *Id.* at 6.

Q. WHAT IS STAFF'S SURREBUTTAL TESTIMONY REGARDING RATE CASE EXPENSE?

A. That "Mr. Millsap's recommendation is based on the classification of the utilities involved" and that he "mentioned" other water companies in a data request response. Millsap Sb. at 3. This conclusory testimony provides no support for Staff's recommendation.

Mr. Millsap also testifies that they had to conduct a lot of discovery in this case because of the ALJ and the Commission, which expect them to conduct an adequate analysis. *Id.* This second point misses the mark. No one questioned

whether Staff had to do an analysis. CCWC just pointed out that Staff's extensive discovery impacted the level of rate case expense. So does Staff's 11th hour introduction of a new witness on the cost of equity. But Staff ignores any case-specific impacts to rate case expense. This is rather ironic given Staff's argument that every case stands on its own.

Finally, Mr. Millsap states that rate case expense should be "normalized" not amortized, but he doesn't say why and still offers no support for his position, which conflicts with a long line of Commission decisions ordering rate case expense to be amortized. Millsap Sb. at 3.

In short, Staff made no effort to address the Company's concerns that its position was essentially unsupported and in conflict with past Commission decisions on rate case expense. Bourassa Rb. at 24-27. Staff also ignored our rebuttal concerning the rate case expense for the appeal and remand. *Id.* at 24-25. *See also* Hanford Rb. at 11-12.

Q. HOW DOES STAFF ADDRESS THE COMPANY'S REBUTTAL TESTIMONY REGARDING STAFF'S ADJUSTMENTS TO NORMALIZE CHEMICALS, REPAIRS AND MAINTENANCE AND INSURANCE EXPENSE?

A. Staff really doesn't address this testimony. Bourassa Rb. at 31-32; Hanford Rb. at 8. Mr. Millsap just testifies that "normalization is a basic ratemaking principle" and that it makes the test year "as normal as possible". Millsap Sb. at 5.

Q. DOES MR. MILLSAP PROVIDE ANY EXPLANATION OF HOW THESE ADJUSTMENTS MAKE THE TEST YEAR "AS NORMAL AS POSSIBLE"?

A. No. *Id.* at 5-6.

Q. DOES STAFF ACCEPT ANY OF THE COMPANY'S REBUTTAL ADJUSTMENTS TO THE INCOME STATEMENT IN ITS SURREBUTTAL?

A. Other than to recommend a negative $1,294 of general insurance expense as shown in the Company's rebuttal income statement, no. As I explained above, the Company is now recommending the expense be zero.

C. <u>Rejoinder to RUCO on Income Statement.</u>

Q. WHAT ISSUES REMAIN IN DISPUTE WITH RUCO WITH RESPECT TO THE INCOME STATEMENT?

A. RUCO continues to advocate its methodology for determining property tax expense. Coley Sb. at 31-32. RUCO also continues to oppose recovery of rate case expense for the appeal and remand. Rigsby Sb. at 4-5.

Q. DOES RUCO PROVIDE ANY FURTHER SUPPORT FOR ADOPTION OF ITS PROPERTY TAX EXPENSE?

A. Not in my opinion. RUCO instead argues that prior property tax expense levels were higher than the level of this expense actually incurred. But RUCO completely ignores my rebuttal testimony where I offer several obvious reasons that this has occurred. Bourassa Rb. at 19-21. As a result, RUCO has still failed to provide any basis for deviating from the Commission's well-established methodology for determining the level of property tax expense. Bourassa Dt. at 14.

Q. WHY DOES RUCO CONTINUE TO OPPOSE RECOVERY OF RATE CASE EXPENSE FOR THE APPEAL AND REMAND PROCEEDINGS?

A. Mr. Rigsby continues to assert that CCWC made a business decision to pursue the appeal to increase its operating income. Rigsby Sb. at 4-5. RUCO's argument misses the point. The Commission failed to follow the Arizona Constitution and,

as a result, did not properly determine the Company's revenue requirement, including the amount of operating income. The appeal and remand was the result of that unlawful decision, and for this reason CCWC is entitled to recover a reasonable amount of rate case expense for the appeal and remand.

Q. ISN'T EVERY RATE CASE THE RESULT OF A "BUSINESS DECISION"?

A. Yes, if you follow Mr. Rigsby's logic. That would mean that rate case expense would never be recovered, which flies in the face of long-standing policy. The appeal and remand proceedings were a continuation of the same rate case, and the Company is entitled to recover the additional expenses it incurred.

IV. RATE DESIGN.

Q. PLEASE SUMMARIZE THE POSITIONS OF THE PARTIES WITH RESPECT TO THE RATE DESIGN.

A. Staff does not provide any testimony in its surrebuttal on any rate design issue in this case, and does not provide any schedules nor show its surrebuttal rates. As a result, while I cannot state what Staff's recommended rates are, it does appear to me that all parties continue to propose the same rate design as adopted by the Commission in the last rate case for CCWC, Decision No. 68176 (September 30, 2005), with one exception: the rate ofr irrigation and construction water.

Q. WHAT DO YOU MEAN STAFF DOES NOT ADDRESS ANY RATE DESIGN ISSUE IN "THIS CASE"?

A. In his surrebuttal testimony (at 1), Mr. Millsap addressed the Company's proposed surcharge in another docket. While I disagree with Mr. Millsap's testimony, because this is an issue in another docket, I am not going to address it in this one.

The Company has already filed a corrected schedule showing the correct surcharge in the correct docket. *See* Docket No. W-02113A-04-0616.

Q. WHAT IS THE DISAGREEMENT REGARDING THE RATE FOR IRRIGATION AND CONSTRUCTION WATER?

A. Presently, the rate for irrigation (i.e., exterior water use for turf and landscaping) and construction water is lower than the other commodity rates, including the lowest rate block for residential customers. This low rate encourages the use of potable water for exterior watering and construction-related purposes. The Company recommends that the commodity rate for irrigation and construction water be increased so that this rate is the same as the middle rate block for residential customers and the initial rate block for commercial and industrial customers. This is shown below in my proposed rejoinder rates. Staff agrees with the Company in principle, but proposes to raise the commodity rate for irrigation and construction water to a smaller extent, so that is closer to the middle rate block for residential customers and the initial rate block for commercial and industrial customers, but is still less.

Q. WHAT ABOUT RUCO'S ASSERTION THAT THE COMPANY PROPOSES A HOOK-UP FEE TO RECOVER THE COSTS OF THE ADDITIONAL CAP ALLOCATION?

A. The Company is not seeking approval of such a hook-up fee which is why I did not address it in my direct or rebuttal testimonies. However, I inadvertently included schedules which would lead one to believe otherwise, and RUCO correctly notes that this was reflected in my H-3 schedules. Coley Sb. at 36.

Q. DID STAFF POINT OUT A PROBLEM WITH A FOOTNOTE CONCERNING THE TAXABILITY OF METER AND SERVICE LINE CHARGES ON PAGE 4 OF YOUR H-3 SCHEDULES?

A. Yes. Millsap Dt. at 42. Staff is correct and this language was inadvertently included on the schedule. It has been eliminated from the Company's rejoinder schedules.

Q. WHAT ARE THE COMPANY'S PROPOSED REJOINDER RATES?

A. The proposed rates are:

All Classes

Meter Size(inches)	Monthly Minimum	Gallons included in Monthly Minimum
3/4	$ 18.15	0
1	$ 30.25	0
1 1 /2	$ 60.50	0
2	$ 96.80	0
3	$ 193.60	0
4	$ 302.50	0
6	$ 605.00	0
8	$ 1,119.25	0
10	$ 1,573.00	0
12	$ 2,783.00	0
Fire Hydrants used for Irrigation	$ 194.88	0
Fire Hydrants basic Service	$ 0.00	0
Fire Sprinkler	$ 10.00	0

The commodity charges and tiers by meter size are:

Residential, Commercial and Industrial Class

Meter Size (inches)	Tier (gallons)	Charge per 1,000 gallons
3/4	1 to 3,000	$ 2.262
	3,001 to 9,000	$ 3.364
	Over 10,000	$ 4.044
1	1 to 24,000	$ 3.364
	Over 24,000	$ 4.044
1 1/2	1 to 60,000	$ 3.364
	Over 60,000	$ 4.044
2	1 to 100,000	$ 3.364
	Over 100,000	$ 4.044
3	1 to 225,000	$ 3.364
	Over 225,000	$ 4.044
4	1 to 350,000	$ 3.364
	Over 350,000	$ 4.044
6	1 to 725,000	$ 3.364
	Over 725,000	$ 4.044
8	1 to 1,125,000	$ 3.364
	Over 1,125,000	$ 4.044
10	1 to 1,500,000	$ 3.364
	Over 1,500,000	$ 4.044
12	1 to 2,250,000	$ 3.364
	Over 2,250,000	$ 4.044

Irrigation Class		
All Meter Sizes	All gallons	$3.364
Fire Hydrant Irrigation and Construction Class		
All Meter Sizes	All gallons	$3.364
Standpipe (Fire Hydrants)		
All Meter Sizes	All gallons	$3.364
Fire Sprinklers		
All Meter Sizes	All gallons	$3.364

Q. WHAT IS THE IMPACT OF THE COMPANY'S PROPOSED RATES ON AN AVERAGE ¾ INCH METERED RESIDENTIAL CUSTOMER?

A. The present monthly bill for a 3/4-inch metered residential customer using an average of 8,450 gallons is $32.38. The proposed monthly bill for a 3/4-inch metered residential customer using an average of 8,450 gallons is $43.27 – an increase of $10.90 or 33.66% over the present rates.

Q. ARE THERE ANY CHANGES TO THE MISCELLANEOUS SERVICE CHARGES?

A. No.

Q. ARE THERE ANY CHANGES TO THE METER AND SERVICE LINE INSTALLATION CHARGES?

A. No.

Q. ARE STAFF AND THE COMPANY IN AGREEMENT ON METER AND SERVICE LINE INSTALLATION CHARGES?

A. Yes.

Q. WHAT ABOUT THE COMPANY'S PROPOSED LOW INCOME TARIFF?

A. This proposal was set forth in my supplemental rebuttal filed November 19, 2008, so neither Staff nor RUCO has had a chance to address this proposal yet.

Q. DO YOU HAVE ANY OTHER COMMENTS AT THIS TIME?

A. Yes. I prepared a revenue proof of the rates proposed by Staff in its direct filing. Based on the revenue proof, I believe that Staff's rates do not produce the revenue requirement as set forth in Staff's direct filing. I am currently working with Staff to identify the reason for the discrepancy and to resolve the issue.

Q. DOES THAT CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes.

BOURASSA REJOINDER SCHEDULES

(RATE BASE)

Chaparral City Water Company
Test Year Ended December 31, 2006
Computation of Increase in Gross Revenue
Requirements As Adjusted

Exhibit
Rejoinder Schedule A-1
Page 1
Witness: Bourassa

Line No.		
1	Fair Value Rate Base	$ 27,751,114
2		
3	Adjusted Operating Income	979,859
4		
5	Current Rate of Return	3.53%
6		
7	Required Operating Income	$ 2,764,011
8		
9	Required Rate of Return on Fair Value Rate Base	9.96%
10		
11	Operating Income *Deficiency*	$ 1,784,152
12		
13	Gross Revenue Conversion Factor	1.6286
14		
15	Increase in Gross Revenue	
16	Requirement	$ 2,905,731
17		
18	Adjusted Test Year Revenues	$ 7,505,010
19	Increase	$ 2,905,731
20	Proposed Revenue Requirement	$ 10,410,741
21	% Increase over adjusted test year revenues	38.72%
22		

23	**Customer**	**Present**	**Proposed**	**Dollar**	**Percent**
24	**Classification**	**Rates**	**Rates**	**Increase**	**Increase**
25	**Residential, Commerical, Industrial**				
26	3/4 Inch	$ 3,524,021	$ 4,708,257	$ 1,184,236	33.60%
27	1 Inch	2,441,283	3,256,257	814,974	33.38%
28	1.5 Inch	172,583	230,257	57,674	33.42%
29	2 Inch	345,894	460,857	114,963	33.24%
30	3 Inch	24,229	32,224	7,995	33.00%
31	4 Inch	34,290	45,748	11,458	33.41%
32	**Irrigation**				
33	3/4 Inch	69,200	129,742	60,542	87.49%
34	1 Inch	178,745	347,410	168,666	94.36%
35	1.5 Inch	134,012	258,465	124,453	92.87%
36	2 Inch	161,987	311,425	149,437	92.25%
37	4 Inch	152,769	320,083	167,314	109.52%
38	6 Inch	322,475	681,923	359,448	111.47%
39	**FH/Construction**				
40	3/4 Inch	181	256	75	41.60%
41	1 Inch	1,357	2,309	952	70.16%
42	2 Inch	646	1,090	444	68.71%
43	3 Inch	84,704	122,800	38,096	44.98%
44	4 Inch	11,424	15,971	4,547	39.80%
45	**Fire Sprinkler**	5,770	5,773	3	0.06%
46	**Reconciling Amt H-1 to C-1**	8,050	1,565	(6,485)	
47	**Subtotal**	$ 7,673,618	$ 10,932,412	$ 3,258,794	42.47%
48	**Revenue Annualization**	(250,897)	(603,959)	(353,062)	140.72%
49	Miscellaneous Revenues	82,289	82,289	-	0.00%
50	**Total of Water Revenues (a)**	$ 7,505,010	$ 10,410,741	$ 2,905,731	38.72%
51					

52 SUPPORTING SCHEDULES:
53 Rejoinder B-1
54 Rejoinder C-1
55 Rejoinder C-3
56 Rejoinder H-1
57

Chaparral City Water Company
Test Year Ended December 31, 2006
Summary of Rate Base

Exhibit
Rejoinder Schedule B-1
Page 1
Witness: Bourassa

Line No.		Original Cost Rate base	RCND Rate base	Fair Value Rate Base (50/50)
1				
2	Gross Utility Plant in Service	$ 50,893,199	$ 78,120,931	$ 64,507,065
3	Less: Accumulated Depreciation	13,696,614	23,733,469	18,715,041
4				
5	Net Utility Plant in Service	$ 37,196,585	$ 54,387,462	$ 45,792,023
6				
7	Less:			
8	Advances in Aid of			
9	Construction	6,557,243	10,225,334	8,391,288
10	Contributions in Aid of			
11	Construction - Net of amortization	6,119,129	9,435,452	7,777,291
12	Customer Meter Deposits	819,845	819,845	819,845
13	Deferred Income Taxes & Credits	925,896	925,896	925,896
14	Investment tax Credits	-	-	-
15	Well Settlement Proceeds	646,000	646,000	646,000
16				
17	Plus:			
18	Unamortized Debt Issuance			
19	Costs	424,010	424,010	424,010
20	Prepayments	-	-	-
21	Materials and Supplies	-	-	-
22	Deferred Regulatory Assets	-	-	-
23	Allowance for Working Capital	95,400	95,400	95,400
24				
25				
26	Total Rate Base	$ 22,647,882	$ 32,854,345	$ 27,751,114
27				
28				
29				
30	SUPPORTING SCHEDULES:			RECAP SCHEDULES:
31	Rejoinder B-2			Rejoinder A-1
32	Rejoinder B-3			
33	Rejoinder B-5			
34				
35				

Chaparral City Water Company
Test Year Ended December 31, 2006
Original Cost Rate Base Proforma Adjustments

Exhibit
Rejoinder Schedule B-2
Page 1
Witness: Bourassa

Line No.		Direct Adjusted at End of Test Year	Adjustment Amount	Rejoinder Adjusted at end of Test Year
1	Gross Utility			
2	Plant in Service	$ 50,908,634	(15,435)	$ 50,893,199
3				
4	**Less:**			
5	Accumulated			
6	Depreciation	13,696,614	-	13,696,614
7				
8				
9	Net Utility Plant			
10	in Service	$ 37,212,020		$ 37,196,585
11				
12	**Less:**			
13	Advances in Aid of			
14	Construction	6,557,243	-	6,557,243
15				
16	Contributions in Aid of			
17	Construction - Net	6,119,129	-	6,119,129
18				
19	Customer Meter Deposits	819,845	-	819,845
20	Deferred Income Taxes	925,896	-	925,896
21	Investment Tax Credits	-	-	-
22	Well Settlement Proceeds	646,000	-	646,000
23				
24	**Plus:**			
25	Unamortized Debt Issuance			
26	Costs	424,010	-	424,010
27	Prepayments	-	-	-
28	Materials and Supplies	-	-	-
29	Deferred Regulatory Assets	-	-	-
30	Working capital	95,400	-	95,400
31				
32				
33	Total	$ 22,663,316		$ 22,647,882
34				
35				
36				
37	SUPPORTING SCHEDULES:			RECAP SCHEDULES:
38	Rejoinder B-2, page 1			Rejoinder B-1
39				
40				
41				
42				
43				
44				
45				
46				

Chaparral City Water Company
Test Year Ended December 31, 2006
Original Cost Rate Base Proforma Adjustments

Exhibit
Rejoinder Schedule B-2
Page 2
Witness: Bourassa

Line No.		Rebuttal Adjusted at End of Test Year	ADJUSTMENTS 1 GO PTY Plant	2 GO PTY A/D	3 Intentionally Left Blank	4 Intentionally Left Blank	Rejoinder at end of Test Year
1	Gross Utility						
2	Plant in Service	$ 50,908,634	$ (15,435)				$ 50,893,199
3							
4	**Less:**						
5	Accumulated						
6	Depreciation	13,696,614		-			13,696,614
7							
8							
9	Net Utility Plant						
10	in Service	$ 37,212,020	$ (15,435)	$ -	$ -	$ -	$ 37,196,585
11							
12	**Less:**						
13	Advances in Aid of						
14	Construction	6,557,243					6,557,243
15							
16	Contributions in Aid of						
17	Construction - Net	6,119,129					6,119,129
18							
19	Customer Meter Deposits	819,845					819,845
20	Deferred Income Taxes	925,896					925,896
21	Investment Tax Credits	-					-
22	Well Settlement Proceeds	646,000					646,000
23							
24	**Plus:**						
25	Unamortized Debt Issuance						
26	Costs	424,010					424,010
27	Prepayments	-					-
28	Materials and Supplies	-					-
29	Deferred Regulatory Assets	-					-
30	Working capital	95,400					95,400
31							
32							
33	Total	$ 22,663,316	$ (30,869)	$ -	$ -	$ -	$ 22,647,882
34							
35							
36							
37	SUPPORTING SCHEDULES:						RECAP SCHEDULES:
38	Rejoinder B-2, pages 3-6						Rejoinder B-1
39							
40							

Chaparral City Water Company
Test Year Ended December 31, 2006
Original Cost Rate Base Proforma Adjustments
Adjustment 1

Exhibit
Rejoinder Schedule B-2
Page 3
Witness: Bourassa

Line No.				A	B					
1	General Office Plant Allocation - Plant-in-service			Remove	Intentionally			Rejoinder	Rebuttal	
2			Rebuttal	PTY	Left	Rejoinder	Allocation	Allocated	Allocated	Rejoinder
3	NARUC	NARUC Description	Orig. Cost	Plant	Blank	Orig. Cost	Factor	Orig. Cost	Orig. Cost	Adjustment
4	301	Organization Cost	16,452			16,452	2.80%	461	461	-
5	302	Franchise Cost and Other Intangible Pla	669,237	(159,087)		510,150	2.80%	14,284	18,739	(4,454)
6	303	Land and Land Rights	-			-	2.80%	-	-	-
7	304	Structures and Improvements	4,982,559			4,982,559	2.80%	139,512	139,512	-
8	305	Collecting and Impounding Res.	-			-	2.80%	-	-	-
9	306	Lake River and Other Intakes	-			-	2.80%	-	-	-
10	307	Wells and Springs	-			-	2.80%	-	-	-
11	308	Infiltration Galleries and Tunnels	-			-	2.80%	-	-	-
12	309	Supply Mains	-			-	2.80%	-	-	-
13	310	Power Generation Equipment	-			-	2.80%	-	-	-
14	311	Electric Pumping Equipment	(916)			(916)	2.80%	(26)	(26)	-
15	320	Water Treatment Equipment	-			-	2.80%	-	-	-
16	330	Distribution Reservoirs & Standpipe	-			-	2.80%	-	-	-
17	331	Transmission and Distribution Mains	-			-	2.80%	-	-	-
18	333	Services	-			-	2.80%	-	-	-
19	334	Meters	-			-	2.80%	-	-	-
20	335	Hydrants	-			-	2.80%	-	-	-
21	336	Backflow Prevention Devices	-			-	2.80%	-	-	-
22	339	Other Plant and Miscellaneous Equipme	847,382			847,382	2.80%	23,727	23,727	-
23	340	Office Furniture and Fixtures	14,268,765	(392,151)		13,876,614	2.80%	388,545	399,525	(10,980)
24	341	Transportation Equipment	278,718			278,718	2.80%	7,804	7,804	-
25	342	Stores Equipment	-			-	2.80%	-	-	-
26	343	Tools and Work Equipment	405,643			405,643	2.80%	11,358	11,358	-
27	344	Laboratory Equipment	4,061			4,061	2.80%	114	114	-
28	345	Power Operated Equipment	249,261			249,261	2.80%	6,979	6,979	-
29	346	Communications Equipment	165,561			165,561	2.80%	4,636	4,636	-
30	347	Miscellaneous Equipment	-			-	2.80%	-	-	-
31	348	Other Tangible Plant	-			-	2.80%	-	-	-
32										
33			$21,886,723	$ (551,238)	$ -	$21,335,485		$ 597,394	$ 612,828	$ (15,435)
34										
35	General Office Plant Allocation - Plant-in-service per Rebuttal Filing							$ 612,828		
36										
37	Increase (Decrease) to Plant -in-service							$ (15,435)		
38										
39	Adjustment to Plant-in-Service							$ (15,435)		
40										
41										
42	SUPPORTING SCHEDULES									
43	RUCO OCRB Adj. #11 - Schedule TJC-11									
44										

Chaparral City Water Company
Test Year Ended December 31, 2006
Original Cost Rate Base Proforma Adjustments
Adjustment 2

Exhibit
Rejoinder Schedule B-2
Page 4
Witness: Bourassa

General Office Plant Allocation -Accumulated Depreciation

Line No.	NARUC	NARUC Description	Rebuttal Accum. Depr.	A Remove PTY Plant	B Intentionally Left Blank	Rejoinder Accum. Depr.	Allocation Factor	Rejoinder Allocated Accum. Depr.	Rebuttal Allocated Accum. Depr.	Rejoinder Adjustment
5	301	Organization Cost	-			-	2.80%	-	-	-
6	302	Franchise Cost and Other Intangible Plant	57,708	-		57,708	2.80%	1,616	1,616	-
7	303	Land and Land Rights	-			-	2.80%	-	-	-
8	304	Structures and Improvements	2,354,430			2,354,430	2.80%	65,924	65,924	-
9	305	Collecting and Impounding Res.	-			-	2.80%	-	-	-
10	306	Lake River and Other Intakes	-			-	2.80%	-	-	-
11	307	Wells and Springs	-			-	2.80%	-	-	-
12	308	Infiltration Galleries and Tunnels	-			-	2.80%	-	-	-
13	309	Supply Mains	-			-	2.80%	-	-	-
14	310	Power Generation Equipment	-			-	2.80%	-	-	-
15	311	Electric Pumping Equipment	-			-	2.80%	-	-	-
16	320	Water Treatment Equipment	-			-	2.80%	-	-	-
17	330	Distribution Reservoirs & Standpipe	-			-	2.80%	-	-	-
18	331	Transmission and Distribution Mains	-			-	2.80%	-	-	-
19	333	Services	-			-	2.80%	-	-	-
20	334	Meters	-			-	2.80%	-	-	-
21	335	Hydrants	-			-	2.80%	-	-	-
22	336	Backflow Prevention Devices	-			-	2.80%	-	-	-
23	339	Other Plant and Miscellaneous Equipment	(3,450)			(3,450)	2.80%	(97)	(97)	-
24	340	Office Furniture and Fixtures	8,664,647	-		8,664,647	2.80%	242,610	242,610	-
25	341	Transportation Equipment	278,717			278,717	2.80%	7,804	7,804	-
26	342	Stores Equipment	-			-	2.80%	-	-	-
27	343	Tools and Work Equipment	192,488			192,488	2.80%	5,390	5,390	-
28	344	Laboratory Equipment	4,062			4,062	2.80%	114	114	-
29	345	Power Operated Equipment	249,257			249,257	2.80%	6,979	6,979	-
30	346	Communications Equipment	165,561			165,561	2.80%	4,636	4,636	-
31	347	Miscellaneous Equipment	-			-	2.80%	-	-	-
32	348	Other Tangible Plant	-			-	2.80%	-	-	-
33			$11,963,420	$ -	$ -	$ 11,963,420		$ 334,976	$ 334,976	$ -

