0000049782

EXHIBITS

W-01303A-05-0405

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PART 1 OF 4 BAR CODED #0000047488

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EXHIBIT
RUCO-10
admitted

ARIZONA-AMERICAN WATER COMPANY

DOCKET NO. W-01303A-05-0405
and
DOCKET NO. W-01303A-05-0910

SURREBUTTAL TESTIMONY

OF

WILLIAM A. RIGSBY

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

MARCH 6, 2006

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INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is William A. Rigsby. I am a Public Utilities Analyst V employed by the Residential Utility Consumer Office ("RUCO") located at 1110 W. Washington, Suite 220, Phoenix, Arizona 85007.

Q. Please state the purpose of your surrebuttal testimony.

A. The purpose of my testimony is to respond to Arizona-American Water Company Inc.'s ("Arizona-American" or "Company") rebuttal testimony on RUCO's recommended rate of return on invested capital (which includes RUCO's recommended cost of debt and cost of common equity) for the Company's Paradise Valley Water District ("PV Water") located in Maricopa County.

Q. Have you filed any prior testimony in this case on behalf of RUCO?

A. Yes, on January 17, 2006, I filed direct testimony with the Arizona Corporation Commission ("ACC" or "Commission"). My direct testimony addressed the cost of capital issues that were raised in Arizona-American's application requesting a permanent rate increase ("Application") based on a test year ended December 10, 2004 ("Test Year").

Q. How is your surrebuttal testimony organized?

A. My surrebuttal testimony contains four parts: the introduction that I have just presented; a summary of Arizona-American's rebuttal testimony; a section on the cost of debt; and, a section on the cost of equity capital.

SUMMARY OF ARIZONA-AMERICAN'S REBUTTAL TESTIMONY

Q. Have you reviewed Arizona-American's rebuttal testimony?

A. Yes. I have reviewed the rebuttal testimony of Company witness A. Lawrence Kolbe, Ph.D. Dr. Kolbe's rebuttal testimony, filed on February 13, 2006, addresses the cost of common equity issue in this case.

Q. Please summarize the Company's rebuttal testimony that addresses the cost of capital issues in this case.

A. Dr. Kolbe's rebuttal testimony takes issue with the cost of equity capital recommendations made by ACC Staff witness Dennis Rogers and myself. Dr. Kolbe agrees with our decisions to make upward adjustments to our original cost of equity estimates in order to reflect the Company's leveraged (i.e. debt-heavy capital structure). However, Dr. Kolbe is critical of our final recommended costs of equity and argues that they are not high enough to compensate investors for the amount of financial risk that Arizona-American is exposed to. Dr. Kolbe continues to advocate the use of his after tax weighted average cost of capital ("ATWACC") methodology, which produces estimates ranging from 12.00 to 13.00

percent, to justify Arizona-American's request for a 12.00 percent return on common equity.

Q. Briefly summarize the positions of the parties to the