35 General Office Plant Allocation - Plant-in-service per Rebuttal Filing	$ 334,976
37 Increase (Decrease) to Plant -in-service	$ -
39 Adjustment to Plant-in-Service	$ -

42 SUPPORTING SCHEDULES
43 RUCO OCRB Adj. #11 - Schedule TJC-11

Chaparral City Water Company
Test Year Ended December 31, 2006
RCND Rate Base Proforma Adjustments

Exhibit
Rejoinder Schedule B-:
Page 1
Witness: Bourassa

Line No.		Rebuttal Adjusted at End of Test Year	Adjustment	Rejoinder Adjusted at end of Test Year
1	Gross Utility			
2	Plant in Service	$ 78,136,365	(15,434)	$ 78,120,931
3				
4	**Less:**			
5	Accumulated			
6	Depreciation	23,732,066	1,403	23,733,469
7				
8	Net Utility Plant			
9	in Service	$ 54,888,882	-	$ 54,387,462
10				
11	**Less:**			
12	Advances in Aid of			
13	Construction	10,225,334	-	10,225,334
14				
15	Contributions in Aid of			
16	Construction - Net	9,435,452	-	9,435,452
17				
18	Customer Meter Deposits	819,845	-	819,845
19	Deferred Income Taxes	925,896	-	925,896
20	Investment Tax Credits	-	-	-
21	Well Settlement Proceeds	646,000	-	646,000
22				
23	**Plus:**			
24	Unamortized Debt Issuance			
25	Costs	424,010	-	424,010
26	Prepayments	-	-	-
27	Materials and Supplies	-	-	-
28	Deferred Regulatory Assets	-	-	-
29	Working capital	95,400	-	95,400
30				
31				
32	Total	$ 33,355,766		$ 32,854,345
33				
34				
35				
36	SUPPORTING SCHEDULES:			RECAP SCHEDULES:
37	Rejoinder B-3, page 2			Rejoinder B-1
38				
39				
40				

Chaparral City Water Company
Test Year Ended December 31, 2006
RCND Rate Base Proforma Adjustments

Exhibit
Rejoinder Schedule B-3
Page 2
Witness: Bourassa

Line No.		Rebuttal Adjusted at end of Test Year	1 GO PTY Plant	2 GO PTY A/D	3 Intentionally Left Blank	4 Intentionally Left Blank	5 Intentionally Left Blank	6 Intentionally Left Blank	Rejoinder Adjusted at end of Test Year
1	Gross Utility								
2	Plant in Service	$ 78,136,365	$ (15,434)						$ 78,120,931
3									
4	**Less:**								
5									
6	Accumulated								
7	Depreciation	23,732,066		1,403					23,733,469
8									
9	Net Utility Plant								
10	in Service	$ 54,404,299							$ 54,387,462
11									
12	**Less:**								
13	Advances in Aid of								
14	Construction	10,225,334							10,225,334
15									
16	Contributions in Aid of								
17	Construction - Net	9,435,452							9,435,452
18									
19	Customer Meter Deposits	819,845							819,845
20	Deferred Income Taxes	925,896							925,896
21	Investment Tax Credits	-							-
22	Well Settlement Proceeds	646,000							646,000
23									
24	**Plus:**								
25	Unamortized Debt Issuance								
26	Costs	424,010							424,010
27	Prepayments	-							-
28	Materials and Supplies	-							-
29	Deferred Regulatory Assets	-							-
30	Working capital	95,400							95,400
31									
32									
33	Total	$ 32,871,183	$ (15,434)	$ 1,403	$ -	$ -	$ -	$ -	$ 32,854,345
34									
35									
36									
37	SUPPORTING SCHEDULES:								
38	Rejoinder B-3, pages 3-6								
39									

Chaparral City Water Company
Test Year Ended December 31, 2006
RCND Rate Base Proforma Adjustments
Adjustment 1

Exhibit
Rejoinder Schedule B-3
Page 3
Witness: Bourassa

Line No.				1	2					
1	General Office Plant Allocation - Plant-in-service		Rebuttal		Intentionally	Rejoinder		Rejoinder	Rebuttal	
2			RCN	Remove	Left	Trended	Allocation	Allocated	Allocated	Rejoinder
3	NARUC	NARUC Description	Value	GO Plant	Blank	RCN Value	Factor	RCN Value	RCN Value	Adjustment
4	301	Organization Cost	16,452			16,452	2.80%	461	461	-
5	302	Franchise Cost and Other Intangible Plant	669,237	(159,087)		510,150	2.80%	14,284	18,739	(4,454)
6	303	Land and Land Rights	-			-	2.80%	-	-	-
7	304	Structures and Improvements	9,379,730			9,379,730	2.80%	262,632	262,632	-
8	305	Collecting and Impounding Res.	-			-	2.80%	-	-	-
9	306	Lake River and Other Intakes	-			-	2.80%	-	-	-
10	307	Wells and Springs	-			-	2.80%	-	-	-
11	308	Infiltration Galleries and Tunnels	-			-	2.80%	-	-	-
12	309	Supply Mains	-			-	2.80%	-	-	-
13	310	Power Generation Equipment	-			-	2.80%	-	-	-
14	311	Electric Pumping Equipment	(1,860)			(1,860)	2.80%	(52)	(52)	-
15	320	Water Treatment Equipment	-			-	2.80%	-	-	-
16	330	Distribution Reservoirs & Standpipe	-			-	2.80%	-	-	-
17	331	Transmission and Distribution Mains	-			-	2.80%	-	-	-
18	333	Services	-			-	2.80%	-	-	-
19	334	Meters	-			-	2.80%	-	-	-
20	335	Hydrants	-			-	2.80%	-	-	-
21	336	Backflow Prevention Devices	-			-	2.80%	-	-	-
22	339	Other Plant and Miscellaneous Equipment	40,256			40,256	2.80%	1,127	1,127	-
23	340	Office Furniture and Fixtures	17,188,237	(392,121)		16,796,116	2.80%	470,291	481,271	(10,979)
24	341	Transportation Equipment	310,294			310,294	2.80%	8,688	8,688	-
25	342	Stores Equipment	-			-	2.80%	-	-	-
26	343	Tools and Work Equipment	663,298			663,298	2.80%	18,572	18,572	-
27	344	Laboratory Equipment	15,358			15,358	2.80%	430	430	-
28	345	Power Operated Equipment	634,172			634,172	2.80%	17,757	17,757	-
29	346	Communications Equipment	260,818			260,818	2.80%	7,303	7,303	-
30	347	Miscellaneous Equipment	-			-	2.80%	-	-	-
31	348	Other Tangible Plant	-			-	2.80%	-	-	-
32										
33			$ 29,175,992	$ (551,208)	$ -	$ 28,624,784		$ 801,494	$ 816,928	$ (15,434)
34										
35	GO RCN Plant-in-Service Per Rebuttal Filing							$ 816,928		
36										
37	Increase (Decrease) in GO RCN Plant-in-Service							$ (15,434)		
38										
39	Adjustment to GO RCN Plant-in-Service							$ (15,434)		
40										
41										
42	SUPPORTING SCHEDULES									
43	RUCO RCN Adj. #11 Schedule TJC-25									
44										

Chaparral City Water Company
Test Year Ended December 31, 2006
RCND Rate Base Proforma Adjustments
Adjustment 2

Exhibit
Rejoinder Schedule B-3
Page 4
Witness: Bourassa

General Office Plant Allocation - Accumulated Depreciation

Line No.	NARUC	NARUC Description	1 Rejoinder Original Cost	2 Rejoinder RCN Value	3=2/1 Rejoinder RCN Ratio	4 Rejoinder Original Cost Accum Depr	5=3x4 Rejoinder RCN Accum. Depr.	6 Allocation Factor	7=5x6 Allocated RCN Accum. Depr.	Rebuttal Allocated RCN Accum. Depr.	Rejoinder RCN Accum. Depr. Adjustment
6	301	Organization Cost	16,452	16,452	1.0000	-	-	2.80%	-	-	-
7	302	Franchise Cost and Other Intan. Plant	510,150	510,150	1.0000	57,708	57,708	2.80%	1,616	1,616	-
8	303	Land and Land Rights	-	-	-	-	-	2.80%	-	-	-
9	304	Structures and Improvements	4,982,559	9,379,730	1.8825	2,354,430	4,432,244	2.80%	124,103	124,103	-
10	305	Collecting and Impounding Res.	-	-	-	-	-	2.80%	-	-	-
11	306	Lake River and Other Intakes	-	-	-	-	-	2.80%	-	-	-
12	307	Wells and Springs	-	-	-	-	-	2.80%	-	-	-
13	308	Infiltration Galleries and Tunnels	-	-	-	-	-	2.80%	-	-	-
14	309	Supply Mains	-	-	-	-	-	2.80%	-	-	-
15	310	Power Generation Equipment	-	-	-	-	-	2.80%	-	-	-
16	311	Electric Pumping Equipment	(916)	(1,860)	2.0302	-	-	2.80%	-	-	-
17	320	Water Treatment Equipment	-	-	-	-	-	2.80%	-	-	-
18	330	Distribution Reservoirs & Standpipe	-	-	-	-	-	2.80%	-	-	-
19	331	Transmission and Distribution Mains	-	-	-	-	-	2.80%	-	-	-
20	333	Services	-	-	-	-	-	2.80%	-	-	-
21	334	Meters	-	-	-	-	-	2.80%	-	-	-
22	335	Hydrants	-	-	-	-	-	2.80%	-	-	-
23	336	Backflow Prevention Devices	-	-	-	-	-	2.80%	-	-	-
24	339	Other Plant and Misc Equipment	847,382	40,256	0.0475	(3,450)	(164)	2.80%	(5)	(5)	-
25	340	Office Furniture and Fixtures	13,876,614	16,796,116	1.2104	8,664,647	10,487,603	2.80%	293,653	292,250	1,403
26	341	Transportation Equipment	278,718	310,294	1.1133	278,717	310,293	2.80%	8,688	8,688	-
27	342	Stores Equipment	-	-	-	-	-	2.80%	-	-	-
28	343	Tools and Work Equipment	405,643	663,298	1.6352	192,488	314,752	2.80%	8,813	8,813	-
29	344	Laboratory Equipment	4,061	15,358	3.7818	4,062	15,362	2.80%	430	430	-
30	345	Power Operated Equipment	249,261	634,172	2.5442	249,257	634,162	2.80%	17,757	17,757	-
31	346	Communications Equipment	165,561	260,818	1.5754	165,561	260,818	2.80%	7,303	7,303	-
32	347	Miscellaneous Equipment	-	-	-	-	-	2.80%	-	-	-
33	348	Other Tangible Plant	-	-	-	-	-	2.80%	-	-	-
34			$ 21,335,485	$ 28,624,784		$ 11,963,420	$ 16,512,777		$ 462,358	$ 460,954	$ 1,403

37	GO RCN Accumulated Depreciation per Direct Filing	$ 460,954
39	Increase (Decrease) in GO RCN Accumulated Depreciation	$ 1,403
41	Adjustment to GO RCN Accumulated Depreciation	$ 1,403

43 SUPPORTING SCHEDULES
44 RUCO RCN Adj. #11 Schedule TJC-25

Chaparral City Water Company
Test Year Ended December 31, 2006
Computation of Working Capital

Exhibit
Rejoinder Schedule B-5
Page 1
Witness: Bourassa

Line No.			
1			
2	Cash Working Capital	$	(111,606)
3	Prepayments		192,485
4	Materials and Supplies		14,521
5			
6			
7			
8			
9	Total Working Capital Allowance	$	95,400
10			
11			
12	Working Capital Requested	$	95,400
13			
14			
15	SUPPORTING SCHEDULES:	RECAP SCHEDULES:	
16	RUCO Lead-Lag Study	Rejoinder B-1	
17	E-1	Rejoinder B-2	
18			
19			
20			

Chaparral City Water Company
Test Year Ended December 31, 2006
Income Statement

Exhibit
Rejoinder Schedule C-1
Page 1
Witness: Bourassa

Line No.		Rebuttal Test Year Adjusted Results	Rejoinder Adjustments	Test Year Rejoinder Adjusted Results	Proposed Rate Increase	Rejoinder Adjusted with Rate Increase
1	**Revenues**					
2	Metered Water Revenues	$ 7,422,721	$ -	$ 7,422,721	$ 2,905,731	$ 10,328,452
3	Unmetered Water Revenues	-	-	-		-
4	Other Water Revenues	82,289	-	82,289		82,289
5		$ 7,505,010	$ -	$ 7,505,010	$ 2,905,731	$ 10,410,741
6	**Operating Expenses**					
7	Salaries and Wages	$ 969,244	-	$ 969,244		$ 969,244
8	Purchased Water	821,470	-	821,470		821,470
9	Purchased Power	614,600	-	614,600		614,600
10	Chemicals	127,457	-	127,457		127,457
11	Repairs and Maintenance	61,392	-	61,392		61,392
12	Office Supplies and Expense	19,800	-	19,800		19,800
13	Outside Services	228,495	(71,000)	157,495		157,495
14	Water Testing	25,638	-	25,638		25,638
15	Rents	-	-	-		-
16	Transportation Expenses	70,430	-	70,430		70,430
17	Insurance - General Liability	(1,294)	1,294	-		-
18	Insurance - Health and Life	-	-	-		-
19	Reg. Commission Exp. - Rate Case	179,504	-	179,504		179,504
20	Miscellaneous Expense	1,298,112	(950)	1,297,162		1,297,162
21	Depreciation Expense	1,543,944	(732)	1,543,212		1,543,212
22	Amortization of Well Settlement	(76,000)	-	(76,000)		(76,000)
23	Amortization of CAP	-	-	-		-
24	Taxes Other Than Income	47,873	-	47,873		47,873
25	Property Taxes	251,493	(864)	250,629		250,629
26	Income Tax	382,609	32,637	415,246	1,121,580	1,536,826
27	**Total Operating Expenses**	$ 6,564,766	$ (39,616)	$ 6,525,151	$ 1,121,580	$ 7,646,730
28	**Operating Income**	$ 940,244	$ 39,616	$ 979,859	$ 1,784,152	$ 2,764,011
29	**Other Income (Expense)**					
30	Interest Income	-	-	-		-
31	Other income (loss)	-	-	-		-
32	Interest Expense	(368,024)	48,717	(319,307)		(319,307)
33	Other Expense	-	-	-		-
34		-	-	-		-
35	**Total Other Income (Expense)**	$ (368,024)	$ 48,717	$ (319,307)	$ -	$ (319,307)
36	**Net Profit (Loss)**	$ 572,219	$ 88,333	$ 660,552	$ 1,784,152	$ 2,444,704
37						
38	SUPPORTING SCHEDULES:				RECAP SCHEDULES:	
39	Rebuttal C-1, page 2				Rebuttal A-1	
40						

Chaparral City Water Company
Test Year Ended December 31, 2006
Income Statement

Exhibit
Rejoinder Schedule C-1
Page 2
Witness: Bourassa

Line No.		Rebuttal Adjusted Results	1 Depreciation	2 Property Taxes	3 Outside Services	4 Insurance	5 Misc. Expense	6 Interest Synch.	7 Income Taxes	Rejoinder Adjusted Results	Proposed Rate Increase	Rejoinder Adjusted with Rate Increase
1	**Revenues**											
2	Metered Water Revenues	$ 7,422,721								$ 7,422,721	$ 2,905,731	$ 10,328,452
3	Unmetered Water Revenues	-								-		-
4	Other Water Revenues	82,289								82,289		82,289
5		$ 7,505,010	$ -	$ -	$ -	$ -		$ -	$ -	$ 7,505,010	$ 2,905,731	$ 10,410,741
6	**Operating Expenses**											
7	Salaries and Wages	$ 969,244								$ 969,244		$ 969,244
8	Purchased Water	821,470								821,470		821,470
9	Purchased Power	614,600								614,600		614,600
10	Chemicals	127,457								127,457		127,457
11	Repairs and Maintenance	61,392								61,392		61,392
12	Office Supplies and Expense	19,800								19,800		19,800
13	Outside Services	228,495			(71,000)					157,495		157,495
14	Water Testing	25,638								25,638		25,638
15	Rents	-								-		-
16	Transportation Expenses	70,430								70,430		70,430
17	Insurance - General Liability	(1,294)				1,294				-		-
18	Insurance - Health and Life	-								-		-
19	Reg. Comm. Exp. - Rate Case	179,504								179,504		179,504
20	Miscellaneous Expense	1,298,112					(950)			1,297,162		1,297,162
21	Depreciation Expense	1,543,944	(732)							1,543,212		1,543,212
22	Amortization of Well Settlement	(76,000)								(76,000)		(76,000)
23	Amortization of CAP	-								-		-
24	Taxes Other Than Income	47,873								47,873		47,873
25	Property Taxes	251,493		(864)						250,629		250,629
26	Income Tax	382,609							32,637	415,246	1,121,580	1,536,826
27	**Total Operating Expenses**	$ 6,564,766	$ (732)	$ (864)	$ (71,000)	$ 1,294	$ (950)	$ -	$ 32,637	$ 6,525,151	$ 1,121,580	$ 7,646,730
28	**Operating Income**	$ 940,244	$ 732	$ 864	$ 71,000	$ (1,294)	$ 950	$ -	$ (32,637)	$ 979,859	$ 1,784,152	$ 2,764,011
29	**Other Income (Expense)**											
30	Interest Income	-								-		-
31	Other income (loss)	-								-		-
32	Interest Expense	(368,024)						48,717		(319,307)		(319,307)
33	Other Expense	-								-		-
34		-								-		-
35	**Total Other Income (Expense)**	$ (368,024)	$ -	$ -	$ -	$ -	$ -	$ 48,717	$ -	$ (319,307)	$ -	$ (319,307)
36	**Net Profit (Loss)**	$ 572,219	$ 732	$ 864	$ 71,000	$ (1,294)	$ 950	$ 48,717	$ (32,637)	$ 660,552	$ 1,784,152	$ 2,444,704
37												
38	SUPPORTING SCHEDULES:											
39	Rejoinder C-2											
40												
41												

RECAP SCHEDULES:
Rejoinder A-1

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustments to Revenues and Expenses

Exhibit
Rejoinder Schedule C-2
Page 1
Witness: Bourassa

Line No.		Adjustments to Revenues and Expenses						
		1	2	3	4	5	6	Subtotal
1		Depreciation	Property	Outside	Misc.		Interest	
2		Expense	Taxes	Services	Expense	Insurance	Synchronization	
3	Revenues							-
4								
5	Expenses	(732)	(864)	(71,000)	1,294			(71,303)
6								
7	Operating							
8	Income	732	864	71,000	(1,294)	-	-	71,303
9								
10	Interest							
11	Expense						(950)	(950)
12	Other							
13	Income /							-
14	Expense							
15								
16	Net Income	732	864	71,000	(1,294)	-	(950)	70,353
17								
18		Adjustments to Revenues and Expenses						
19		7	8	9	10	11	12	Subtotal
20		Interest	Income	Intentionally	Intentionally	Intentionally	Intentionally	
21		Synchronization	Tax	Left Blank	Left Blank	Left Blank	Left Blank	
22	Revenues							-
23								
24	Expenses		-				-	(71,303)
25								
26	Operating							
27	Income	-	-	-	-	-	-	71,303
28								
29	Interest							
30	Expense							(950)
31	Other							
32	Income /							-
33	Expense							
34								
35	Net Income	-	-	-	-	-	-	70,353
36								

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustments to Revenues and Expenses
Adjustment Number 1

Exhibit
Rejoinder Schedule C-2
Page 2
Witness: Bourassa

Line No.	Acct. No.	Description	Rebuttal Adjusted Original Cost	B-2 Rejoinder Adj #1	Intentionally Left Blank	Rejoinder Original Cost	Depr. Rate	Rejoinder Depreciation Expense
1		Depreciation Expense						
5	301	Organization Cost	-			-	0.00%	-
6	302	Franchise Cost	-			-	0.00%	-
7	303	Land and Land Rights	1,551,858			1,551,858	0.00%	-
8	304	Structures and Improvements	1,529,642			1,529,642	3.33%	50,937
9	305	Collecting and Impounding Res.	-			-	2.50%	-
10	306	Lake River and Other Intakes	-			-	2.50%	-
11	307	Wells and Springs	159,627			159,627	3.33%	5,316
12	308	Infiltration Galleries and Tunnels	-			-	6.67%	-
13	309	Supply Mains	-			-	2.00%	-
14	310	Power Generation Equipment	-			-	5.00%	-
15	311	Electric Pumping Equipment	1,588,246			1,588,246	12.50%	198,531
16	320	Water Treatment Equipment	5,786,639			5,786,639	3.33%	192,695
17	330	Dist Reservoirs & Standpipe	6,512,148			6,512,148	2.22%	144,570
18	331	Trans and Dist Mains	18,953,054			18,953,054	2.00%	379,061
19	333	Services	7,496,338			7,496,338	3.33%	249,628
20	334	Meters	2,736,866			2,736,866	8.33%	227,981
21	335	Hydrants	1,224,985			1,224,985	2.00%	24,500
22	336	Backflow Prevention Devices	-			-	6.67%	-
23	339	Other Plant and Misc Equipment	1,760,446			1,760,446	6.67%	117,422
24	340	Office Furniture and Fixtures	272,173			272,173	6.67%	18,154
25	341	Transportation Equipment	535,315			535,315	20.00%	107,063
26	342	Stores Equipment	-			-	4.00%	-
27	343	Tools and Work Equipment	149,365			149,365	5.00%	7,468
28	344	Laboratory Equipment	-			-	10.00%	-
29	345	Power Operated Equipment	-			-	5.00%	-
30	346	Communications Equipment	39,105			39,105	10.00%	3,911
31	347	Miscellaneous Equipment	0			0	10.00%	0
32	348	Other Tangible Plant	-			-	10.00%	-
33		Rounding	(3)			(3)		
34		TOTALS	$ 50,295,805	$ -	$ -	$ 50,295,805		$ 1,727,235
36		**General Office Plant Allocated**						
37	301	Organization	461			461	0.00%	-
38	302	Franch. and Other Intangibles	18,739	(4,454)		14,284	0.00%	-
39	304	Structures and Improvements	139,512			139,512	3.33%	4,646
40	311	Electric Pumping Equipment	(26)			(26)	12.50%	-
41	339	Other Plant and Equipment	23,727			23,727	3.33%	790
42	340	Office Furniture and Equipment	399,525	(10,980)		388,545	6.67%	25,904
43	341	Transportation Equipment	7,804			7,804	20.00%	- *
44	343	Tools and Work Equipment	11,358			11,358	5.00%	568
45	344	Laboratory Equipment	114			114	10.00%	11
46	346	Communication Equipment	4,636			4,636	10.00%	- *
47	345	Power Operated Equipment	6,979			6,979	5.00%	- *
48		Totals GO Plant	$ 612,828	$ (15,435)	$ -	$ 597,394		$ 31,919
50		Totals Plant-in-Service	$ 50,908,633		$ -	$ 50,893,199		
52		Less: Amortization of CIAC	$ 6,288,097			6,288,097	3.4342%	$ (215,943)
54		Total Depreciation Expense						$ 1,543,212
56		Direct Filing Depreciation Expense						$ 1,543,944
58		Increase (decrease) in Depreciation Expense						(732)
60		Adjustment to Revenues and/or Expenses						$ (732)

* Fully depreciated

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustment to Revenues and Expenses
Adjustment Number 2

Exhibit
Rejoinder Schedule C-2
Page 3
Witness: Bourassa

Line No.			
1	Property Taxes:		
2			
3	Rebuttal Adjusted Revenues in year ended 12/31/06	$	7,505,010
4	Rebuttal Adjusted Revenues in year ended 12/31/06		7,505,010
5	Proposed Revenues		10,410,741
6	Average of three year's of revenue	$	8,473,587
7	Average of three year's of revenue, times 2	$	16,947,174
8	Add:		
9	Construction Work in Progess at 10%	$	-
10	Deduct:		
11	Book Value of Transportation Equipment		474,679
12			
13	Full Cash Value	$	16,472,496
14	Assessment Ratio		22%
15	Assessed Value		3,623,949
16	Property Tax Rate		6.9159%
17			
18	Property Tax		250,629
19	Tax on Parcels		0
20			
21	Total Property Tax at Proposed Rates	$	250,629
22	Property Taxes in the test year		251,493
23	Change in Property Taxes	$	(864)
24			
25			
26	Adjustment to Revenues and/or Expenses	$	(864)
27			
28			

Chaparral City Water Company
Test Year Ended December 31, 2001
Adjustment to Revenues and Expenses
Adjustment Number 3

Exhibit
Rejoinder Schedule C-2
Page 4
Witness: Bourassa

Line No.			
1	Remove Outside Services Expense		
2			
3			
4	RUCO Adjustment #6 (Schedule TJC-37)	$	(71,000)
5			
6			
7			
8			
9	Increase (decrease) in Outside Services	$	(71,000)
10			
11			
12			
13			
14	Adjustment to Revenue and/or Expense	$	(71,000)
15			
16			
17			
18			
19			
20			
21			
22			
23			

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustment to Revenues and Expenses
Adjustment Number 4

Exhibit
Rejoinder Schedule C-2
Page 5
Witness: Bourassa

Line No.			
1	Insurance		
2			
3	Remove negative expense	$	(1,294)
4			
5			
6			
7			
8	Increase (decrease) in Outside Services	$	1,294
9			
10			
11			
12			
13	Adjustment to Revenue and/or Expense	$	1,294
14			
15			
16			
17			
18			
19			
20			

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustment to Revenues and Expenses
Adjustment Number 5

Exhibit
Rejoinder Schedule C-2
Page 6
Witness: Bourassa

Line No.			
1	Miscellaneous Expense		
2			
3			
4	Remove IOWUA lobbying expense (per Staff Adj. #4 Schedule MEM-17)	$	950
5			
6			
7			
8			
9	Increase (decrease) in Outside Services	$	(950)
10			
11			
12			
13			
14	Adjustment to Revenue and/or Expense	$	(950)
15			
16			
17			
18			
19			
20			

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustment to Revenues and Expenses
Adjustment Number 6

Exhibit
Rejoinder Schedule C-2
Page 7
Witness: Bourassa

Line No.			
1	Interest Synchronization		
2			
3	Fari Value Rate Base	$ 27,751,114	
4	Weighted cost of debt (from D-1) (short and long-term)	1.151%	
5	Interest Expense per Rejoinder Filing		$ 319,307
6	Interest Expense per Rebuttal Filing		368,024
7			
8	Increase (decrease) in Interest Expense		(48,717)
9			
10	Adjustment to Revenues and/or Expense		48,717
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Chaparral City Water Company
Test Year Ended December 31, 2006
Adjustment to Revenues and/or Expenses
Adjustment Number 6

Exhibit
Schedule C-2
Page 8
Witness: Bourassa

Line No.			Rejoinder Adjusted		Rejoinder Adjusted with Rate Increase	
1	Income Tax Computation					
7	Taxable Income		$ 1,075,798		$ 3,981,529	
9	Arizona Income Before Taxes		$ 1,075,798		$ 3,981,529	
11	Less Arizona Income Tax		$ 74,962		$ 277,433	
12	Rate =	6.97%				
13	Arizona Taxable Income		$ 1,000,837		$ 3,704,097	
15	Arizona Income Taxes		$ 74,962		$ 277,433	
17	Federal Income Before Taxes		$ 1,075,798		$ 3,981,529	
19	Less Arizona Income Taxes		$ 74,962		$ 277,433	
21	Federal Taxable Income		$ 1,000,837		$ 3,704,097	
23	FEDERAL INCOME TAXES:					
24	15% BRACKET		$ 7,500		$ 7,500	
25	25% BRACKET		$ 6,250		$ 6,250	
26	34% BRACKET		$ 8,500	Federal	$ 8,500	Federal
27	39% BRACKET		$ 91,650	Effective	$ 91,650	Effective
28	34% BRACKET		$ 226,384	Tax	$ 1,145,493	Tax
29				Rate		Rate
30	Federal Income Taxes		$ 340,284	31.63%	$ 1,259,393	31.63%
33	Total Income Tax		$ 415,246		$ 1,536,826	
35	Overall tax rate				38.60%	
38	Income taxes per Rebuttal Filing		$ 382,609			
40	Increase (decrease) to Income Taxes		$ 32,637			

Chaparral City Water Company
Test Year Ended December 31, 2006
Computation of Gross Revenue Conversion Factor

Exhibit
Rejoinder Schedule C-3
Page 1
Witness: Bourassa

Line No.	Description	Percentage of Incremental Gross Revenues
1	Federal Income Taxes	31.63%
2		
3	State Income Taxes	6.97%
4		
5	Other Taxes and Expenses	0.00%
6		
7		
8	Total Tax Percentage	38.60%
9		
10	Operating Income % = 100% - Tax Percentage	61.40%
11		
12		
13		
14		
15	1 = Gross Revenue Conversion Factor	
16	Operating Income %	1.6286
17		
18	SUPPORTING SCHEDULES:	RECAP SCHEDULES:
19		Rejoinder A-1
20		

Chaparral City Water Company
Test Year Ended December 31, 2006
Revenue Summary
With Annualized Revenues to Year End Number of Customers

Exhibit
Rejoinder Schedule H-1
Page 1
Witness: Bourassa

Line No.	Meter Size	Class	Present Revenues	Proposed Revenues	Dollar Change	Percent Change	Percent of Present Water Revenues	Percent of Proposed Water Revenues
1	3/4 Inch	Residential	$ 3,455,850	$ 4,617,269	$ 1,161,419	33.61%	45.08%	42.24%
2	1 Inch	Residential	2,342,394	3,124,331	781,936	33.38%	30.56%	28.58%
3	1.5 Inch	Residential	31,414	41,908	10,494	33.40%	0.41%	0.38%
4	2 Inch	Residential	123,686	164,802	41,116	33.24%	1.61%	1.51%
5	3 Inch	Residential	10,012	13,325	3,313	33.09%	0.13%	0.12%
6								
7		Subtotal	5,963,356	7,961,635	1,998,278	33.51%	77.79%	72.84%
8								
9	3/4 Inch	Commercial	$ 67,867	$ 90,581	22,714	33.47%	0.89%	0.83%
10	1 Inch	Commercial	98,616	131,563	32,947	33.41%	1.29%	1.20%
11	1.5 Inch	Commercial	140,840	187,912	47,072	33.42%	1.84%	1.72%
12	2 Inch	Commercial	222,208	296,055	73,847	33.23%	2.90%	2.71%
13	3 Inch	Commercial	14,217	18,899	4,682	32.93%	0.19%	0.17%
14	4 Inch	Commercial	34,290	45,748	11,458	33.41%	0.45%	0.42%
15								
16		Subtotal	$ 578,038	$ 770,758	$ 192,720	33.34%	7.54%	7.05%
17								
18	3/4 Inch	Industrial	$ 304	$ 406	$ 102	33.67%	0.00%	0.00%
19	1 Inch	Industrial	272	363	91	33.26%	0.00%	0.00%
20	1.5 Inch	Industrial	328	437	109		0.00%	0.00%
21								
22		Subtotal	$ 904	$ 1,206	302	33.42%	0.01%	0.01%
23								
24	3/4 Inch	Irrigation	$ 69,200	$ 129,742	60,542	87.49%	0.90%	1.19%
25	1 Inch	Irrigation	178,745	347,410	168,666	94.36%	2.33%	3.18%
26	1.5 Inch	Irrigation	134,012	258,465	124,453		1.75%	2.36%
27	2 Inch	Irrigation	161,987	311,425	149,437	92.25%	2.11%	2.85%
28	4 Inch	Irrigation	152,769	320,083	167,314	109.52%	1.99%	2.93%
29	6 Inch	Irrigation	322,475	681,923	359,448	111.47%	4.21%	6.24%
30								
31		Subtotal	1,019,188	2,049,049	1,029,861	101.05%	13.30%	18.75%
32								
33	3/4 Inch	Construction	$ 181	$ 256	75	41.60%	0.00%	0.00%
34	1 Inch	Construction	1,357	2,309	952	70.16%	0.02%	0.02%
35	2 Inch	Construction	646	1,090	$ 444	68.71%	0.01%	0.01%
36	3 Inch	Construction	18,826	35,262				
37	4 Inch	Construction	2,247	3,722	$ 1,476	65.70%	0.03%	0.03%
38								
39		Subtotal	$ 23,256	$ 42,639	$ 19,383	83.35%	0.30%	0.39%
40								
41	3 Inch	Fire Hydrant Meter (Irrigation)	$ 65,878	$ 87,537	21,660	32.88%	0.86%	0.80%
42	4 Inch	Fire Hydrant Meter (Irrigation)	9,178	12,248	3,071	33.46%	0.12%	0.11%
43								
44		Subtotal	$ 75,055	$ 99,786	24,731	32.95%	0.98%	0.91%
45								
46	34 inch	Fire Sprinkler	$ 5,164	$ 5,165	1	0.02%	0.07%	0.05%
47	1 Inch	Fire Sprinkler	244	245	1	0.52%	0.00%	0.00%
48	1.5 Inch	Fire Sprinkler	363	363	1	0.23%	0.00%	0.00%
49								
50		Subtotal	$ 5,770	$ 5,773	3	0.06%	0.08%	0.05%
51								
51	Total Revenues Before Annualization		$ 7,665,568	$ 10,930,847	$ 3,265,278	42.60%	100.00%	100.00%
52								

Chaparral City Water Company
Test Year Ended December 31, 2006
Revenue Summary
With Annualized Revenues to Year End Number of Customers

Exhibit
Rejoinder Schedule H-1
Page 2
Witness: Bourassa

Line No.	Meter Size	Class	Present Revenues	Proposed Revenues	Dollar Change	Percent Change	Additional Bills to be Sold	Additional Gallons to be Pumped (In 1,000's)
			Revenue Annualization					
5	3/4 Inch	Residential	$ 2,317	$ 3,096	779	33.63%	61	639
6	1 Inch	Residential	65,260	87,042	21,782	33.38%	1,415	13,151
7	1.5 Inch	Residential	860	1,147	287	33.41%	7	215
8	2 Inch	Residential	253	337	84	33.24%	1	72
9	3 Inch	Residential	1,790	2,383	593	33.13%	5	421
11		Subtotal	$ 70,480	$ 94,007	23,526	33.38%	1,489	14,497
13	3/4 Inch	Commercial	$ (50)	$ (67)	(17)	0.00%	(1)	(14)
14	1 Inch	Commercial	2,647	3,531	884	33.42%	38	704
15	1.5 Inch	Commercial	1,934	2,581	647	33.43%	12	551
16	2 Inch	Commercial	(778)	(1,037)	(259)	0.00%	(3)	(222)
17	3 Inch	Commercial	(206)	(274)	(68)	0.00%	(1)	(24)
18	4 Inch	Commercial	-	-	-	0.00%	-	-
19					-			
20		Subtotal	$ 3,547	$ 4,734	48,240	1360.21%	45	996
22	3/4 Inch	Industrial	$ -	$ -	-	0.00%	-	-
23	1 Inch	Industrial	-	-	-	0.00%	-	-
24	1.5 Inch	Industrial	-	-	-	0.00%	-	-
26		Subtotal	$ -	$ -	-	0.00%	-	-
28	3/4 Inch	Irrigation	$ 792	$ 1,472	681	85.99%	21	324
29	1 Inch	Irrigation	6,585	12,741	6,156	93.49%	78	3,086
30	1.5 Inch	Irrigation	1,901	3,650	1,749	92.03%	12	869
31	2 Inch	Irrigation	-	-	-	0.00%	-	-
32	4 Inch	Irrigation	(101,269)	(218,453)	(117,184)	0.00%	(2)	(64,916)
33	6 Inch	Irrigation	(232,932)	(502,110)	(269,178)	0.00%	-	(148,914)
35		Subtotal	$ (324,924)	$ (702,700)	(377,776)	116.27%	109	(209,550)
37	3/4 Inch	Construction	$ -	$ -	-	0.00%	-	-
38	1 Inch	Construction	-	-	-	0.00%	-	-
39	2 Inch	Construction	-	-	-	0.00%	-	-
40	3 Inch	Construction	-	-	-	0.00%	-	-
41	4 Inch	Construction	-	-	-	0.00%	-	-
43		Subtotal	$ -	$ -	-	0.00%	-	-
45	3 Inch	Fire Hydrant Meter (Irrigation)	$ -	$ -	-	0.00%	-	-
46	4 Inch	Fire Hydrant Meter (Irrigation)	-	-	-	0.00%	-	-
48		Subtotal	$ -	$ -	-	0.00%	-	-
50	34 inch	Fire Sprinkler	$ -	$ -	-	0.00%	-	-
51	1 Inch	Fire Sprinkler	-	-	-	0.00%	-	-
52	1.5 Inch	Fire Sprinkler	-	-	-	0.00%	-	-
54		Subtotal	$ -	$ -		0.00%	-	-
56	Total Revenue Annualization		$ (250,897)	$ (603,959)	$ (306,010)	0.00%	1,643	(194,058)

Chaparral City Water Company
Test Year Ended December 31, 2006
Revenue Summary
With Annualized Revenues to Year End Number of Customers

Exhibit
Rejoinder Schedule H-1
Page 3
Witness: Bourassa

Line No.		Present Revenues	Proposed Revenues	Dollar Change	Percent Change	Percent of Present Water Revenues	Percent of Proposed Water Revenues
1							
2							
3	Subtotal Metered Revenues	$ 7,665,568	$ 10,930,847	$ 3,265,278	42.60%	100.00%	100.00%
4	Subtotal Revenue Annualization	(250,897)	(603,959)	(353,062.24)	140.72%	-3.27%	-5.53%
5	Total Metered Revenues	$ 7,414,671	$ 10,326,887	$ 2,912,216	39.28%		
6							
7	Misc. Revenues	$ 82,289	$ 82,289	-	0.00%	1.07%	0.75%
8	Reconciling Amount to GL	8,050	1,565	(6,485)	-80.56%	0.11%	0.01%
9	Total Water Revenues	$ 7,505,010	$ 10,410,741	$ 2,905,731	38.72%	0.00%	0.00%
10							
11							
12	Revenue Reconciliation						
13							
14	Revenue per bill count before revenue annualization		$ 7,665,568				
15	Revenue per GL (metered water revenues)		7,673,618				
16	Difference		$ (8,050)				
17	Difference %		-0.10%				
18	Tolerance %		0.50%				
19	Tolerance Amount + or -		$ 38,368				
20							
21	Acceptable?		YES				
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
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33							
34							
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Chaparral City Water Company
Test Year Ended December 31, 2006
Customer Summary

Exhibit
Rejoinder Schedule H-2
Page 1
Witness: Bourassa

Line No.		Meter Size, Class	(a) Average Number of Customers at 12/31/2006	Average Consumption	Average Bill Present Rates	Average Bill Proposed Rates	Proposed Increase Dollar Amount	Proposed Increase Percent Amount
1	3/4 Inch	Residential	8,368	8,450	$ 32.38	$ 43.27	10.90	33.66%
2	1 Inch	Residential	4,000	10,095	48.14	64.21	16.07	33.38%
3	1.5 Inch	Residential	21	29,821	120.55	160.82	40.27	33.40%
4	2 Inch	Residential	39	72,924	256.77	342.12	85.35	33.24%
5	3 Inch	Residential	3	70,226	322.97	429.84	106.87	33.09%
6		Subtotal	12,431					
7								
8	3/4 Inch	Commercial	115	12,528	$ 46.97	$ 62.69	15.72	33.48%
9	1 Inch	Commercial	114	17,907	67.83	90.49	22.66	33.41%
10	1.5 Inch	Commercial	66	47,736	165.69	221.08	55.39	33.43%
11	2 Inch	Commercial	71	68,389	245.34	326.86	81.52	33.23%
12	3 Inch	Commercial	5	34,550	233.06	309.82	76.76	32.93%
13	4 Inch	Commercial	4	186,146	696.09	928.70	232.61	33.42%
14		Subtotal	375					
15								
16	3/4 Inch	Industrial	1	5,375	$ 24.63	$ 32.93	8.30	33.71%
17	1 Inch	Industrial	1	-	$ 22.70	$ 30.25	7.55	33.26%
18	1.5 Inch	Industrial	0	8,000	$ 65.56	$ 87.41	21.85	33.33%
19		Subtotal	2					
20								
21	3/4 Inch	Irrigation	145	16,732	$ 39.70	$ 74.44	34.73	87.49%
22	1 Inch	Irrigation	170	41,781	$ 87.88	$ 170.80	82.92	94.36%
23	1.5 Inch	Irrigation	68	76,173	$ 164.23	$ 316.75	152.52	92.87%
24	2 Inch	Irrigation	52	119,346	$ 259.18	$ 498.28	239.10	92.25%
25	4 Inch	Irrigation	4	1,813,070	$ 3,055.39	$ 6,401.67	3,346.28	109.52%
26	6 Inch	Irrigation	3	5,451,042	$ 8,957.63	$ 18,942.30	9,984.68	111.47%
27		Subtotal	442					
28								
29	3/4 Inch	Construction	1	959	$ 15.10	$ 21.37	6.28	41.60%
30	1 Inch	Construction	3	11,803	$ 41.11	$ 69.96	28.84	70.16%
31	2 Inch	Construction	0	36,000	$ 129.16	$ 217.91	88.74	68.71%
32	3 Inch	Construction	4	180,682	$ 427.86	$ 801.41	373.55	87.31%
33	4 Inch	Construction	1	94,500	$ 374.42	$ 620.40	245.98	65.70%
34		Subtotal	8					
35								
36	3 Inch	Fire Hydrant Meter (Irrigation)	26	26,121	$ 211.82	$ 281.47	69.65	32.88%
37	4 Inch	Fire Hydrant Meter (Irrigation)	1	516,917	$ 1,529.63	$ 2,041.41	511.78	33.46%
38		Subtotal	26					
39								
40	34 inch	Fire Sprinkler	43	3	$ 10.01	$ 10.01	0.00	0.02%
41	1 Inch	Fire Sprinkler	2	63	$ 10.16	$ 10.21	0.05	0.52%
42	1.5 Inch	Fire Sprinkler	3	28	$ 10.07	$ 10.09	0.02	0.23%
43		Subtotal	48					
44								
45								
46		Total	13,333					

47 **(a)** Average number of customers of less than one (1), indicates that less than 12 bills were issued during the year.

Chaparral City Water Company
Test Year Ended December 31, 2006
Customer Summary

Exhibit
Rejoinder Schedule H-2
Page 2
Witness: Bourassa

Line No.		Meter Size, Class	(a) Average Number of Customers at 12/31/2006	Median Consumption	Median Bill Present Rates	Median Bill Proposed Rates	Proposed Increase Dollar Amount	Proposed Increase Percent Amount
1	3/4 Inch	Residential	8,368	5,500	$ 24.94	$ 33.35	8.41	33.70%
2	1 Inch	Residential	4,000	7,500	41.60	55.48	13.88	33.37%
3	1.5 Inch	Residential	21	21,500	99.58	132.83	33.25	33.39%
4	2 Inch	Residential	39	51,500	202.78	270.05	67.27	33.17%
5	3 Inch	Residential	3	83,000	355.16	472.81	117.65	33.13%
6		Subtotal	12,431					
7								
8	3/4 Inch	Commercial	115	4,501	$ 24.94	$ 33.29	8.35	33.47%
9	1 Inch	Commercial	114	5,500	36.56	48.75	12.19	33.35%
10	1.5 Inch	Commercial	66	13,500	79.42	105.91	26.49	33.36%
11	2 Inch	Commercial	71	21,500	127.18	169.13	41.95	32.98%
12	3 Inch	Commercial	5	12,500	177.50	235.65	58.15	32.76%
13	4 Inch	Commercial	4	79,500	427.34	569.94	142.60	33.37%
14		Subtotal	375					
15								
16	3/4 Inch	Industrial	1	3,500	$ 19.90	$ 26.62	6.72	33.76%
17	1 Inch	Industrial	1	-	$ 22.70	$ 30.25	7.55	33.26%
18	1.5 Inch	Industrial	0	-	$ 45.40	$ 60.50	15.10	33.26%
19		Subtotal	2					
20								
21	3/4 Inch	Irrigation	145	8,500	$ 26.86	$ 46.74	19.88	74.03%
22	1 Inch	Irrigation	170	15,500	$ 46.88	$ 82.39	35.51	75.75%
23	1.5 Inch	Irrigation	68	24,500	$ 83.62	$ 142.92	59.30	70.91%
24	2 Inch	Irrigation	52	63,000	$ 171.28	$ 308.73	137.45	80.25%
25	4 Inch	Irrigation	4	157,000	$ 471.92	$ 830.65	358.73	76.01%
26	6 Inch	Irrigation	3	1,312,000	$ 2,500.72	$ 5,018.57	2,517.85	100.68%
27		Subtotal	442					
28								
29	3/4 Inch	Construction	1	-	$ 13.60	$ 18.15	4.55	33.46%
30	1 Inch	Construction	3	11,500	$ 40.64	$ 68.94	28.30	69.63%
31	2 Inch	Construction	0	59,000	$ 165.04	$ 295.28	130.24	78.91%
32	3 Inch	Construction	4	19,500	$ 176.42	$ 259.20	82.78	46.92%
33	4 Inch	Construction	1	106,000	$ 392.36	$ 659.08	266.72	67.98%
34		Subtotal	8					
35								
36	3 Inch	Fire Hydrant Meter (Irrigation)	26	9,500	$ 169.94	$ 225.56	55.62	32.73%
37	4 Inch	Fire Hydrant Meter (Irrigation)	1	561,500	$ 1,641.98	$ 2,191.39	549.41	33.46%
38		Subtotal	26					
39								
40	34 inch	Fire Sprinkler	43	-	$ 10.00	$ 10.00	-	0.00%
41	1 Inch	Fire Sprinkler	2	-	$ 10.00	$ 10.00	-	0.00%
42	1.5 Inch	Fire Sprinkler	3	-	$ 10.00	$ 10.00	-	0.00%
43		Subtotal	48					
44								
45								
46		Total	13,333					

47 **(a)** Average number of customers of less than one (1), indicates that less than 12 bills were issued during the year.

Chaparral City Water Company
Test Year Ended December 31, 2006
Present and Proposed Rates

Exhibit
Rejoinder Schedule H-3
Page 1
Witness: Bourassa

Line No.	Monthly Usage Charge for:	Present Rates	Proposed Rates	Change	Percent Change
1	Meter Size (All Zones and Classes):				
2	3/4 Inch	$ 13.60	$ 18.15	$ 4.55	33.46%
3	1 Inch	22.70	30.25	7.55	33.26%
4	1 1/2 Inch	45.40	60.50	15.10	33.26%
5	2 Inch	73.00	96.80	23.80	32.60%
6	3 Inch	146.00	193.60	47.60	32.60%
7	4 Inch	227.00	302.50	75.50	33.26%
8	6 Inch	454.00	605.00	151.00	33.26%
9	8 Inch	730.00	1,119.25	389.25	53.32%
10	10 Inch	1,043.00	1,573.00	530.00	50.81%
11	12 Inch	1,980.00	2,783.00	803.00	40.56%
12					
13					
14	Fire Hydrants Basic Service	$ -	$ -	-	0.00%
15					
16	Fire Hydrants Used for Irrigation	$ 146.00	$ 194.88	48.88	33.48%
17					
18	Monthly Service Charge for Fire Sprinkler				
19	4 Inch or smaller	$ 10.00	$ 10.00	-	0.00%
20	6 Inch	10.00	10.00	-	0.00%
21	8 Inch	10.00	10.00	-	0.00%
22	10 Inch	10.00	10.00	-	0.00%
23	Larger than 10 Inch	10.00	10.00	-	0.00%
24					
25					
26	Gallons In Minimum (All Zones and Classes)	-	-		
27					
28			(Per 1,000 gallons)		
29	**Commodity Rates**		**Present**	**Proposed**	
30	**(Residential, Commercial, Industrial)**	**Block**	**Rate**	**Rate**	**Change**	**Percent Change**
31					
32	3/4 Inch Meter Residential	0 gallons to 3,000 gallons	$ 1.68	$ 2.262	$ 0.58	34.64%
33		3,001 gallons to 9,000 gallons	$ 2.52	$ 3.364	$ 0.84	33.49%
34		over 9,000 gallons	$ 3.03	$ 4.044	$ 1.01	33.47%

Diablo Village Water Company
Test Year Ended December 31, 2006
Present and Proposed Rates

Exhibit
Rejoinder Schedule H-3
Page 2
Witness: Bourassa

Line No.	Commodity Rates (Residential, Commercial, Industrial)	Block	Present Rate (Per 1,000 gallons)	Proposed Rate (Per 1,000 gallons)	Change	Percent Change
1						
2	**Commodity Rates**					
3	**(Residential, Commercial, Industrial)**	**Block**	**Rate**	**Rate**	**Change**	**Percent Change**
4						
5	3/4 Inch Meter Commercial and Industrial	0 gallons to 9000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
6		over 9,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
7	1 Inch Meter	0 gallons to 24,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
8		over 24,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
9	1.5 Inch Meter	0 gallons to 60,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
10		over 60,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
11	2 Inch Meter	0 gallons to 100,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
12		over 100,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
13	3 Inch Meter	0 gallons to 225,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
14		over 225,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
15	4 Inch Meter	0 gallons to 350,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
16		over 350,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
17	6 Inch Meter	0 gallons to 725,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
18		over 725,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
19	8 Inch Meter	0 gallons to 1,125,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
20		over 1,125,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
21	10 Inch Meter	0 gallons to 1,500,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
22		over 1,500,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
23	12 Inch Meter	0 gallons to 2,250,000 gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
24		over 2,250,000 gallons	$ 3.03	$ 4.044	$ 1.014	33.47%
25						
26	**Irrigation/Bulk**	All gallons	$ 1.56	$ 3.364	$ 1.804	115.64%
27						
28	**Fire Hydrant Irrig./Construction**	All gallons	$ 1.56	$ 3.364	$ 1.804	115.64%
29						
30	**Standpipe (Fire Hydrants)**	All gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
31						
32	**Fire Sprinklers**	All gallons	$ 2.52	$ 3.364	$ 0.844	33.49%
33						

Chaparral City Water Company
Changes in Representative Rate Schedules
Test Year Ended December 31, 2006

Exhibit
Rejoinder Schedule H-3
Page 3
Witness: Bourassa

Line No.	Other Service Charges	Present Rates	Proposed Rates
1	Establishment	$ 25.00	$ 25.00
2	Establishment (After Hours)	$ 35.00	$ 35.00
3	Reconnection (Deliquent)	$ 35.00	$ 35.00
4	Reconnection (Deliquent and After Hours)	$ 50.00	$ 50.00
5	Meter Test	$ 35.00	$ 35.00
6	Deposit Requirement (Residential)	(a)	(a)
7	Deposit Requirement (None Residential Meter)	(a)	(a)
8	Hydrant Meter Deposit	$ 50.00	$ 50.00
9	Deposit Interest	(b)	(b)
10	Re-Establishment (With-in 12 Months)	(c)	(c)
11	Re-Establishment (After Hours)	(c)	(c)
12	NSF Check	$ 25.00	$ 25.00
13	Deferred Payment, Per Month	1.50%	1.50%
14	Meter Re-Read	$ 25.00	$ 25.00
15	Charge of Moving Customer Meter -		
16	Customer Requested per Rule R14-2-405B	Cost	Cost
17	After hours service charge, per Rule R14-2-403D	Refer to	Refer to
18		Above	Above
19		Charges	Charges
20	Late Charge per month	1.5%	1.5%
21	Off-site Facilities Hook-up Fee (See H-3, page 5)	(d)	(d)
22			
23			

24 (a) Residential - two times the average bill. Non-residential - two and one-half times the average bill.
25 (b) Interest per Rule R14-2-403(B).
26 (c) Minimum charge times number of full months off the system. per Rule R14-2-403(D).
27 (d) New water installations. May be assessed only once per parcel, service connection, or lot within a sub-
28 division. Purpose is to equitably apportion the costs of constructing additional off-site facilities to provide
29 water production, delivery, storage, and presssure among all new service connections.
30
31
32
33
34 IN ADDITION TO THE COLLECTION OF REGULAR RATES, THE UTILITY WILL COLLECT FROM
35 ITS CUSTOMERS A PROPORTIONATE SHARE OF ANY PRIVILEGE, SALES, USE, AND FRANCHISE
36 TAX. PER COMMISSION RULE 14-2-409D(5).
37 ALL ADVANCES AND/OR CONTRIBUTIONS ARE TO INCLUDE LABOR, MATERIALS, OVERHEADS,
38 AND ALL APPLICABLE TAXES, INCLUDING ALL GROSS-UP TAXES FOR INCOME TAXES, IF APPLICABLE.
39
40
41

Chaparral City Water Company
Test Year Ended December 31, 2006
Meter and Service Line Charges

Exhibit
Rejoinder Schedule H-3
Page 4
Witness: Bourassa

Meter and Service Line Charges

Line No.		Present Service Line Charge	Present Meter Install-ation Charge	Total Present Charge	Proposed Service Line Charge	Proposed Meter Install-ation Charge	Total Proposed Charge
9	5/8 x 3/4 Inch	$ 385.00	$ 135.00	$ 520.00	$ 385.00	$ 135.00	$ 520.00
10	3/4 Inch	385.00	215.00	600.00	385.00	215.00	600.00
11	1 Inch	435.00	255.00	690.00	435.00	255.00	690.00
12	1 1/2 Inch	470.00	465.00	935.00	470.00	465.00	935.00
13	2 Inch / Turbine	630.00	965.00	1,595.00	630.00	965.00	1,595.00
14	2 Inch / Compound	630.00	1,690.00	2,320.00	630.00	1,690.00	2,320.00
15	3 Inch / Turbine	805.00	1,470.00	2,275.00	805.00	1,470.00	2,275.00
16	3 Inch / Compound	845.00	2,265.00	3,110.00	845.00	2,265.00	3,110.00
17	4 Inch / Turbine	1,170.00	2,350.00	3,520.00	1,170.00	2,350.00	3,520.00
18	4 Inch / Compound	1,230.00	3,245.00	4,475.00	1,230.00	3,245.00	4,475.00
19	6 Inch / Turbine	1,730.00	4,545.00	6,275.00	1,730.00	4,545.00	6,275.00
20	6 Inch / Compound	1,770.00	6,280.00	8,050.00	1,770.00	6,280.00	8,050.00
21	8 Inch & Larger	At Cost	At Cost	At Cost	At Cost	At Cost	At Cost

N/T = No Tariff

Chaparral City Water Company
Test Year Ended December 31, 2006
Hook-Up Fees

Exhibit
Rejoinder Schedule H-3
Page 5
Witness: Bourassa

Line No.		Present Charge	Proposed Charge
1			
2	**Off-site Facilities Hook-up Fee**		
3			
4			
5			
6	5/8 x 3/4 Inch	$ 1,000	$ 1,000
7	3/4 Inch	1,500	1,500
8	1 Inch	2,500	2,500
9	1 1/2 Inch	5,000	5,000
10	2 Inch	8,000	8,000
11	3 Inch	16,000	16,000
12	4 Inch	25,000	25,000
13	6 Inch or larger	50,000	50,000
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FENNEMORE CRAIG
Norman D. James (No. 006901)
Jay L. Shapiro (No. 014650)
3003 N. Central Ave.
Suite 2600
Phoenix, Arizona 85012
Attorneys for Chaparral City Water Company

BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF CHAPARRAL CITY WATER COMPANY, INC., AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES FOR UTILITY SERVICE BASED THEREON.	DOCKET NO. W-02113A-07-0551

REJOINDER TESTIMONY OF

THOMAS J. BOURASSA

(COST OF CAPITAL)

December 4, 2008

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I. INTRODUCTION AND SUMMARY OF THE COMPANY'S FINAL POSITION AND RECOMMENDATIONS ON THE COST OF CAPITAL

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Thomas J. Bourassa. My business address is 139 W. Wood Drive, Phoenix, Arizona 85029.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?

A. On behalf of the applicant, Chaparral City Water Company ("Chaparral City" or "the Company").

Q. ARE YOU THE SAME THOMAS J. BOURASSA THAT FILED DIRECT AND REBUTTAL TESTIMONY IN THIS CASE?

A. Yes. I previously filed testimony on the appropriate cost of capital and rate of return to be applied to the Company's fair value rate base. I also have filed rejoinder testimony addressing the Company's final position on its rate base, income statement (revenue and operating expenses), required increase in revenue, and rate design and proposed rates and charges for service. That testimony has been filed separately.

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY?

A. I will provide an updated estimate of the cost of equity and discuss the basis for the Company's proposed rate of return, which is 9.96 percent. I also will provide an updated estimate of the cost of equity using the methodology employed by the Utilities Division ("Staff") and accepted by the Arizona Corporation Commission ("Commission") in recent rate cases for Arizona water and wastewater utilities for comparison purposes. Finally, I will respond to the surrebuttal testimony of Mr. William A. Rigsby ("Rigsby Sb.") on behalf of the Residential Utility Consumer Office ("RUCO"). My rejoinder schedules and exhibits that relate to the cost of capital are attached to this testimony.

Q. PLEASE PROVIDE A SUMMARY OF THE COMPANY'S FINAL POSITION REGARDING THE COST OF CAPITAL.

A. The Company's final position is virtually unchanged from the Company's rebuttal position:

Cost of Equity and WACC

My updated estimate of the cost of equity, 13.2 percent, is slightly higher than my rebuttal estimate, 13.0 percent. Chaparral City, however, continues to recommend an equity return of 11.5 percent to be conservative and minimize disputes over the cost of equity. The cost of short-term debt has decreased from 3.97 percent to 2.88 percent, while the cost of long-term debt, 5.33 percent, is unchanged. The resulting weighted cost of capital ("WACC") is 9.96 percent.

Application of WACC to FVRB

Chaparral City continues to maintain that the WACC should be applied to the Company's fair value rate base ("FVRB") to determine the Company's required operating income, without any adjustment. The cost of equity is estimated using two market-based finance models, the Discounted Cash Flow ("DCF") model and the Capital Asset Pricing Model ("CAPM"). These models rely on current stock prices and other market data for a sample group of publicly traded water utilities. Neither model considers the rate bases of the sample utilities or Chaparral City's rate base. Moreover, because the WACC depends on the percentages of debt and equity in the Company's capital structure, and not on the actual amount invested in plant, a WACC-derived return can be used with any rate base. There is no "matching" problem, as has been suggested.

Adjustment for Financial Risk

Chaparral City opposes an adjustment to its cost of equity based on financial risk. The parties agree that the Company's capital structure consists of approximately 24

percent debt and 76 percent equity. The Commission has not reduced the cost of equity in situations like this, where approximately one-quarter of the utility's capital structure consists of debt. *See, e.g.,* Arizona Water Company, Decision No. 68302 (Nov. 14, 2005) (no adjustment for financial risk appropriate when the utility's capital structure contained 73 percent equity). Where downward adjustments have been made, the utility's capital structure has typically contained 100 percent equity and no debt. Moreover, even in those cases, the downward adjustment has been no more than 100 basis points, not 180 basis points as proposed by Staff here.

Adjustment for "Inflation"

Chaparral City continues to oppose any adjustment based on "inflation" being "over-counted" because the cost of equity, estimated by means of the DCF and CAPM models, and the FVRB both contain an "inflation component." *See* Decision No. 70441 (July 28, 2008) at 33 (appeal pending). In reality, inflation adversely impacts utilities to a far greater extent than other businesses because they cannot adjust their rates in response to price increases, and must wait until new rates are approved following a rate case. For this reason, inflation is continually eroding the Company's earnings. Yet the impact of inflation on earnings is ignored by Staff and RUCO, resulting in unlawful piecemeal rate-making.

Moreover, the Company's FVRB is not simply the "inflated" cost of its plant. Rather, it is based on the average of its original cost rate base ("OCRB") and its reconstruction cost rate base ("RCRB"). By definition, the original or book cost of the Company's plant contains no inflationary component, as Staff has acknowledged. *See* Gordon Fox Direct Testimony ("Fox Dt.) at 7-8. Further, the Company's RCRB is not based on the CPI or other measures of inflation, but is the current value of its plant based on its reconstruction cost. That value is reduced by

averaging the OCRB with the RCRB to derive fair value. If an adjustment for inflation is authorized, it must be reduced by at least one-half to properly account for the use of OCRB in the FVRB.

Finally, at present, inflation is non-existent. The parties agree that an appropriate method of estimating the expected, future inflation component in the cost of equity may be estimated by subtracting the yields on Treasury inflation protected securities ("TIPS") from the yields on Treasury securities with constant maturities. The present inflationary component indicated by this method is a negative 1.18 percent, based on the average yields on 5, 7 and 10-year Treasuries. According to Staff, most investors hold securities for an intermediate period, i.e., 5 to 10 years. Therefore, if an inflation adjustment is made, it should increase the cost of equity and overall rate of return. Even if 20-year Treasuries are used instead, the indicated inflation is about 80 basis points. In that case, however, the current yield on a 20-year Treasury should be used in the CAPM, producing a higher cost of equity.

II. SUMMARY OF THE PARTIES' RECOMMENDED CAPITAL STRUCTURE AND COST OF DEBT

Q. WHAT ARE THE PARTIES' RECOMMENDED CAPITAL STRUCTURES FOR THE COMPANY?

A. The parties' recommended capital structures are very similar, as shown in the following table:

	Company	Staff	RUCO
Short-Term Debt	$1,400,000	$2,050,000	$1,400,000
Long-Term Debt	6,865,000	6,585,000	6,585,000
Common Equity	27,028,873	26,690,000	26,362,476
Total Capital	$35,293,873	$35,325,000	$34,347,476

The differences are due to the Company's use of the capital structure at the end of the test year while the other parties went outside the test year.

Notably, all of the parties acknowledge that the Company's total capitalization significantly exceeds the Company's OCRB, its reconstruction cost rate base RCRB and its fair value rate base FVRB, which is derived by averaging the OCRB and RCRB. The percentages of debt and equity, and not the amounts of debt and equity, are the key inputs used to determine the weighted cost of capital WACC.

Q. WHAT ARE THE PERCENTAGES OF DEBT AND EQUITY THAT ARE BEING RECOMMENDED BY EACH PARTY?

A. Again, the percentages of debt and equity being recommended by each party are similar, as shown in the following table:

	Company	Staff	RUCO
Short-Term Debt	3.97%	5.8%	4.08%
Long-Term Debt	19.45%	18.6%	19.17%
Common Equity	76.58%	75.6%	76.75%

As the foregoing table shows, while there are certain minor differences, the parties are in agreement that the Company's capital structure consists of approximately 24 percent debt and 76 percent equity. As previously stated, the percentages of debt and equity and their respective costs are the key inputs that are used in computing the WACC, rather than the actual amounts of debt and equity in the capital structure.

Q. WHAT ARE THE COSTS OF DEBT RECOMMENDED BY THE PARTIES AND HOW WERE THEY DERIVED?

A. Again, each party's proposed cost of debt is approximately the same. The

Company's recommended cost of debt is 4.92 percent, based on a cost of short-term debt of 2.88 percent and a cost of long-term debt of 5.33 percent. The Company's short-term debt consists of funds provided by its parent, which borrows under a credit facility with interest based on the London Interbank Offered Rate ("LIBOR"). The current 12-month LIBOR rate is 2.88 percent, which is slightly higher than RUCO's proposed rate of 2.71 percent. The Company's long-term debt consists of long-term bonds with fixed interest rates and annual interest payments, which are unaffected by inflation or by changes in the capital markets.

Q. RUCO'S WITNESS, MR. RIGSBY, ASSERTS THAT STAFF HAS ELIMINATED SHORT-TERM DEBT FROM ITS RECOMMENDED CAPITAL STRUCTURE. IS HE CORRECT?

A. No. Mr. Rigsby apparently misread Mr. Chaves' testimony. Mr. Chaves has proposed a composite cost of debt of 5.0%. The composite rate includes the cost of both short-term and long-term debt. *See* Chaves Dt., Schedule PMC-10.

III. UPDATED ESTIMATE OF THE COST OF EQUITY AND COST OF CAPITAL

A. <u>The Company's Updated Cost of Equity Estimate</u>

Q. PLEASE SUMMARIZE YOUR UPDATED COST OF CAPITAL ANALYSIS.

A. I have performed new estimates of the cost of equity using the Commission's preferred models, the DCF model and the CAPM. The schedules containing my updated cost of capital analysis are attached to this testimony at Tab 1. The table below summarizes the results of my updated analysis using those models:

	Range	Midpoint
DCF Constant Growth (earnings growth)	10.7% - 14.9%	12.8%
DCF Constant Growth (sustainable growth)	8.6% - 12.3%	10.4%

Two-Stage Growth Model	10.3% - 13.2%	11.8%
DCF Average Results	9.9% - 13.5%	11.7%
CAPM Historical Market Risk Premium		9.8%
CAPM Current Market Risk Premium		19.4%
CAPM Average Result		14.6%
Average		**13.2%**

The overall result is approximately the same as the estimate derived from these models when I prepared my rebuttal testimony last October, which was 13.0 percent. As I explained in my rebuttal testimony, these results are not surprising given the increase in the average beta of the water utility sample group, which is currently 0.98 and is substantially greater than the average beta of the same utilities in the Company's previous rate case, 0.68.[1] The water utility sample has become considerably more risky relative to the market as a whole, and investors require a higher return on equity to compensate for that risk.

There are other factors that also affect the cost of equity, but to a large degree those factors offset one another. For example, Treasury rates have declined during the past several months, and are currently at very low levels. Thus, the "risk free" rates used in the CAPM are very low and tend to reduce the cost of equity. At the same time, the current market risk premium has increased as a result of recent stock market volatility. *Compare* Rejoinder Schedule D-4.13 *with* Rebuttal Schedule D-4.13. Likewise, the stock prices have declined, increasing the dividend yield from 3.2 percent to nearly 3.6 percent. *Compare* Rejoinder Schedule D-4.8 *with* Rebuttal Schedule D-4.8. As a result, there has been little change in the cost of equity estimate produced by the models.

[1] *See* Surrebuttal Testimony of Alejandro Ramirez, Docket No. W-02113A-04-0616, Exh. S-4, Schedule AXR-8.

Q. HAVE STAFF AND THE COMMISSION PREVIOUSLY RECOGNIZED THAT THE INPUTS USED IN THE COST OF EQUITY ESTIMATION MODELS TEND TO OFFSET EACH OTHER, RESULTING IN A REASONABLE COST OF EQUITY?

A. Yes. In Arizona Water Company's Western Group rate case, for example, the Commission adopted Staff's CAPM estimate, explaining:

> [W]hile interest rates have gone up, the cost of equity for the market as a whole as decreased, while the cost of equity for utilities has remained relatively stable. Staff states that while its witness in [Arizona Water Company's prior rate case] estimated an overall market risk premium at 13.1 percent, its current estimate is 7.8 percent ..., and this relative change in the risks of utilities as compared to the overall market is reflected in Staff's increased beta estimate, from 0.59 in the [prior case] to 0.68 in this case.

Decision No. 68302 at 38. A similar discussion appears in Decision No. 69164 (Dec. 5, 2006), which involved Black Mountain Sewer Corporation's request for rate increases. In that case, Mr. Chaves testified that changes in interest rates do not mean that the cost of equity will also change or even move in the same direction as interest rates. Thus, "while interest rates increased between the filing of [Mr. Chaves'] direct and surrebuttal testimonies, from 3.3 to 4.7 percent, Staff's current [market risk premium] declined from 13.1 percent to 5.7 percent, thereby offsetting the interest rate increase (Tr. 719-722)." Decision No. 69164 at 25. The same phenomenon is present in this case: While Treasury yields have declined, the betas of the water utilities in the sample group and the market risk premium have remained high, resulting in a cost of equity of approximately 13 percent.

B. <u>The Company's Updated Cost of Capital and Rate of Return</u>

Q. WHAT ARE THE COMPANY'S REVISED WACC AND ITS RECOMMENDED RATE OF RETURN ON FAIR VALUE RATE BASE?

A. As previously explained, the Company's capital structure consists of 23.42 percent debt and 76.58 percent common equity as shown on attached Rejoinder Schedule D-1. Despite my updated cost of capital analysis, Chaparral City is requesting a cost of equity of 11.5 percent. This results in a WACC of 9.96 percent, as shown on Rejoinder Schedule D-1, attached hereto.

The Company continues to maintain that the WACC be used as the rate of return and applied to the Company's fair value rate base FVRB to compute the Company's required operating income, consistent with the Company's position in its prior rate case, Docket No. W-02113A-04-0616.

Q. WHY ARE YOU RECOMMENDING A COST OF EQUITY OF ONLY 11.5 PERCENT WHEN YOUR FINANCIAL MODELS INDICATE THAT A HIGHER EQUITY RETURN IS APPROPRIATE?

A. The Company has elected to request a return of 11.5 percent on common equity. As I explained in my rebuttal testimony, the Company is willing to do so in order to minimize disputes and to keep the revenue increase at or below the increase requested in its direct filing. The Company realizes that an equity return of 13 percent would be controversial, even if it is indicated by the financial models and methods that have been used by Staff and approved by the Commission in numerous water and wastewater utility rate cases during the past six or seven years. The Company hopes to avoid a dispute over the cost of equity and to simplify this case, which has already been pending for more than 14 months.

IV. UPDATED ESTIMATE OF STAFF'S COST OF EQUITY AND COMMENTS ON STAFF'S METHODOLOGY.

A. Overview of Staff's Position

Q. DID STAFF FILE SURREBUTTAL TESTIMONY ON THE COST OF CAPITAL?

A. No. Staff has elected to rely on the Direct Testimony of Pedro Chaves, filed on October 3, 2008.

Q. IN SUMMARY, WHAT DOES MR. CHAVES RECOMMEND?

A. In his direct testimony, Mr. Chaves estimated that the cost of equity is 11.8 percent based on the average cost of equity produced by the DCF and CAPM models as applied to the sample of six publicly traded water utilities. *See* Direct Testimony of Pedro M. Chaves ("Chaves Dt") at 34 and Schedule PMC-3. He then adjusted the cost of equity downward by 180 basis points based on the Company's purported financial risk. *Id.* at 34-35 and Schedule PMC-3.

Mr. Chaves' calculated a cost of debt of 5.0 percent, which was based on a short-term debt rate of 3.8 percent and a long-term debt rate of 5.4 percent. *Id.* at 6 and Schedule PMC-10. He also calculated a capital structure consisting of 24.4 percent debt and 75.6 percent equity. *Id.*

Using that capital structure, Mr. Chaves determined that the Company's WACC is 8.8 percent. *Id.* at 35. Then, Mr. Chaves adjusted the WACC downward by subtracting 1.2 percent as an adjustment for inflation, resulting in an adjusted WACC of 7.6 percent. *Id.* at 36 and Schedule PMC-2. That adjustment is supported by the testimony of Mr. Fox, the Staff Public Utilities Analyst Manager. Mr. Fox and Mr. Chaves maintain the inflation factor should recognize that the FVRB reflects a 50/50 weighting of OCRB and RCRB. Because the Company's OCRB (which is one-half of the FVRB) is based solely on historic or "book" costs and is unaffected by changes in price levels, they recommends that the inflation factor be reduced by one-half. Fox Dt. at 8-9; Chaves Dt. at 35-36. But they also recommend that the inflation factor be applied to the cost of debt, even though the annual cost (interest) is fixed and does not change in response to changes in price levels, as I discussed in my rebuttal testimony. *See* Bourassa Rb. at 21-22. I will

address inflation later in my testimony, and will provide an updated estimate of current inflation.

B. <u>Updated Cost of Equity Estimate Using Staff's Methods</u>

Q. DID YOU PREPARE AN UPDATED ESTIMATE OF THE COST OF EQUITY USING STAFF'S METHODS AND INPUTS?

A. Yes. It is attached to this testimony at Tab 2 as Schedule TJB-1 through Schedule TJB-13. I relied on the work papers provided by Staff following its direct filing to ensure that I followed Staff's exact approach. I used the constant growth DCF model and two-stage growth DCF model and the CAPM with historical and current market risk premiums, with the same inputs used by Staff. The table below summarizes the results of my updated analysis using Staff's models and inputs:

DCF Constant Growth	9.1%
Two-Stage Growth Model	10.2%
DCF Average Results	9.7%
CAPM Historical Market Risk Premium	10.0%
CAPM Current Market Risk Premium	29.8%
Average CAPM Results	19.9%
Average Overall Results	**14.8%**

Q. WHY HAS STAFF'S COST OF EQUITY ESTIMATE INCREASED SO MUCH SINCE ITS DIRECT TESTIMONY WAS FILED?

A. Staff's cost of equity estimate increased from 11.8 percent to 14.8 percent between its direct filing and this filing primarily due to the result produced by Staff's CAPM model. More specifically, Staff's current market risk premium ("MRP") has increased substantially over the past two months. The method that Staff uses to estimate the current MRP is volatile, as I have testified in prior rate cases and as the Company's cost of capital witness in its prior case, Dr. Thomas Zepp,

explained to the Commission.[2] In the Company's prior case, Staff relied on its relatively low current MPR to reduce the CAPM estimate, producing a return on equity of 9.3 percent, even though interest rates and betas of the water utility sample had been increasing. As I explained above, in prior cases, the Commission has accepted Staff's method, and approved the resulting lower rates of return. In this case, the inputs into Staff's method are such that a very high current MPR is produced, increasing the cost of equity. This is simply the case of a very volatile method being volatile. To be consistent with prior decisions in water and wastewater utility rate cases, including Chaparral City's prior case, Staff's method should be used here.

Q. NEVERTHELESS, THE COMPANY IS NOT ARGUING THAT STAFF'S METHOD OF ESTIMATING THE CURRENT MRP SHOULD BE USED IN THIS CASE.

A. That is correct. While it is tempting to simply use Staff method, given that the Commission has consistently approved this method in water and wastewater rate cases, I have testified in the past that Staff's method produces unreliable results and should not be used. Moreover, as I have stated, the Company desires to avoid a dispute over the cost of equity, and will accept a return on equity of 11.5 percent, which is less than Staff's initial estimate of 11.8 percent.

Q. IT APPEARS THEN THAT THE PRIMARY AREA OF DISAGREEMENT WITH STAFF CONCERNS THE ADJUSTMENTS TO STAFF'S COST OF EQUITY ESTIMATE.

A. That is correct. Notwithstanding the volatility of Staff's method of estimating the

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[2] *See* Rebuttal Testimony of Thomas M. Zepp, Exh. A-8, Docket No. W-02113A-04-0616, at pp. 21-22. Dr. Zepp explained that between October 9, 2002, and April 15, 2005, Staff's current MPR fluctuated between 5.9 percent and 18.2 percent. *Id.* at 22. He suggested a more reliable way to estimate the current MRP, but the Commission adopted Staff's method.

current MRP, the models employed by the Company and Staff are similar in most respects, and we both rely on the same sample group of six publicly traded water utilities, which are the utilities that have been used by the Commission in setting rates for water and wastewater utilities for a number of years. As a result, our cost of equity estimates are similar.

Q. HOW DO THE COST OF EQUITY ESTIMATES OF THE COMPANY AND STAFF COMPARE TO RUCO'S COST OF EQUITY ESTIMATES?

A. RUCO continues to use a completely different sample of utilities as well as methods and approaches that depress the cost of equity. The results in this case are obvious:

Company Rebuttal	13.0%
Company Rejoinder	13.2%
Staff Direct	11.8%
Staff Updated	14.8%
RUCO Direct	8.83%
RUCO Surrebuttal	8.60%

I will address the problems with RUCO's methods later in this testimony. It is apparent, however, that RUCO's methods are quite different from those used by Staff and the Company, and produce an extremely low cost of equity.

C. <u>Staff's Financial Risk Adjustment</u>

Q. DID YOU ALSO RECOMPUTE STAFF'S FINANCIAL RISK ADJUSTMENT?

A. Yes. It is shown on Schedules TJB-11 through TJB-13. In doing so, I again followed Staff's method, which is the formula originally derived from the CAPM by Professor Hamada. *See* Bourassa Rb. at 29. I also used the book value of the equity in the sample utilities' capital structures, which, as I explained in my

rebuttal testimony, is not the correct method of implementing the Hamada formula. *Id.* at 34-35.

Q. WHAT IS STAFF'S UPDATED RISK ADJUSTMENT, USING THE BOOK VALUE OF EQUITY?

A. It would be 290 basis points, or nearly 3.0 percent! That is extraordinarily high. In my experience before the Commission, I have never seen a downward adjustment greater than 100 basis points, and I have only seen a downward adjustment when the utility had a capital structure consisting of 100 percent equity and no debt. The magnitude of this adjustment is driven by Staff's improper use of the book equity of the sample utilities, coupled with Staff's CAPM's model and, more specifically, its current MRP determination.[3]

Q. DID YOU RE-COMPUTE STAFF'S FINANCIAL RISK ADJUSTMENT USING THE MARKET VALUES OF THE SAMPLE UTILITIES' EQUITY?

A. Yes. This calculation is shown on Schedules TJB-14 through TJB-16. The use of the correct inputs – the market value of the sample utilities' equity – results in a downward adjustment of 80 basis points (0.80 percent). Keep in mind that this adjustment is tied to Staff's CAPM estimate and resulting cost of equity of 14.8 percent. If Staff's method were used, the resulting cost of equity would be 14.0 percent (14.8 percent – 0.80 percent), which is higher than the Company's 11.5 percent recommended cost of equity.

Q. ARE YOU PROPOSING A DOWNWARD ADJUSTMENT OF 80 BASIS POINTS FOR CHAPARRAL CITY?

A. Absolutely not, given that approximately one-quarter of Chaparral City's capital

[3] Since my rebuttal testimony was filed, I located an additional text discussing the calculation used to determine the effect of leverage. That text also states that market values should be used, not book values. Tim Koller, Marc Goedhart and David Wessels, *Valuation: Measuring and Managing the Value of Companies* 312-13 (John Wiley & Sons, Inc. 4th ed. 2005).

structure consists of debt. As explained in my rebuttal testimony at pages 32 to 33, the Commission has generally considered an adjustment of this nature only when the utility's capital structure consists of 100 percent equity, and even then, it has not always made an adjustment to the cost of equity. *See, e.g.,* Arizona Water Company, Decision No. 68302 (Nov. 14, 2005) (no adjustment for financial risk based on capital structure containing 73 percent equity); Black Mountain Sewer Corporation, Decision No. 69164 (Dec. 5, 2006) (no financial risk adjustment based on capital structure consisting of 100 percent equity). Here, one-quarter of the Company's capital structure is debt. It would be punitive, in my opinion, to apply a downward adjustment to the cost of equity under these circumstances.

V. THERE IS NO BASIS TO ADJUST THE COST OF EQUITY OR THE RATE OF RETURN DOWNWARD FOR INFLATION

A. Summary of Company's Final Position

Q. WHAT IS THE COMPANY'S FINAL POSITION ON WHETHER ITS COST OF CAPITAL SHOULD BE ADJUSTED DOWNWARD FOR INFLATION?

A. The Company continues to maintain that a downward adjustment for inflation is improper and would deprive the Company of an opportunity to earn a fair rate of return on the fair value of its utility plant and property, i.e., its FVRB.

Q. PLEASE SUMMARIZE THE BASIS FOR THE COMPANY'S POSITION.

A. There are a number of serious problems with the adjustments to account for inflation proposed by Staff and RUCO. They are, in summary, as follows:

- The failure to account for the impact of inflation on other aspects of the Company's business, namely operating expenses and earnings, which impacts the Company to a much greater extent than an alleged increase in rate base (*see* Bourassa Rb. at 24-26).

- The failure to consider the Company's continued inability to actually earn its authorized rate of return, and thereby recover the inflationary component in the cost of equity (*see* Bourassa Rb. at 26-27).
- The fact that, as Staff acknowledges, one-half of the Company's FVRB consists of its OCRB, which is based on the original or historic cost of the plant and is unaffected by changes in prices (*see* Fox Dt. at 7-8; Bourassa Rb. at 18-19). An adjustment to the cost of equity that fails to recognize this fact dramatically overstates the impact of inflation.
- The Company's long-term debt is an existing contractual obligation that has a fixed cost and is unaffected by changes in prices or other inflationary effects (*see* Bourassa Rb. at 20-21). Therefore, it would be improper to reduce the cost of debt and impair the Company's ability to recover its authorized return on equity.
- If inflation is considered, it must be based on inflation that is <u>expected to occur in the future</u>, not historic data. As Mr. Chaves explains, "[u]se of current bond yield [to estimate inflation] is consistent with finance theory, i.e., the efficient market hypothesis. Further, ... the best estimate of tomorrow's [inflation] is simply today's [inflation]. (Chaves Dt. at 37). RUCO, however, improperly uses historic data from the period 2001 through 2007 to estimate future inflation (*see* William Rigsby Direct Testimony (Rigsby Dt."), Schedule WAR-1, p. 5).

B. <u>Updated Estimate of Inflation</u>

Q. WHAT IS THE CURRENT RATE OF INFLATION, USING THE METHOD RECOMMENDED BY STAFF?

A. The current rate of inflation is a <u>negative 1.18 percent</u>, based on the average yields on 5, 7 and 10-year Treasuries. As explained in my rebuttal testimony at pages 23-

24, it is appropriate to use the current yields on these bonds based on Staff's view (which has been accepted by the Commission is prior cases) that most investors hold stocks for an intermediate period, which is why Staff uses the average of 5, 7 and 10-year Treasuries as the risk-free rate in implementing its CAPM.[4]

Staff and RUCO agree that an appropriate method of estimating the expected, future inflation component in the cost of equity is by subtracting the yields on U.S. Treasury inflation protected securities ("TIPS") from the yields of U.S. Treasury securities with constant maturities. In connection with updating my estimate of the cost of equity, I used financial data at November 21, 2008. Consequently, to estimate the current inflationary component in the cost of equity, I also evaluated U.S. Treasuries' spot rates on that same date, following the recommendation of Staff, to determine the current level of inflation. The result is as follows:

	Constant Maturity	TIPS	Expected Inflation
5-Year	2.02%	3.96%	(1.94)
7-Year	2.53%	4.17%	(1.64)
10-year	3.20%	3.15%	0.05
Average	2.58%	3.76%	(1.18)

Q. IS THIS THE SAME METHOD THAT YOU USED IN YOUR REBUTTAL TESTIMONY TO ESTIMATE INFLATION?

A. Yes (*see* Bourassa Dt. at 23). At that time, the indicated rate of inflation was negative 0.82%. It is currently negative 1.18%, as shown above. If there is an adjustment to the cost of equity, it should be a positive adjustment to increase the

[4] This was Staff's position in Chaparral City's prior rate case, which was adopted by the Commission. *See* Surrebuttal Testimony of Alejandro Ramirez, Docket No. W-02113A-04-0616 (May 5, 2005), Exh. S-4 at 11.

cost of equity, not lower it.

Q. WOULD THE INDICATED INFLATION RATE BE DIFFERENT IF 20-YEAR TREASURIES WERE USED INSTEAD?

A. Yes. The difference between the yields of a 20-year Treasury and a 20-year TIPS as of November 21, 2008, was 0.83 percent. Half of that difference is 0.42 percent, which would result in a 42 basis point downward adjustment to the cost of equity. However, following Staff's logic, it would not be appropriate to use the spot yields of 20-year Treasuries without also using 20-year Treasuries to implement the CAPM. This would result in a higher cost of equity, offsetting the downward adjustment for inflation.

The bottom line is that regardless of whether an adjustment for inflation is appropriate – and the Company continues to maintain that such an adjustment is not appropriate for a variety of reasons – given current financial indicators, no adjustment for inflation is required.

C. <u>Response to RUCO's Surrebuttal Arguments</u>

Q. HOW DO YOU RESPOND TO MR. RIGSBY'S ARGUMENT THAT YOU ARE ATTEMPTING TO APPLY AN "ACCOUNTING-LIKE MATCHING CONVENTION" BY FOLLOWING STAFF'S RECOMMENDED APPROACH AND USING "SPOT" YIELDS ON TREASURIES RATHER THAN HISTORIC RATES OF INFLATION?

A. Mr. Rigsby is mistaken. The use of current Treasury yields, as advocated by Staff, has nothing to do with the so-called "matching principle." Rather, as Mr. Chaves explains in his testimony (which Mr. Rigsby has ignored), it is a matter of using <u>current</u> market data to properly reflect <u>current</u> investor expectations. *See* Chaves Dt. at 37. It is the same reason why Mr. Rigsby didn't use the average annual price of the stocks of his sample utilities since 2001 in his DCF model, or use the

average annual yield on a 5-year Treasury since 2001 as the risk-free rate in his CAPM. The cost of equity is based on what investors expect to earn in the future, not what may have been earned in the past. Under the efficient market hypothesis, investors have already taken into account historic inflation levels, as well as historic information on stock prices, dividends, earnings and other data on the utilities in the sample group. It is also why Mr. Rigsby adjusted his proposed cost of short-term debt to reflect the current LIBOR rate, rather than using the average LIBOR rate over the past eight years. For the same reason, the level of inflation in 2002 or in 2005 is irrelevant to determining the inflation component in the current cost of equity.

Q. WHAT INFLATION ADJUSTMENT WOULD BE APPROPRIATE IF THE MODELS AND INPUTS ADOPTED BY RUCO WERE USED TO ESTIMATE THE COST OF EQUITY?

A. RUCO's cost of equity estimate should be increased by 194 basis points (1.94 percent), not reduced by 200 basis points. This would result in a cost of equity of 10.8 percent, instead of a cost of equity of 6.60 percent, which is what RUCO proposes. The reason is that Mr. Rigsby uses the 5-year Treasury yield as the risk-free rate. At the present time, the difference in the yield on a 5-year Treasury and a 5-year TIPS is <u>negative</u> 1.94 percent.

Q. HOW DO YOU RESPOND TO MR. RIGSBY'S ARGUMENT THAT IT IS IRRELEVANT WHETHER HALF OF THE COMPANY'S RATE BASE IS UNAFFECTED BY INFLATION?

A. On this issue, Mr. Rigsby has simply ignored the issue before the Commission. He claims on page 16 of his surrebuttal testimony that the purpose of making the inflation adjustment is to "avoid overcompensating investors for general inflation and not offset year-to-year increases or decreases in a utility's specific rate base."

His support for this argument is the surrebuttal testimony of Ben Johnson, filed in Chaparral City's remand proceeding in Docket No. W-02113A-04-0616. Unfortunately, Dr. Johnson also ignored the issue.

Q. WHAT IS THE ISSUE, MR. BOURASSA?

A. The issue is whether Chaparral City is being overcompensated if the fair value of its utility plant is used as the rate base, instead of OCRB. In Decision No. 70441, the Commission concluded that inflation is being "over-counted" because the cost of equity (estimated by means of the DCF and CAPM models) and the FVRB both include an "inflation component."[5] Dr. Johnson, unfortunately, never identified the "inflation component" in the Company's FVRB or explained how it should be determined. Instead, he ignored the issue by talking in vague terms about "general inflation" affecting the cost of equity, as Mr. Rigsby now states. However, if Chaparral City's FVRB is not affected by "general inflation," there is no "over-counting." We know that at least half of the Company's FVRB is not affected by inflation because it is valued on the basis of its historic cost, i.e., the OCRB. For this reason, Staff has acknowledged that OCRB includes no inflation, and that the inflation adjustment must be reduced to reflect that fact.

Another way to look at this issue is to consider what has happened in other recent rate cases for Arizona water and wastewater utilities that have agreed to accept OCRB as the fair value of their utility plant. In those cases, the Commission has consistently adopted Staff's recommended cost of equity, based on the same finance models and inputs used by Staff in this case. Yet neither Staff nor RUCO proposed an adjustment to account for "general inflation" in the cost of equity. It was done in this case on the basis that inflation is "over-counted" if the FVRB is used to set rates. If it is appropriate, as RUCO argues, to adjust the cost

[5] Decision No. 70441 at 33.

of equity to account for "general inflation" without regard to the components of the rate base, then in every rate case, an inflation-related adjustment would be used. This does not take place, however, because the utility's rate base is its OCRB. For the same reason, an adjustment based on "general inflation" is overstated by at least 50 percent if the fact that half of the FVRB consists of plant valued at its historic or original cost is ignored.

D. <u>Response to Mr. Abinah's Request for Consideration of Method One</u>

Q. MR. FOX DID NOT FILE SURREBUTTAL TESTIMONY ADDRESSING THE ADJUSTMENT FOR INFLATION. STAFF INSTEAD FILED TESTIMONY FROM ELIJAH ABINAH. DOES MR. ABINAH'S TESTIMONY AFFECT STAFF'S RECOMMENDATION REGARDING INFLATION?

A. Apparently, no. Mr. Abinah simply states that he has reviewed Mr. Fox's direct testimony and my rebuttal testimony, and believes that the Commission should also consider what Mr. Fox calls "Method One" (*see* Fox Dt. at 3-4) as well as Staff's preferred method, "Method Two" (*id.* at 4-8). Method Two recognizes that any inflation adjustment must be reduced to account for absence of inflation in the OCRB, but erroneously assumes that the annual debt service (interest) goes up or down, based on inflation. Method One, in contrast, adjusts only the cost of equity, but fails to recognize that half of the FVRB is the historic cost of plant.

Q. ISN'T "METHOD ONE" SIMPLY THE METHOD PROPOSED BY RUCO?

A. Yes. Consequently, I have assumed that the Commission would consider Method One. My testimony responding to RUCO's inflation adjustment also applies to Staff's Method One.

Q. DOES MR. ABINAH PROVIDE ANY BASIS FOR ACCEPTING METHOD ONE OVER METHOD TWO?

A. Only that he believes Method One will produce a lower revenue requirement than Method Two. That would not be the case at present, however, because inflation is currently negative.

VI. RESPONSE TO RUCO'S SURREBUTTAL TESTIMONY

A. Overview of RUCO's Proposed Cost of Capital

Q. PLEASE SUMMARIZE RUCO'S PROPOSED COST OF CAPITAL.

A. RUCO continues to recommend a WACC of only 6.38 percent. To put this in perspective, the Company's long-term debt has a cost of 5.33 percent – about 100 basis points less than RUCO's WACC. At the same time, the interest rate on an investment grade (Baa) bond is currently about 9 percent.[6]

As I explained, RUCO's capital structure and cost of debt are very similar to the capital structures and cost of debt recommended by the Company and Staff. Thus, the primary reason for RUCO's extremely low WACC is its cost of equity, 6.83 percent, which is based on the average cost of equity of its DCF and CAPM results (8.83 percent) and a downward adjustment of 200 basis points for inflation. *See* Rigsby Dt. at 8. In his surrebuttal testimony, Mr. Rigsby explains that his updated cost of equity is 8.60 percent, which would produce an inflation-adjusted WACC of only 6.19 percent. Rigsby Sb. at 11-12. But he continues to recommend a WACC of 6.38 percent. *Id.*

As I explained on pages 38 through 41 of my rebuttal testimony, Mr. Rigsby's methods are flawed in several critical respects, as one would expect given the extremely low result produced by his models. Moreover, as I explained, an adjustment to account for inflation would actually increase RUCO's cost of equity

[6] The Federal Reserve reports that the yield on Baa corporate bonds was 9.08 percent on November 21, 2008, while the yield on Aaa bonds was 5.82 percent on that same date. *See* Federal Reserve Statistical Release H.15 (Nov. 24, 2008), available at http://www.federalreserve.gov/releases/h15/.

by nearly 200 basis points, based on the current difference between a 5-year Treasury and a 5-year TIPS.

B. <u>Updated Cost of Equity Estimate Using RUCO's Methods</u>

Q. DID YOU PREPARE AN UPDATED ESTIMATE OF THE COST OF EQUITY USING RUCO'S METHODS AND INPUTS?

A. No, I did not.

Q. WHY DID YOU UPDATE STAFF'S COST OF EQUITY ESTIMATE AND NOT RUCO'S ESTIMATE?

A. Because RUCO's method of estimating the cost of equity is subjective and cannot be verified or replicated, in contrast to the methods that Staff and I use. In his DCF model, Mr. Rigsby relies on projected sustainable growth in order to estimate the dividend growth rate. Mr. Chaves and I also use the sustainable growth method. *See* Chaves Dt. at 18-19; Bourassa Dt. at 32-33. The difference, however, is that the key inputs necessary to estimate the internal or retention growth rate are not disclosed by Mr. Rigsby.

Q. WHAT ARE THOSE INPUTS?

A. Internal or retention growth, as Mr. Chaves and I have explained, is the expected growth in dividends due to the retention of earnings. Retention growth is dependent on the percentage of earnings retained (the retention ratio) and the expected return on common equity that is applied to the retained earnings. Thus, the internal growth rate formula is:

Retention growth rate = br

Where: b = the retention ratio (1-dividend payout ratio)

r = the expected return on common equity

The problem with Mr. Rigsby's implementation of this formula is that he does not

disclose the retention ratio or the expected return on common equity used to calculate the retention growth rate. As a result, it is impossible to verify the accuracy of his calculation or to duplicate that calculation based on more current information.

Q. I ASSUME THAT THE COMPANY REQUESTED THIS DATA FROM RUCO.

A. Yes. Unfortunately, RUCO was unable to provide the data necessary to verify Mr. Rigsby's calculation. Instead, RUCO's counsel advised the Company's counsel that Mr. Rigsby relied on Value Line estimates. I relied on the same data, however, and derived a higher growth rate. *Compare* Bourassa Rejoinder Schedule D-4.6 *with* Rigsby Dt. Schedule WAR-4, page 1.

Q. MR. RIGSBY ALSO CLAIMS TO HAVE CONSIDERED OTHER DATA.

A. Yes. Again, the problem is that it is unclear how this data was actually used to derive his sustainable growth estimate. He lists various sources of data (*see* Rigsby Dt. at 26), and also attaches various materials to his direct testimony. But there is no explanation of how any of these materials were actually used. This approach effectively allows Mr. Rigsby to simply select a growth rate that falls somewhere within a broad range and cannot be verified. For this reason, his cost of equity estimate cannot be updated to reflect current market data.

C. <u>Problems with RUCO's CAPM Estimates</u>

Q. COULD YOU HAVE UPDATED RUCO'S CAPM ESTIMATES?

A. Perhaps. Again, however, the methodology employed by Mr. Rigsby differs significantly from the methodology that Mr. Chaves and I have used. Mr. Rigsby makes no attempt to estimate the current MRP. Instead, he calculates two different historic MRPs for the period 1926 to 2007, one of which relies on the geometric mean (average) of historic returns and the other relies on the arithmetic mean

(average) of historic returns. *See* Rigsby Dt. at 33. Mr. Rigsby's calculated risk premiums are 4.90 percent based on his geometric mean calculation, and 6.5 percent based on his arithmetic mean calculation. In contrast, Staff and I both rely on the information published by Morningstar (formerly Ibbotson Associates), which calculates the historical risk premium by averaging the historical arithmetic differences between the S&P 500 and intermediate-term government bond income returns for the period 1926 through 2007. *See* Chaves Dt. at 30; Bourassa Dt. at 35-36. Our historical market risk premium is 7.5 percent. *Id.*

Q. MR. RIGSBY ARGUES THAT IT IS APPROPRIATE TO USE THE GEOMETRIC MEAN (AVERAGE) IN COMPUTING THE HISTORICAL MARKET RISK PREMIUM, DISAGREEING WITH YOUR REBUTTAL TESTIMONY. DO YOU HAVE A RESPONSE?

A. Yes. The discussion found on pages 19-25 of his surrebuttal testimony is contrary to the overwhelming weight of the evidence. Dr. Roger Morin, for example, explains in his text on regulatory finance:

> In estimating the cost of capital, the goal is to obtain the rate of return that investors expect, that is, a target rate of return. On average, investors expect to achieve their target return. This target expected return is in effect an arithmetic average. The achieved retrospective return is the geometric average. In statistical parlance, the arithmetic average is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean....
>
> In capital markets, where returns are a probability distribution, the answer that takes account of uncertainty, the arithmetic mean, is the correct one for estimating discount rates and the cost of capital.
>
> While the geometric mean is appropriate when measuring performance over a long time period, it is incorrect when estimating a risk premium to compute the cost of capital.[7]

[7] Roger A. Morin, *New Regulatory Finance* 133 (Public Utility Reports 2006).

Dr. Morin's text provides a theoretical discussion of why the arithmetic mean should be used to estimate the cost of capital, empirical evidence supporting the use of an arithmetic mean, excerpts from widely used corporate finance texts, and a formal demonstration of why the use of an arithmetic mean is appropriate. I have attached the relevant pages from Dr. Morin's text to this testimony at Tab 3.

Q. MR. RIGSBY HAS PROVIDED AN EXAMPLE ON PAGES 20 TO 22 OF HIS SURREBUTTAL PURPORTING TO SHOW WHY THE GEOMETRIC MEAN SHOULD BE USED. THIS THAT CALCULATION CORRECT?

A. His calculation is correct, but is backward-looking rather forward-looking. He has used the geometric mean to calculate the past performance of an investment, not to estimate the return that will be earned in the future. As explained in the attached excerpt from Dr. Morin's text, the geometric average "is an excellent measure of *past* performance. However, if our focus is on future performance, then the arithmetic average is the statistic of interest because it is an unbiased estimate of the portfolio's expected future return … ." (italics in text).[8]

Q. MR. RIGSBY CITES A TEXT BOOK FOR THE ARGUMENT THAT THE USE OF AN ARITHMETIC MEAN OVERSTATES THE MARKET RISK PREMIUM. DID YOU REVIEW THAT TEXT?

A. I reviewed the most current edition of the text, Tim Koller, Marc Goedhart and David Wessels, *Valuation: Measuring and Managing the Value of Companies* (John Wiley & Sons, Inc. 4th ed. 2005). This text does not support Mr. Rigsby's argument. The authors state that for longer intervals (here, a period of 81 years) an arithmetic average should be used. They also state that "[t]o estimate the mean (expectation) for any random variable, well-accepted statistical principles dictate

[8] *Id.* at 135, quoting Z. Brodie, A. Kane and A.J. Marcus, *Investments* (McGraw-Hill Irwin 6th ed. 2005).

that the arithmetic average is the best unbiased estimator."[9] Mr. Rigsby appears to be confusing the calculation of future cash flows beyond one period, which may be biased upward or downward, with estimating the current cost of equity. I also note that the authors recommend use of a 10-year Treasury as the risk-free rate, while Mr. Rigsby uses a 5-year Treasury, resulting in a lower risk-free rate and a lower cost of equity.

Q. MR. RIGSBY ALSO CITES THIS TEXT AS AUTHORITY FOR THE EXISTENCE OF "SURVIVORSHIP BIAS."

A. The authors briefly discuss survivorship bias, which relates to the fact that over the past 100 years, the U.S. stock market has outperformed markets in foreign countries such as China, Russia and Poland. Since the purpose here is to estimate the cost of equity for Chaparral City by using a proxy group of publicly traded water utilities in the United States, which are treated as being comparable in terms of investment risk, it would be improper to reduce the historic risk premium, which is based on differences between the S&P 500 and U.S. Treasury bond income returns over the past 81 years, to account for a higher incidence of business failures in foreign countries.

D. <u>Problems with RUCO's Use of Southwest Water</u>

Q. IN YOUR REBUTTAL TESTIMONY, YOU CRITICIZED MR. RIGSBY FOR USING SOUTHWEST WATER IN HIS SAMPLE WATER UTILITIES. HOW DOES MR. RIGSBY RESPOND TO YOUR CRITICISMS AND DO YOU AGREE WITH HIM?

A. In my rebuttal testimony, I pointed out that Mr. Rigsby used four publicly traded water utilities, including Southwest Water Company, in his sample group of water utilities, which is inappropriate for several different reasons, including the low

[9] Koller, *et al.*, *supra*, at 299.

percentage of its revenues derived from regulated activities and its poor earnings record.

Q. BEFORE WE GO ANY FARTHER, WHAT WATER UTILITIES DID STAFF AND THE COMPANY INCLUDE IN THEIR SAMPLE GROUPS?

A. The sample water utilities used by Staff and the Company are the same six publicly traded water utilities that Staff has been using in its sample group for a number of years, American States Water, Aqua America, California Water Service, Connecticut Water Service, Middlesex Water Company and SJW Corporation. The Commission has repeatedly accepted that sample group in determining the cost of equity for Arizona water and wastewater utilities. It did so, for example, in Chaparral City's prior rate case.

Mr. Rigsby, however, contends that it is appropriate to substitute Southwest Water Company for Connecticut Water Service, Middlesex Water Company and SJW Corporation, despite the fact that, as he acknowledges on page 17 of his surrebuttal testimony, <u>less than 50 percent</u> of Southwest Water's revenues are derived from regulated activities. According to the most recent *AUS Utility Reports* (November 2008), 45 percent of Southwest Water's revenues are derived from regulated activities. In contrast, four of the six water utilities customarily used by the Commission have at least 90 percent of their revenue derived from regulated activities, while the remaining two water utilities have 82 percent and 85 percent of their revenues derived from regulated activities. Obviously there is a significant difference between Southwest Water and the remaining water utilities.

Q. MR. RIGSBY POINTS OUT THAT THE COMPANY'S PARENT, AMERICAN STATES WATER, ENGAGES IN NON-REGULATED ACTIVITIES. IS THAT CORRECT?

A. Yes, as do the remaining five water utilities in the sample group. None of these

utilities is a "pure water provider." However, there is obviously a significant difference, in terms of comparability, between a utility such as American States, which derives over 80 percent of its revenue from regulated activities, and Southwest Water, which currently derives 45 percent of its revenue from regulated activities.

Q. IS THERE ANY OTHER REASON WHY SOUTHWEST WATER COMPANY SHOULD BE EXCLUDED FROM THE COST OF EQUITY ANALYSIS?

A. Yes. Southwest Water Company's financial condition continues to deteriorate. According to the most recent *AUS Monthly Utility Report*, for the 12-month period ended June 30, 2008, Southwest Water had negative earnings per share, and its dividend pay out ratio, return on common equity and return on total capital are described as "not meaningful." A utility experiencing these sorts of financial difficulties should not be included in the sample group.

E. <u>RUCO'S Gas Utility Sample Group Is Not Directly Comparable</u>

Q. LET'S TURN TO RUCO'S GAS UTILITY SAMPLE GROUP, MR. BOURASSA. WHAT DOES MR. RIGSBY SAY IN RESPONSE TO YOUR REBUTTAL TESTIMONY ABOUT THE USE OF THOSE UTILITIES TO DETERMINE CHAPARRAL CITY'S COST OF CAPITAL?

A. Mr. Rigsby asserts that the gas utilities have similar operating characteristics and therefore can be used to estimate Chaparral City's cost of equity.

Q. DO YOU AGREE?

A. No. The gas utilities are not comparable, and cannot be treated as such in implementing the DCF and CAPM models. In reality RUCO has used them to depress the cost of equity, not to provide a larger sample group.

Q. WHY AREN'T THE GAS COMPANIES COMPARABLE?

A. As I explained in my rebuttal testimony, RUCO's gas utility sample has an average beta of 0.82, while RUCO's water utility sample has an average beta of 1.05. *See* Rigsby Dt., Schedule WAR-7, page 1. Therefore, the water utility sample has significantly more systematic risk than the gas utility sample. Mr. Rigsby erroneously assumes that the gas utilities and water utility have the same systematic risk and are directly comparable, when they are not.

Q. CAN THE GAS UTILITIES BE USED TO ESTIMATE CHAPARRAL CITY'S COST OF EQUITY?

A. Yes, if the results produced by the DCF and CAPM models are adjusted upward to reflect the water utilities' additional risk. Mr. Rigsby, however, has made no adjustment to account for the water utilities' additional risk.

Q. HOW WOULD AN APPROPRIATE RISK ADJUSTMENT BE CALCULATED?

A. By using the CAPM. As I explained in my rebuttal, the difference between the results produced by Mr. Rigsby's CAPM model is 130 basis points. *See* Bourassa Dt. at 40. Because of the method used by Mr. Rigsby to implement the CAPM, however, 130 basis points understates the required adjustment to properly reflect the gas utilities' lower investment risk. If Staff's method and inputs are used instead, the result is 190 basis points, calculated as follows:

	Rf		Beta		Rp		k
Historic MRP	2.5%	+	0.82	x	7.5%	=	8.65%
Current MRP	3.6%	+	0.82	x	16.0%	=	16.72%
Average Gas Utility Sample							12.7%
Average Water Utility Sample[10]							14.6%
Difference/Risk Adjustment							**1.9%**

[10] *See* Rejoinder Schedule D-4.13.

Given this difference, it is clearly inappropriate to simply average the gas utilities' equity cost with the water utilities' equity cost, as Mr. Rigsby has done. This error assumes that a typical gas utility has the same investment risk as a typical water utility, which is not the case at the present time. As a result, Mr. Rigsby's use of gas utilities depresses the cost of equity for Chaparral City.

Q. DOES THAT CONCLUDE YOUR REJOINDER TESTIMONY MR. BOURASSA?

A. Yes.

1

Chaparral City Water Company
Test Year Ended December 31, 2006
Summary of Cost of Capital

Exhibit
Rejoinder Schedule D-1
Page 1
Witness: Bourassa

Line No.	Item of Capital	End of Test Year Dollar Amount	End of Test Year Percent of Total	End of Test Year Cost Rate	End of Test Year Weighted Cost	End of Projected Year Dollar Amount	End of Projected Year Percent of Total	End of Projected Year Cost Rate	End of Projected Year Weighted Cost
1	Short-Term Debt[1]	$ 1,400,000	2.88%	3.98%	0.11%	$ 1,400,000	3.89%	3.98%	0.15%
2									
3	Long-Term Debt	$ 6,865,000	19.45%	5.33%	1.04%	$ 6,585,000	18.28%	5.36%	0.98%
4									
5	Stockholder's Equity	$ 27,028,873	76.58%	11.50%	8.81%	$ 29,432,938	81.72%	11.50%	9.40%
6									
7	Totals	$ 35,293,873	98.91%		9.96%	$ 36,017,938	100.00%		10.38%

[1] Current one year LIBOR rate (12 month LIBOR as reported on Nov. 21, 2008 by www.economagic.com)

SUPPORTING SCHEDULES:
Rejoinder D-2
Rejoinder D-3
Rejoinder D-4

RECAP SCHEDULES:

Chaparral City Water Company
Test Year Ended December 31, 2006
Cost of Long Term Debt

Exhibit
Rejoinder Schedule D-2
Page 1
Witness: Bourassa

Line No.	Description of Debt	End of Test Year Amount Outstanding	Annual Interest	Interest Rate	Weighted Cost	End of Projected Year Amount Outstanding	Annual Interest	Interest Rate	Weighted Cost
1									
2	Series 1997A serial bonds, due 1998 to 2007 (4% to 4.85%)	240,000	11,040	4.60%	0.16%	-	-	4.60%	0.00%
3	Series 1997A term bonds, due Dec. 2011 (5.20%)	1,000,000	52,000	5.20%	0.76%	960,000	49,920	5.20%	0.76%
4	Series 1997A term bonds, due Dec. 2022 (5.40%)	4,610,000	248,940	5.40%	3.63%	4,610,000	248,940	5.40%	3.78%
5	Series 1997B term bonds, due Dec. 2022 (5.30%)	1,015,000	53,795	5.30%	0.78%	1,015,000	53,795	5.30%	0.82%
6									
7									
8									
9									
10									
11									
12									
13	Totals	$ 6,865,000	365,775		5.33%	$ 6,585,000	352,655		5.36%
14									
15	Supporting Schdules:								
16	E-2								
17									
18									
19									
20									
21									

Chaparral City Water Company
Test Year Ended December 31, 2006
Cost of Preferred Stock

Exhibit
Rejoinder Schedule D-3
Page 1
Witness: Bourassa

Line No.	Description of Issue	End of Test Year Shares Outstanding	End of Test Year Amount	End of Test Year Dividend Requirement	End of Projected Year Shares Outstanding	End of Projected Year Amount	End of Projected Year Dividend Requirement
1							
2							
3	NOT APPLICABLE, NO PREFERRED STOCK ISSUED OR OUTSTANDING						
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17	SUPPORTING SCHEDULES:			RECAP SCHEDULES:			
18	E-1			Rejoinder D-1			
19							
20							

Chaparral City Water Company
Test Year Ended December 31, 2006
Cost of Common Equity

Exhibit
Rejoinder Schedule D-4
Page 1
Witness: Bourassa

Line No.	
1	
2	The Company is proposing a cost of common equity of 11.5%.
3	
4	
5	
6	
7	
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9	
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11	
12	
13	
14	
15	
16	
17	SUPPORTING SCHEDULES: RECAP SCHEDULES:
18	Rejoinder D-1
19	
20	

Chaparral City Water Company
Test Year Ended December 31, 2006
Cost of Common Equity

Exhibit
Rejoinder Schedule D-4
Page 1
Witness: Bourassa

Line No.	
1	
2	The Company is proposing a cost of common equity of 11.5%.
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	SUPPORTING SCHEDULES: RECAP SCHEDULES:
18	Rejoinder D-1
19	
20	

Chaparral City Water Company
Summary of Results

Exhibit
Rejoinder Schedule D-4.0
Witness: Bourassa

Line No.	Method	Low	High	Midpoint
1				
2				
3				
4	Method	Low	High	Midpoint
5	DCF Constant Growth	10.7%	14.9%	12.8%
6	DCF Sustainable Growth	8.6%	12.3%	10.4%
7	DCF Two-Stage	10.3%	13.2%	11.8%
8				
9	Average DCF Results	9.9%	13.5%	11.7%
10				
11	CAPM	9.9%	19.4%	14.7%
12				
13	Average DCF and CAPM Results	9.9%	16.5%	13.2%
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				

Chaparral City Water Company
Selected Characteristics of Water Utilities

Exhibit
Rejoinder Schedule D-4.1
Witness: Bourassa

Line No.	Company	% Water Revenues	Operating Revenues (millions)	Net Plant (millions)	S&P Bond Rating	Moody's Bond Rating
1						
2						
3	Company					
4	1. American States	82%	$ 299.1	$ 701.8	NR	A2
5	2. Aqua America	87%	$ 604.6	$ 2,466.5	AA-	NR
6	3. California Water	97%	$ 378.2	$ 929.5	NR	NR
7	4. Connecticut Water	85%	$ 61.3	$ 239.2	AAA	NR
8	5. Middlesex	90%	$ 89.3	$ 307.2	A	NR
9	6. SJW Corp.	95%	$ 213.8	$ 476.8	NR	NR
10						
11	Average	89%	$ 274.4	$ 853.5		
12						
13	Chaparral City Water Company	100%	$ 7.4	$ 37.2	NR	NR
14						
15	Source: AUS Utility Reports (November 2008)					
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

Chaparral City Water Company
Capital Structures of Water Utilities

Exhibit
Rejoinder Schedule D-4.2
Witness: Bourassa

No.	Company	Book Value Long-Term Debt	Book Value Common Equity	Market Value Long-Term Debt	Market Value Common Equity
1	American States	47.0%	53.0%	33.2%	66.8%
2	Aqua America	55.4%	44.6%	30.7%	69.3%
3	California Water	43.0%	57.0%	25.6%	74.4%
4	Connecticut Water	47.9%	52.1%	34.7%	65.3%
5	Middlesex	49.8%	50.2%	40.5%	59.5%
6	SJW Corp.	47.7%	52.3%	33.0%	67.0%
7					
8	Average	48.5%	51.5%	32.9%	67.1%
9					
10	Chaparral City Water Company	23.4%	76.6%	N/A	N/A

Source: Value Line Analyzer Data (November 21, 2008)

Chaparral City Water Company
Comparisons of Past and Future Estimates of Growth

Exhibit
Rejoinder Schedule D-4.3
Page 1
Witness: Bourassa

Line No.	Company	Five-year historical compound annual changes: Price	Book Value	DPS	EPS	Average Future Growth[1]
7	1. American States	13.68%	4.53%	1.99%	6.53%	8.50%
8	2. Aqua America	13.72%	9.84%	8.45%	5.63%	8.00%
9	3. California Water	12.76%	7.11%	0.70%	3.71%	8.67%
10	4. Connecticut Water	1.91%	3.50%	1.51%	Negative	9.03%
11	5. Middlesex	6.86%	6.34%	1.93%	3.57%	8.00%
12	6. SJW Corp.	24.69%	8.96%	7.24%	5.92%	12.00%
15	GROUP AVERAGE	12.27%	6.71%	3.64%	5.07%	9.03%
16	GROUP MEDIAN	13.22%	6.73%	1.96%	5.63%	8.58%

1 See Rejoinder Schedule D-4.5

Sources:
Value Line Data
Yahoo Finance

Chaparral City Water Company
Comparisons of Past and Future Estimates of Growth

Exhibit
Rejoinder Schedule D-4.4
Page 1
Witness: Bourassa

Line No.	Company	Ten-year historical compound annual changes: Price	Book Value	DPS	EPS	Average Future Growth[1]
7	1. American States	12.35%	4.54%	1.47%	4.53%	8.50%
8	2. Aqua America	13.87%	9.39%	7.18%	7.64%	8.00%
9	3. California Water	6.33%	3.59%	0.91%	Negative	8.67%
10	4. Connecticut Water	8.84%	3.76%	1.26%	1.08%	9.03%
11	5. Middlesex	9.88%	3.98%	1.98%	2.65%	8.00%
12	6. SJW Corp.	16.43%	4.85%	5.13%	2.66%	12.00%
15	GROUP AVERAGE	11.28%	5.02%	2.99%	3.71%	9.03%
16	GROUP MEDIAN	11.12%	4.26%	1.72%	2.66%	8.58%

1 See Rejoinder Schedule D-4.5

Sources:
Value Line Data
Yahoo Finance

Chaparral City Water Company
Analysts Forecasts of Earnings Per Share Growth

Exhibit
Rejoinder Schedule D-4.5
Witness: Bourassa

Line No.		(1)	(2)		(3)	(4)
1						
2						
3						
4			EPS GROWTH			Average
5					Value	Growth (G)
6	Company	Zacks	Morningstar	Yahoo	Line	(Cols 1-3)
7	1. American States	12.00%	7.00%	4.00%	11.00%	8.50%
8	2. Aqua America	9.00%	7.50%	8.00%	7.50%	8.00%
9	3. California Water	9.00%	8.00%	7.67%	10.00%	8.67%
10	4. Connecticut Water					9.03%
11	5. Middlesex	8.00%		8.00%	8.00%	8.00%
12	6. SJW Corp.	10.00%	18.00%	10.00%	10.00%	12.00%
13						
14						
15	GROUP AVERAGE	9.60%	10.13%	7.53%	9.30%	9.03%
16	GROUP MEDIAN					8.58%
17						
18	Sources:					
19	Value Line Investment Analyzer Data November 21, 2008					
20	Zacks Investment Research Site November 21, 2008					
21	Morningstar Website November 21, 2008					
22	Yahoo Finance November 21, 2008					
23						
24						
25						
26						
27						
28						

Chaparral City Water Company
Estimates of Sustainable Growth

Exhibit
Rejoinder Schedule D-4.6
Witness: Bourassa

Line No.		(1)	(2)	(3)	(4)	(5)
1						
2						
3						Average
4						Sustainable
5		Retention	Rate	br	sv	Growth
6	Company	Ratio	of Return	Growth	Growth	(Cols 3+4)
7	1. American States	0.52	13.50%	7.02%	0.89%	7.91%
8	2. Aqua America	0.43	12.00%	5.20%	0.67%	5.87%
9	3. California Water	0.49	11.00%	5.34%	2.66%	7.99%
10	4. Connecticut Water					
11	5. Middlesex					
12	6. SJW Corp.					
13						
14						
15	GROUP AVERAGE	0.48	12.17%	5.85%	1.40%	7.26%
16	GROUP MEDIAN	0.49	12.00%	5.34%	0.89%	7.91%
17						
18	Sources:					
19	Value Line Data					
20						
21						
22						
23						

Chaparral City Water Company
Estimates of sv Growth

Exhibit
Rejoinder Schedule D-4.7
Witness: Bourassa

Line No.		(1)	(2)	(3)	(4)
1					
2					
3					
4		Stock	Current		
5		Financing	Market to Book		sv
6	Company	Rate	Ratio	v	Growth
7	1. American States	2.03%	1.78	0.44	0.89%
8	2. Aqua America	1.03%	2.81	0.64	0.67%
9	3. California Water	4.87%	2.20	0.55	2.66%
10	4. Connecticut Water				na
11	5. Middlesex				na
12	6. SJW Corp.				na
13					
14					
15	GROUP AVERAGE	2.65%	2.26	0.54	1.40%
16	GROUP MEDIAN	2.03%	2.20	0.55	0.89%
17					
18	Sources:				
19	Value Line Data				
20					
21					

Chaparral City Water Company
Discounted Cash Flow Analysis (Water)
Constant Growth DCF Model
Using Projected EPS Growth

Exhibit
Rejoinder Schedule D-4.8
Witness: Bourassa

Line No.	Company	(1) Spot Price (Po)	(2) Next Year's Div (D1)	(3) Dividend Yield	(4) Growth (g)[1]	(5) Indicated Cost of Equity k=Div Yld + g (Cols 3+4)
1	1. American States	31.32	1.08	3.45%	8.50%	11.9%
2	2. Aqua America	20.57	0.56	2.72%	8.00%	10.7%
3	3. California Water	40.47	1.18	2.92%	8.67%	11.6%
4	4. Connecticut Water	20.60	0.90	4.37%	9.03%	13.4%
5	5. Middlesex	14.32	0.72	5.03%	8.00%	13.0%
6	6. SJW Corp.	23.93	0.70	2.94%	12.00%	14.9%
7						
8						
9	GROUP AVERAGE			3.57%	9.03%	12.6%
10	GROUP MEDIAN					12.5%

[1] See Schedules D-4.5

Sources:
Value Line Investment Analyzer Data November 21, 2008
Yahoo Finance November 21, 2008

Chaparral City Water Company
Discounted Cash Flow Analysis (Water)
Constant Growth DCF Model - Sustainable Growth

Exhibit
Rejoinder Schedule D-4.9
Witness: Bourassa

Line No.		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1								Indicated
2								Cost of
3			Next		Sustainable Growth[1]			Equity
4		Spot	Year's	Dividend			br+sv	k=Div Yld + g
5	Company	Price (Po)	Div (D1)	Yield	br	vs	Growth (g)	(Cols 3+6)
6	1. American States	31.32	1.08	3.45%	7.02%	0.89%	7.91%	11.4%
7	2. Aqua America	20.57	0.56	2.72%	5.20%	0.67%	5.87%	8.6%
8	3. California Water	40.47	1.18	2.92%	5.34%	2.66%	7.99%	10.9%
9	4. Connecticut Water	20.60	0.90	4.37%			7.26%	11.6%
10	5. Middlesex	14.32	0.72	5.03%			7.26%	12.3%
11	6. SJW Corp.	23.93	0.70	2.94%			7.26%	10.2%
12								
13								
14	GROUP AVERAGE			3.57%			7.26%	10.8%
15	GROUP MEDIAN							11.1%
16								
17								
18	1 See Rejoinder Schedule D-4.6 and D-4.7							
19								
20								
21	Sources:							
22	Value Line Investment Analyzer Data November 21, 2008							
23	Yahoo Finance November 21, 2008							
24								

Chaparral City Water Company
Discounted Cash Flow Analysis (Water)
Two-Stage Growth - Projected

Exhibit
Rejoinder Schedule D-4.10
Witness: Bourassa

Line No.		(1)	(2)	(3)	(4)	(5)	(6)	(7)
					Projected Growth Rates			
	Company	Spot Price(P_0)	Next Year's Div (D_1)	Yield (D_1/P_0)	Near Term[1]	Long Term (GDP)	Average[1]	Indicated Cost of Equity
7	1. American States	31.32	1.08	3.45%	8.50%	6.80%	7.94%	11.4%
8	2. Aqua America	20.57	0.56	2.72%	8.00%	6.80%	7.60%	10.3%
9	3. California Water	40.47	1.18	2.92%	8.67%	6.80%	8.05%	11.0%
10	4. Connecticut Water	20.60	0.90	4.37%	9.03%	6.80%	8.30%	12.7%
11	5. Middlesex	14.32	0.72	5.03%	8.00%	6.80%	7.60%	12.6%
12	6. SJW Corp.	23.93	0.70	2.94%	12.00%	6.80%	10.28%	13.2%
15	GROUP AVERAGE			3.57%			8.30%	11.9%
16	GROUP MEDIAN							12.0%

1 See Rejoinder Schedule D-4.5
[2] Near term growth given weighting of .67

Chaparral City Water Company
Market Betas

Exhibit
Rejoinder Schedule D-4.11
Witness: Bourassa

Line No.		Company	
1			
2	1.	American States	0.95
3	2.	Aqua America	1.00
4	3.	California Water	1.10
5	4.	Connecticut Water	0.80
6	5.	Middlesex	0.90
7	6.	SJW Corp.	1.15
8		Average	**0.98**
9			
10	Source:		
11	Value Line Investment Analyzer Data November 21, 2008		
12			
13			
14			
15			
16			

Chaparral City Water Company
Computation of Current Market Risk Premium

Exhibit
Rejoinder Schedule D-4.12
Witness: Bourassa

Line No.	Month	Dividend Yield	+	Growth	=	Expected Market Return	-	Monthly Average 30 Year Treasury Rate	=	Market Risk Premium
1										
2										
3	**Month**	Yield	+	Growth	=	Return	-	Treasury Rate	=	Premium
4										
5	Jun	2.17%	+	9.71%	=	11.88%	-	5.20%	=	6.68%
6	Jul	2.27%	+	10.91%	=	13.18%	-	5.11%	=	8.07%
7	Aug	2.37%	+	11.92%	=	14.29%	-	4.93%	=	9.36%
8	Sept	2.31%	+	11.16%	=	13.47%	-	4.79%	=	8.68%
9	Oct	2.45%	+	11.90%	=	14.35%	-	4.77%	=	9.58%
10	Nov	2.60%	+	13.41%	=	16.01%	-	4.52%	=	11.49%
11	Dec 2007	2.61%	+	13.51%	=	16.12%	-	4.52%	=	11.60%
12	Jan 2008	2.67%	+	15.19%	=	17.86%	-	4.33%	=	13.53%
13	Feb	2.74%	+	16.47%	=	19.21%	-	4.52%	=	14.69%
14	March	2.85%	+	17.64%	=	20.49%	-	4.39%	=	16.10%
15	April	2.69%	+	15.73%	=	18.42%	-	4.44%	=	13.98%
16	May	2.73%	+	15.51%	=	18.24%	-	4.60%	=	13.64%
17	Jun	3.13%	+	18.51%	=	21.64%	-	4.69%	=	16.95%
18	Jul	3.15%	+	18.61%	=	21.76%	-	4.57%	=	17.19%
19	Aug	3.06%	+	17.08%	=	20.14%	-	4.50%	=	15.64%
20	Sept	3.07%	+	19.30%	=	22.37%	-	4.27%	=	18.10%
21	Oct	4.31%	+	29.40%	=	33.71%	-	4.17%	=	29.54%
22										
23	Recent 12 Mon Avg	2.97%	+	17.53%	=	20.50%	-	4.46%	=	16.04%
27										
28	Short-term Trends									
29	Recent Nine Months Avg	3.08%	+	18.69%	=	21.78%	-	4.46%	=	17.31%
30	Recent Six Months Avg	3.24%	+	19.74%	=	22.98%	-	4.47%	=	18.51%
31	Recent Three Months Avg	3.48%	+	21.93%	=	25.41%	-	4.31%	=	21.09%
32										
33	Sources									
34	Value Line Investment Analyzer Software Data									
35	Federal Reserve									

Chaparral City Water Company
Test Year Ended December 31, 2006
Capital Asset Pricing Model (CAPM)

Exhibit
Rejoinder Schedule D-4.13
Witness: Bourassa

Line No.		Rf	+	beta[3]	x	Rp	=	k
1								
2								
3	Historical Market Risk Premium CAPM[1]	2.5%	+	0.98	x	7.5% [4]	=	9.8%
4								
5	Current Market Risk Premium CAPM[2]	3.6%	+	0.98	x	16.0% [5]	=	19.4%
6								
7								
8	Average							14.6%
9								
10								
11								

12 [1] Federal Reserve November 20, 2008 average of 5, 7 and 10 year Treasury rates (Rf)
13 [2] Federal Reserve November 20, 2008 30 year Treasury rate (Rf)
14 [3] Value Line Investment Analyzer data. See Rejoinder Schedule D-4.11
15 [4] Historical Market Risk Premium from (Rp) MoriningStar SBBI 2008 Yearbook Table A-2 Intermediate-Horizon ERP 1926-2007
16 [5] Computed using DCF constant growth method to determine current market return on Value Line 1700 stocks
17 and CAPM with beta of 1.0 to compute Current Market Risk Premium (Rp). See Rejoinder Schedule D-4.12.
18
19
20

2

Chaparral City Water Company, Inc.
Capital Structure
And Weighted Average Cost of Capital

[A]	[B]	[C]	[D]
Description	Weight (%)	Cost	Weighted Cost
Staff Recommended Structure			
Debt	24.4%	4.8%	1.2%
Common Equity	75.6%	11.9%	9.0%
Weighted Average Cost of Capital			**10.2%**

[D] : [B] x [C]

Supporting Schedules: TJB-3 and TJB-4.

Chaparral City Water Company, Inc.
Inflation Adjustment (Accretion Return) and
Resulting Fair Value Rate of Return

Description		
Weighted Average Cost of Capital	10.2%	[1]
Minus: Modified Inflation Adjustment/Accretion Return	-0.4%	[2]
Fair Value Rate of Return	9.8%	

1: Schedule TJB-1

2: Calculation of Modified Inflation Adjustment/Accretion Return:

20-year Treasury Yield [3]	3.9%	
20-year Treasury Real Yield [3]	3.1%	
Return Required by Investors due to Inflation (Accretion Return)	0.8%	
Times a 50% Factor	0.5	[4]
Modified Inflation Adjustment/Accretion Return	0.4%	

3: http://www.ustreas.gov as of 11/21/2008.

4: Direct Testimony of Mr. Gordon L. Fox.

Chaparral City Water Company, Inc.
Final Cost of Equity Estimates
Sample Water Utilities

[A]	[B]		[C]		[D]		[E]
DCF Method			D_1/P_0 [1]	+	g [2]	=	k
Constant Growth DCF Estimate			3.5%	+	5.6%	=	9.1%
Multi-Stage DCF Estimate						=	10.2%
Average of DCF Estimates							**9.7%**
CAPM Method	Rf	+	β [5]	x	(Rp)	=	k
Historical Market Risk Premium[3]	2.6%	+	0.98	x	7.5% [6]	=	10.0%
Current Market Risk Premium[4]	3.7%	+	0.98	x	26.6% [7]	=	29.8%
Average of CAPM Estimates							**19.9%**
					Average		**14.8%**
			Financial risk adjustment				-2.9%
					Total		**11.9%**

1 MSN Money and Value Line

2 Schedule TJB-8

3 Risk-free rate (Rf) for 5, 7, and 10 year Treasury rates from the U.S. Treasury Department at www.ustreas.gov 11/21/2008

4 Risk-free rate (Rf) for 30 Year Treasury bond rate from the U.S. Treasury Department at www.ustreas.gov 11/21/2008

5 Value Line

6 Historical Market Risk Premium (Rp) from Ibbotson Associates SBBI 2008 Yearbook

7 Value Line Investment Survey November 21, 2008

Chaparral City Water Company, Inc.
Average Capital Structure of Sample Water Utilities

[A]	[B]	[C]	[D]
Company	Debt	Common Equity	Total
American States Water	50.9%	49.1%	100.0%
California Water	43.8%	56.2%	100.0%
Aqua America	55.0%	45.0%	100.0%
Connecticut Water	50.5%	49.5%	100.0%
Middlesex Water	51.5%	48.5%	100.0%
SJW Corp	47.6%	52.4%	100.0%
Average Sample Water Utilities	**49.9%**	**50.1%**	**100.0%**
Chaparral City Water Company, Inc.	**24.4%**	**75.6%**	**100.0%**

Source:
Sample Water Companies from Value Line

Chaparral City Water Company, Inc.
Growth in Earnings and Dividends
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]
Company	Dividends Per Share 1997 to 2007 DPS[1]	Dividends Per Share Projected DPS[1]	Earnings Per Share 1997 to 2007 EPS[1]	Earnings Per Share Projected EPS[1]
American States Water	1.5%	4.6%	4.5%	4.8%
California Water	0.9%	0.8%	-2.0%	9.4%
Aqua America	7.2%	7.2%	7.6%	11.1%
Connecticut Water	1.2%	No Projection	0.5%	No Projection
Middlesex Water	1.9%	No Projection	2.6%	No Projection
SJW Corp	4.8%	No Projection	2.7%	No Projection
Average Sample Water Utilities	**2.9%**	**4.2%**	**3.6%** [2]	**8.4%**

1 Value Line

2 Note that the figure -2.0% has been excluded from the calculation. This has been done as negative growth is inconsistent with the DCF model.

Chaparral City Water Company, Inc.
Sustainable Growth
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]
Company	Retention Growth **1998 to 2007** br	Retention Growth Projected br	Stock Financing Growth vs	Sustainable Growth **1998 to 2007** br + vs	Sustainable Growth Projected br + vs
American States Water	2.8%	5.7%	1.3%	4.2%	7.1%
California Water	1.8%	5.5%	4.7%	6.6%	10.2%
Aqua America	4.5%	5.3%	5.0%	9.5%	10.3%
Connecticut Water	2.6%	No Projection	0.9%	3.5%	No Projection
Middlesex Water	1.3%	No Projection	2.2%	3.5%	No Projection
SJW Corp	4.4%	No Projection	0.1%	4.5%	No Projection
Average Sample Water Utilities	**2.9%**	**5.5%**	**2.4%**	**5.3%**	**9.2%**

[B]: Value Line
[C]: Value Line
[D]: Value Line and MSN Money
[E]: [B]+[D]
[F]: [C]+[D]

Chaparral City Water Company, Inc.
Selected Financial Data of Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Company	Symbol	Spot Price 11/21/2008	Book Value	Mkt To Book	*Value Line* Beta β	Raw Beta β *raw*
American States Water	AWR	**31.32**	17.82	1.8	**0.95**	0.90
California Water	CWT	**40.57**	19.22	2.1	**1.00**	0.97
Aqua America	WTR	**20.57**	7.82	2.6	**1.10**	1.12
Connecticut Water	CTWS	**20.60**	12.53	1.6	**0.80**	0.67
Middlesex Water	MSEX	**14.32**	10.46	1.4	**0.90**	0.82
SJW Corp	SJW	**23.93**	13.60	1.8	**1.15**	1.19
Average				**1.9**	**0.98**	**0.95**

[C]: Msn Money

[D]: Value Line

[E]: [C] / [D]

[F]: Value Line

[G]: (-0.35 + [F]) / 0.67

Chaparral City Water Company, Inc.
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Utilities

[A]	[B]
Description	g
DPS Growth - Historical[1]	2.9%
DPS Growth - Projected[1]	4.2%
EPS Growth - Historical[1]	3.6%
EPS Growth - Projected[1]	8.4%
Sustainable Growth - Historical[2]	5.3%
Sustainable Growth - Projected[2]	9.2%
Average	**5.6%**

1 Schedule TJB-5

2 Schedule TJB-6

Chaparral City Water Company, Inc.
Multi-Stage DCF Estimates
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[H]	[I]
Company	Current Mkt. Price (P_o)[1] 11/21/2008	Projected Dividends[2] (Stage 1 growth) (D_t) d_1	d_2	d_3	d_4	Stage 2 growth[3] (g_n)	Equity Cost Estimate (K)[4]
American States Water	31.3	1.04	1.10	1.16	1.23	6.7%	10.0%
California Water	40.6	1.20	1.27	1.34	1.42	6.7%	9.6%
Aqua America	20.6	0.53	0.56	0.59	0.62	6.7%	9.2%
Connecticut Water	20.6	0.92	0.97	1.03	1.08	6.7%	11.1%
Middlesex Water	14.3	0.73	0.77	0.81	0.86	6.7%	11.7%
SJW Corp	23.9	0.66	0.70	0.74	0.78	6.7%	9.4%
						Average	**10.2%**

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n}\left[\frac{1}{(1+K)}\right]^n$$

Where : P_0 = current stock price
D_t = dividends expected during stage 1
K = cost of equity
n = years of non – constant growth
D_n = dividend expected in year n
g_n = constant rate of growth expected after year n

1 [B] see Schedule TJB-7
2 Derived from Value Line Information
3 Average annual growth in GDP 1929 - 2005 in current dollars.
4 Internal Rate of Return of Projected Dividends

3 http://www.bea.doc.gov

Chaparral City Water Company, Inc.
Capitalization

	Interest Rate	Annual Interest	Amount outstanding as of 6/30/2008	Percentage of Capital Structure
Long-Term Debt				
Bonds due 2011	5.2%	$ 52,000	$ 1,000,000	
Bonds due 2022	5.4%	$ 248,940	4,610,000	
Bonds due 2022	5.3%	$ 51,675	975,000	
Long-Term Debt	5.4%	352,615	$ 6,585,000	18.6%
Short-Term Debt	2.9%	59,040	2,050,000	
Short-Term Debt	2.9%	59,040	$ 2,050,000	5.8%
Total Debt	4.8%	$ 411,655	$ 8,635,000.00	24.4%
Common Equity				
Common Shares Outstanding			4,603,000	
Paid in Capital			14,950,000	
Retained Earnings			7,137,000	
Total Common Equity			$ 26,690,000	75.6%
Total Capitalization			$ 35,325,000	100.0%

Chaparral City Water Company, Inc.
Calculation of Unlevered Beta
Sample Water Utilities

$$\beta_{UL} = \frac{\beta_L}{1 + BD \div EC\ (1 - t)}$$

Where :

β_{UL} = unlevered beta
β_L = levered beta
BD = book debt
EC = equity capital
t = tax rate

Line No.	[A]	[B] (Unadjusted Beta) Value Line Levered Raw Beta β_L	[C] Tax Rate t	[D] Book Debt BD	[E] Equity Cap EC	[F] Unlevered Raw Beta $\beta_{UL} = \frac{\beta_L}{1+\frac{BD}{EC}(1-t)}$
1	American States Water	0.90	**40.5%**	0.51	0.49	0.55
2	California Water	0.97	**39.7%**	0.44	0.56	0.66
3	Aqua America	1.12	**39.6%**	0.55	0.45	0.64
4	Connecticut Water	0.67	**23.5%**	0.50	0.50	0.38
5	Middlesex Water	0.82	**33.4%**	0.51	0.49	0.48
6	SJW Corp	1.19	**40.8%**	0.48	0.52	0.78
7						
8	Sample Water Utilities	0.95	36.25%	0.50	0.50	0.58
9						
10						
11						
12						
13						
14	**Source: Value Line**					
15	**Supporting Schedules: Schedule TJB-1, Schedule TJB-3**					

Chaparral City Water Company, Inc.
Calculation of Relevered Beta
Sample Water Utilities

$$\beta_{RL} = \beta_{UL}\ (1 + (1 - t)BD \div EC)$$

Where :

β_{RL} = relevered beta
β_{UL} = unlevered beta
t = tax rate
BD = book debt
EC = equity capital

[A]	[B]	[C]	[D]	[E]	[F]	[G]
	Unlevered Raw Beta β_{UL}	Book Debt BD	Equity Capital EC	Tax Rate t	Relevered Raw Beta $b_{RL}=\beta_{UL}$ (1+(1-t)BD/EC)) β_{RL}	Adjusted Relevered Beta .35 + .67(Raw Beta) β_{RL}
Chaparral City Water Company, Inc.	0.58	0.24	0.76	38.60%	0.69	0.81

Source: Schedule C3 of the Company's application
Supporting Schedules: Schedule TJB-9 and TJB-10

Chaparral City Water Company, Inc.
Financial Risk Adjustment
Sample Water Companies

[A]	[B]		[C]		[D]		[E]
CAPM Method	**Rf**	**+**	**β**	**x**	**(Rp)**	**=**	**k**
Historical Market Risk Premium	2.6%	+	0.98	x	7.5%	=	10.0%
Current Market Risk Premium	3.7%	+	0.98	x	26.6%	=	29.8%
Average of CAPM Estimates							**19.9%**
Relevered Beta	**Rf**		**β**		**(Rp)**		**k**
Historical Market Risk Premium	2.6%	+	0.81	x	7.5%	=	8.7%
Current Market Risk Premium	3.7%	+	0.81	x	26.6%	=	25.4%
Average of CAPM Estimates							**17.1%**
Capital Structure Adjustment (8 - 3)							-2.9%

Supporting Schedules: Schedule TJB-2, Schedule TJB-11

Updated Staff Cost of Capital
Staff Revised
Based on Market Value Cap. Structure

Chaparral City Water Company, Inc.
Calculation of Unlevered Beta
Sample Water Utilities

$$\beta_{UL} = \frac{\beta_L}{1 + BD \div EC\ (1 - t)}$$

Where :

β_{UL} = unlevered beta
β_L = levered beta
BD = MV debt (assumed to be book)
EC = MVequity capital
t = tax rate

Line No.	[A]	[B] (Unadjusted Beta) Value Line Levered Raw Beta β_L	[C] Tax Rate t	[D] Debt BD	[E] Equity EC	[F] Unlevered Raw Beta $\beta_{UL} = \frac{\beta_L}{1+\frac{BD}{EC}(1-t)}$
1	American States Water	0.90	**40.5%**	0.37	0.63	0.66
2	California Water	0.97	**39.7%**	0.27	0.73	0.79
3	Aqua America	1.12	**39.6%**	0.32	0.68	0.87
4	Connecticut Water	0.67	**23.5%**	0.38	0.62	0.46
5	Middlesex Water	0.82	**33.4%**	0.44	0.56	0.54
6	SJW Corp	1.19	**40.8%**	0.34	0.66	0.91
7						
8	Sample Water Utilities	0.95	36.25%	0.35	0.65	0.70
9						
10						
11						
12						
13						
14	**Source: Value Line**					
15	**Supporting Schedules: Schedule TJB-1, Schedule TJB-3**					

Updated Staff Cost of Capital
Staff Revised
Based on Market Value Cap. Structure

Chaparral City Water Company, Inc.
Calculation of Relevered Beta
Sample Water Utilities

$$\beta_{RL} = \beta_{UL}\,(1 + (1 - t)BD \div EC)$$

Where:

β_{RL} = releveredbeta
β_{UL} = unleveredbeta
t = tax rate
BD = MV debt (assumed to be book)
EC = MV equity capital

[A]	[B]	[C]	[D]	[E]	[F]	[G]
	Unlevered Raw Beta β_{UL}	Book Debt BD	Equity Capital EC	Tax Rate t	Relevered Raw Beta $b_{RL}=\beta_{UL}(1+(1-t)BD/EC))$ β_{RL}	Adjusted Relevered Beta .35 + .67(Raw Beta) β_{RL}
Chaparral City Water Company, Inc.	0.70	0.30	0.70	38.60%	0.88	0.94

Source: Schedule C3 of the Company's application
Supporting Schedules: Schedule TJB-9 and TJB-10

Computation of MV Equity		Amount	%
Fair Value Rate Base	$	27,767,249	100.0%
less: Debt		8,265,000	29.8%
Market Value Equity	$	19,502,249	70.2%

Chaparral City Water Company, Inc.
Financial Risk Adjustment
Sample Water Companies

[A]	[B]		[C]		[D]		[E]
CAPM Method	**Rf**	**+**	**β**	**x**	**(Rp)**	**=**	**k**
Historical Market Risk Premium	2.6%	+	0.98	x	7.5%	=	10.0%
Current Market Risk Premium	3.7%	+	0.98	x	26.6%	=	29.8%
Average of CAPM Estimates							**19.9%**
Relevered Beta	**Rf**		**β**		**(Rp)**		**k**
Historical Market Risk Premium	2.6%	+	0.94	x	7.5%	=	9.7%
Current Market Risk Premium	3.7%	+	0.94	x	26.6%	=	28.7%
Average of CAPM Estimates							**19.2%**
Capital Structure Adjustment (8 - 3)							-0.8%

Supporting Schedules: Schedule TJB-2, Schedule TJB-11

3

NEW
REGULATORY
FINANCE

Roger A. Morin, PhD

2006
PUBLIC UTILITIES REPORTS, INC.
Vienna, Virginia

Appendix 4-A
Arithmetic versus Geometric Means in Estimating the Cost of Capital

The use of the arithmetic mean appears counter-intuitive at first glance, because we commonly use the geometric mean return to measure the average annual achieved return over some time period. For example, the long-term performance of a portfolio is frequently assessed using the geometric mean return.

But performance appraisal is one thing, and cost of capital estimation is another matter entirely. In estimating the cost of capital, the goal is to obtain the rate of return that investors expect, that is, a target rate of return. On average, investors expect to achieve their target return. This target expected return is in effect an arithmetic average. The achieved or retrospective return is the geometric average. In statistical parlance, the arithmetic average is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean. This appendix formally illustrates that only arithmetic averages can be used as estimates of cost of capital, and that the geometric mean is not an appropriate measure of cost of capital.

The geometric mean answers the question of what constant return you would have had to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth.

While the geometric mean is the best estimate of performance over a long period of time, this does not contradict the statement that the arithmetic mean compounded over the number of years that an investment is held provides the best estimate of the ending wealth value of the investment. The reason is that an investment with uncertain returns will have a higher ending wealth value than an investment which simply earns (with certainty) its compound or geometric rate of return every year. In other words, more money, or terminal wealth, is gained by the occurrence of higher than expected returns than is lost by lower than expected returns.

In capital markets, where returns are a probability distribution, the answer that takes account of uncertainty, the arithmetic mean, is the correct one for estimating discount rates and the cost of capital.

While the geometric mean is appropriate when measuring performance over a long time period, it is incorrect when estimating a risk premium to compute the cost of capital.

TABLE 4A-1
GEOMETRIC VS. ARITHMETIC RETURNS

	Stock A	Stock B
1996	50.0%	11.61%
1997	−54.7%	11.61%
1998	98.5%	11.61%
1999	42.2%	11.61%
2000	−32.3%	11.61%
2001	−39.2%	11.61%
2002	153.2%	11.61%
2003	−10.0%	11.61%
2004	38.9%	11.61%
2005	20.0%	11.61%
Standard Deviation	64.9%	0.0%
Arithmetic Mean	26.7%	11.6%
Geometric Mean	11.6%	11.6%

Theory

The geometric mean measures the magnitude of the returns, as the investor starts with one portfolio and ends with another. It does not measure the variability of the journey, as does the arithmetic mean. The geometric mean is backward looking. There is no difference in the geometric mean of two stocks or portfolios, one of which is highly volatile and the other of which is absolutely stable. The arithmetic mean, on the other hand, is forward-looking in that it does impound the volatility of the stocks.

To illustrate, Table 4A-1 shows the historical returns of two stocks, the first one is highly volatile with a standard deviation of returns of 65% while the second one has a zero standard deviation. It makes no sense intuitively that the geometric mean is the correct measure of return, one that implies that both stocks are equally risky since they have the same geometric mean. No rational investor would consider the first stock equally as risky as the second stock. Every financial model to calculate the cost of capital recognizes that investors are risk-averse and avoid risk unless they are adequately compensated for undertaking it. It is more consistent to use the mean that fully impounds risk (arithmetic mean) than the one from which risk has been removed (geometric mean). In short, the arithmetic mean recognizes the uncertainty in the stock market while the geometric mean removes the uncertainty by smoothing over annual differences.

Empirical Evidence

If both the geometric and arithmetic mean returns over the 1926–2004 data are regressed against the standard deviation of returns for the firms in the

deciles, the arithmetic mean outperforms the geometric mean in this statistical regression. Moreover, the constant of arithmetic mean regression matches the average Treasury bond rate and therefore makes economic sense while the constant for the geometric mean matches nothing in particular. This is simply because the geometric mean is stripped of volatility information and, as a result, does a poor job of forecasting returns based on volatility.

The following illustration is frequently invoked in defense of the geometric mean. Suppose that a stock's performance over a two-year period is representative of the probability distribution, doubling in one year ($r_1 = 100\%$) and halving in the next ($r_2 = -50\%$). The stock's price ends up exactly where it started, and the geometric average annual return over the two-year period, r_g, is zero:

$$
\begin{aligned}
1 + r_g &= [(1 + r_1)(1 + r_2)]^{1/2} \\
&= [(1 + 1)(1 - .50)]^{1/2} = 1 \\
r_g &= 0
\end{aligned}
$$

confirming that a zero year-by-year return would have replicated the total return earned on the stock. The expected annual future rate of return on the stock is not zero, however. It is the arithmetic average of 100% and −50%, $(100 - 50)/2 = 25\%$. There are two equally likely outcomes per dollar invested: either a gain of \$1 when $r = 100\%$ or a loss of \$0.50 when $r = -50\%$. The expected profit is $(\$1 - \$.50)/2 = \$.25$ for a 25% expected rate of return. The profit in the good year more than offsets the loss in the bad year, despite the fact that the geometric return is zero. The arithmetic average return thus provides the best guide to expected future returns.

What Academics Have to Say

Bodie, Kane, and Marcus (2005) cite:

> Which is the superior measure of investment performance, the arithmetic average or the geometric average? The geometric average has considerable appeal because it represents the constant rate of return we would have needed to earn in each year to match actual performance over some past investment period. It is an excellent measure of *past* performance. However, if our focus is on future performance, then the arithmetic average is the statistic of interest because it is an unbiased estimate of the portfolio's expected future return (assuming, of course, that the expected return does not change over time). In contrast, because the geometric return over a sample period is always less than the arithmetic mean,

> it constitutes a downward-biased estimator of the stock's expected return in any future year.
>
> Again, the arithmetic average is the better guide to future performance.

Another way of stating the Bodie, Kane, Marcus argument in favor of the arithmetic mean is that it is the best estimate of the future value of the return distribution because it represents the expected value of the distribution. It is most useful for determining the central tendency of a distribution at a particular time, that is, for cross-sectional analysis. The geometric mean, on the other hand, is best suited for measuring an investment's compound rate of return over time, that is, for time-series analysis. This is the same argument made by Ibbotson Associates (2005) where it is shown, using probability theory, that future terminal wealth is given by compounding the arithmetic mean, and not the geometric mean. In other words, if we accept the past as prologue, the best estimate of a future year's return based on a random distribution of the prior years' returns is the arithmetic average. Statistically, it is our best guess for the holding-period return in a given year.

Brigham and Ehrhardt (2005) in their widely used corporate finance text point out that the arithmetic average is more consistent with CAPM theory, as one of its key underpinning assumptions is that investors are supposed to focus, in their portfolio decisions, upon returns in the next period and the standard deviation of this return. To the extent that this next period is one year, the preference for the arithmetic mean, which derives from a set of single one year period returns, follows. It is also noteworthy that one of the crucial assumptions inherent in the CAPM is that investors are single-period expected utility of terminal wealth maximizers who choose among alternative portfolios on the basis of each portfolio's expected return and standard deviation.

Brealey, Myers, and Allen (2006) in their leading graduate textbook in corporate finance opt strongly for the arithmetic mean. The authors illustrate the distinction between arithmetic and geometric averages and conclude that arithmetic averages are appropriate when estimating the cost of capital:

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. Therefore, we call a brief time-out for a clarifying example.
>
> Suppose that the price of Big Oil's common stock is \$100. There is an equal chance that at the end of the year the stock will be worth \$90, \$110, or \$130. Therefore, the return could be -10 percent, $+10$ percent or $+30$ percent (we assume that Big Oil does not pay a dividend). The expected return is $1/3(-10+10+30) = +10$ percent.

If we run the process in reverse and discount the expected cash flow by the expected rate of return, we obtain the value of Big Oil's stock:

$$PV = \frac{110}{1.10} = \$100$$

The expected return of 10 percent is therefore the correct rate at which to discount the expected cash flow from Big Oil's stock. It is also the opportunity cost of capital for investments which have the same degree of risk as Big Oil.

Now suppose that we observe the returns on Big Oil stock over a large number of years. If the odds are unchanged, the return will be -10 percent in a third of the years, $+10$ percent in a further third, and $+30$ percent in the remaining years. The arithmetic average of these yearly returns is

$$\frac{-10 + 10 + 30}{3} = +10\%$$

Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments of similar risk to Big Oil stock.

The average compound annual return on Big Oil stock would be

$$(.9 \times 1.1 \times 1.3)^{1/3} - 1 = .088, \text{ or } 8.8\%$$

less than the opportunity cost of capital. Investors would not be willing to invest in a project that offered an 8.8 percent expected return if they could get an expected return of 10 percent in the capital markets. The net present value of such a project would be

$$NPV = -100 + \frac{108.8}{1.1} = -1.1$$

Moral: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return (geometric averages).

(Richard A. Brealey, Stewart C. Myers, and Paul Allen, *Principles of Corporate Finance*, 8th Edition, Irwin McGraw-Hill, 2006, page 156–7.)

The widely cited Ibbotson Associates publication also contains a detailed and rigorous discussion of the impropriety of using geometric averages in estimating the cost of capital.[12]

[12] Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2005 Yearbook, Valuation Edition*, page 75.

> The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.
>
> The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods.
>
> The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values.

In their widely publicized research on the market risk premium, Dimson, Marsh and Staunton (2002) state

> The arithmetic mean of a sequence of different returns is always larger than the geometric mean. To see this, consider equally likely returns of +25 and −20 percent. Their arithmetic mean is 2½ percent, since (25 − 20)/2 = 2½. Their geometric mean is zero, since (1 + 25/100) × (1 − 20/100) − 1 = 0. But which mean is the right one for discounting risky expected future cash flows? For forward-looking decisions, the arithmetic mean is the appropriate measure.
>
> To verify that the arithmetic mean is the correct choice, we can use the 2½ percent required return to value the investment we just described. A $1 stake would offer equal probabilities of receiving back $1.25 or $0.80. To value this, we discount the cash flows at the arithmetic mean rate of 2½ percent. The present values are respectively $1.25/1.015 = $1.22 and $0.80/1.025 = $0.78, each with equal probability, so the value is $1.22 × ½ + $0.80 × ½ = $1.00. If there were a sequence of equally likely returns of +25 and −20 percent, the geometric mean return will eventually converge on zero. The 2½ percent forward-looking arithmetic mean is required to compensate for the year-to-year volatility of returns.

Lastly, on the practical side, Bruner, Eades, Harris, and Higgins (1998) found that 71% of the texts and tradebooks in their extensive survey of practice supported use of an arithmetic mean for estimation of the cost of equity.

Mean Reversion Argument

Some academics have argued that if stock returns were expected to revert to a trend, this would suggest the use of a geometric mean since the geometric mean is, by definition, an estimate of a smoothed long-run trend increment. These same academics have argued that the historical estimate of the market risk premium (''MRP'') is upward-biased by the buoyant performance of the stock market prior to 2002, and because of the extraordinary and unusually high realized MRPs in those years, investors expect a return to lower MRPs in the future, bringing the average MPR to a more ''normal'' level.

The presence or absence of mean reversion is an empirical issue. The empirical findings are weak and highly contradictory; the empirical evidence is inconclusive and unconvincing, certainly not enough to support the ''mean reversion'' hypothesis. The weight of the empirical evidence on this issue is that the more sophisticated tests of mean reversion in the MRP demonstrate that the realized MRP over the last 75 years or so was almost perfectly free of mean reversion, and had no statistically identifiable time trend. It is also noteworthy that most of these studies were performed prior to the stock market's debacle in 2000–2002, years of extraordinary and unusually low realized MRPs. The stock market's dismal performance of 2000–2002 has certainly taken the wind out of the mean reversion school's sails.

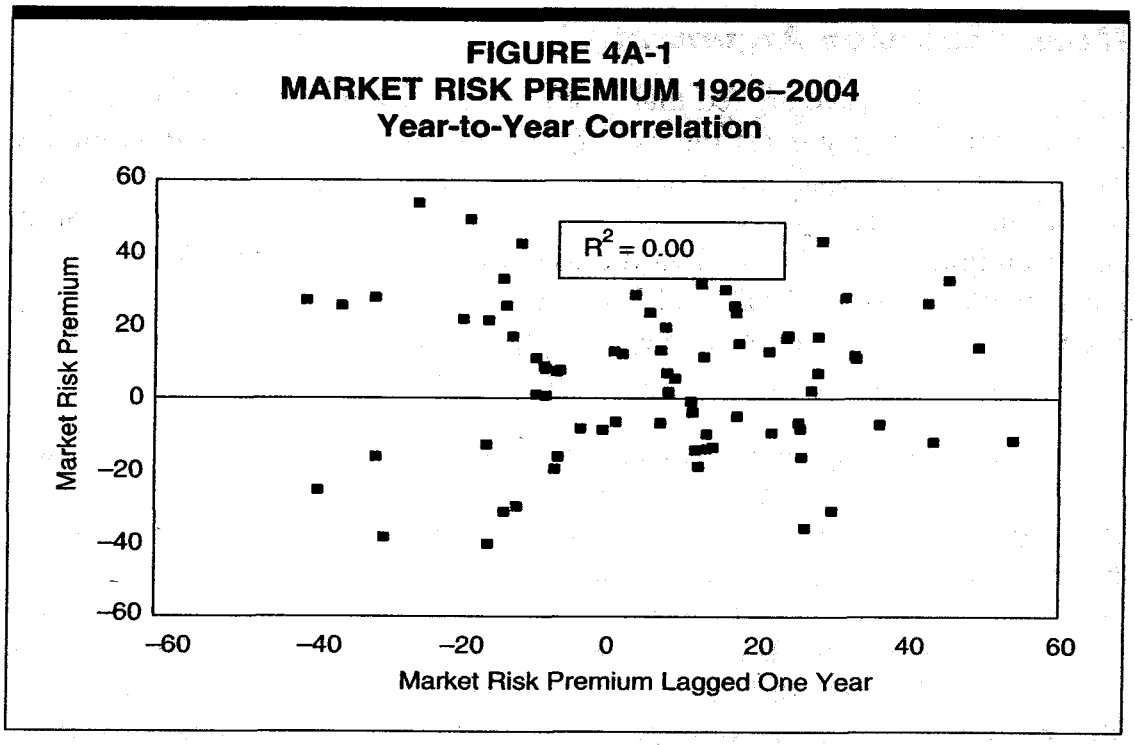
An examination of historical MRPs reveals that the MRP is random with no observable pattern. To the extent that the estimated historical equity risk premium follows what is known in statistics as a random walk, one should expect the equity risk premium to remain at its historical mean. Therefore, the best estimate of the future risk premium is the historical mean.

Ibbotson Associates (2005) find no evidence that the market price of risk or the amount of risk in common stocks has changed over time:

> Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random . . . there is no discernable pattern in the realized equity risk premium. (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2005 Yearbook, Valuation Edition,* pages 74–75)

In statistical parlance, there is no significant serial correlation in successive annual market risk premiums, that is, no trend. Ibbotson Associates go on to state that it is reasonable to assume that these quantities will remain stable in the future (*Id.*):

> The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean)



of its past values. (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2004 Yearbook, Valuation Edition*, page 75)

Nowhere is it suggested by Ibbotson Associates that the market risk premium has declined over time.

Because there is little evidence that the MRP has changed over time, it is reasonable to assume that these quantities will remain stable in the future. Figure 4A-1 shows the relationship, or the lack of relationship, between year-to-year MRPs reported in the Ibbotson Associates Valuation Yearbook, 2005 edition, for the 1926–2004 period. The relationship is virtually absent, as indicated by the low R^2 of zero between successive MRPs. In other words, there is no history in successive MRPs as indicated by the zero serial correlation coefficient.

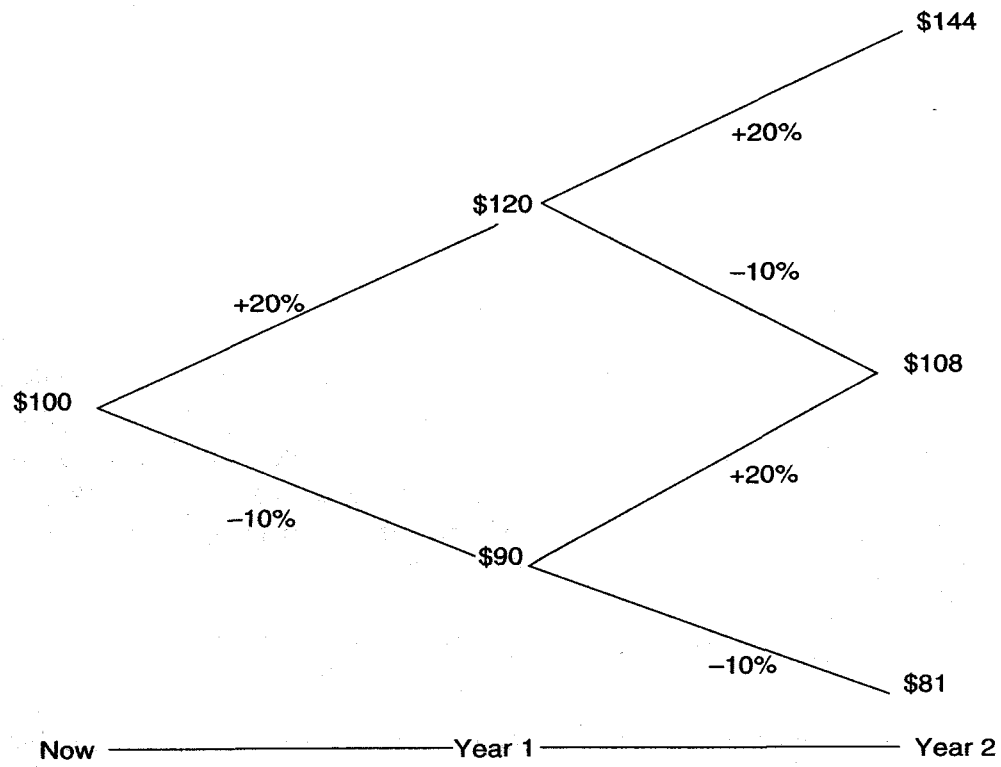
In short, the determination of the cost of capital with the CAPM requires an unbiased estimate of the expected annual return. The expected arithmetic return provides the appropriate measure for this purpose.

Formal Demonstration

This section shows why arithmetic rather than geometric means should be used for forecasting, discounting, and estimating the cost of capital.[13] By

[13] This section is adapted from a similar treatments and demonstration in Brealey, Myers, and Allen (2006) and Ibbotson Associates (2005).

FIGURE 4A-2
POSSIBLE STOCK PRICES



definition, the cost of equity capital is the annual discount rate that equates the discounted value of expected future cash flows (from dividends and the sale of the stock at the end of the investor's investment horizon) to the current market price of a share in the firm. The discount rate that equates the discounted value of future expected dividends and the end of period expected stock price to the current stock price is a prospective arithmetic, rather than a prospective geometric, mean rate of return. Since future dividends and stock prices cannot be predicted with certainty, the "expected" annual rate of return that investors require is an average "target" percentage rate around which the actual, year-by-year returns will vary. This target rate is, in effect, an arithmetic average.

A numerical illustration will clarify this important point. Consider a non-dividend paying stock trading for $100 which has, in every year, an equal chance of appreciating by 20% or declining by 10%. Thus, after one year, there is an equal chance that the stock's price will be $120 and an equal chance the price will be $90. Figure 4A-2 presents all possible eventualities after two periods have elapsed (the rates of return are presented at the end of the lines in the diagram).

The possible stock prices are shown in the following table.

TABLE 4A-2
STOCK PRICES AFTER TWO PERIODS

Price	Chance
$144	1 chance in 4
$108	2 chances in 4
$ 81	1 chance in 4

The expected future stock price after two periods is then:

$$1/4\ (\$144) + 2/4\ (\$108) + 1/4\ (\$81) = \$110.25$$

The cost of equity capital is calculated as the discount rate that equates the present value of the future expected cash flows to the current stock price. In the present simple example, the only cash flow is the gain from selling the stock after two periods have elapsed. Thus, using the expected stock price of $110.25 calculated above, the expected rate of return is that r, which solves the following equation:

$$\text{Current Stock Price} = \frac{\text{Expected Stock Price}}{(1 + r)^2}$$

The factor $(1 + r)^2$ discounts the expected stock price to the present. Substituting the numerical values, we have:

$$\$100 = \frac{\$110.25}{(1+r)^2}$$

$$r = 5\%$$

Thus, the cost of equity capital is 5%. This 5% cost of equity capital is equal to the prospective arithmetic mean rate of return, which is the probability-weighted average single period rate of return on equity. Since in every period there is an equal chance that the stock's return will be 20% or −10%, the probability-weighted average is:

$$1/2\ (20\%) + 1/2\ (-10\%) = 5\%$$

However, the 5% cost of equity capital is not equal to the prospective geometric mean rate of return, which is a probability-weighted average of the possible compounded rates of return over the two periods. Now consider the prospective geometric mean rate of return. Table 4A-3 shows the possible compounded rates of return over two periods, and the probability of each.

Thus, the prospective geometric mean rate of return is:

$$1/4\ (20\%) + 2/4\ (3.92\%) + 1/4\ (-10\%) = 4.46\%$$

TABLE 4A-3
STOCK PRICES AND RETURNS AFTER TWO PERIODS

Price	Chance	Compounded Return
$144	1 chance in 4	20.00%
$108	2 chances in 4	3.92%
$ 81	1 chance in 4	−10.00%

This return is not equal to the 5% cost of equity capital.

The example can easily be extended to include the case of a dividend-paying company and will reach the same conclusion: the implied discount rate calculated in the DCF model is an expected arithmetic rather than an expected geometric mean rate of return.

The foregoing analysis shows that it is erroneous to use a prospective multi-year geometric mean rate of return as a "target" rate of return for each year of the period. If, for example, investors currently require an expected future rate of return on an investment of 13% each year, then 13% is the appropriate annual rate of return on equity for ratemaking purposes. Consequently, in using a risk premium approach for the purposes of rate of return regulation, the single-year annual required rate of return should be estimated using arithmetic mean risk premiums.

It should be pointed out that the use of the arithmetic mean does not imply an investment holding period of one year. Rather, it is premised on the uncertainty with respect to each year's return during the holding period, however many years that may be. When computing the arithmetic average of historic annual returns in order to calculate the average return (expected value of the return), every achieved return outcome is one possible future outcome for each year the security will be held. Each historic return has an equal probability of occurring during each year of the holding period. The resulting expected value of the risk premium is the arithmetic average of all of the past premiums considered, regardless of the length of the expected holding period.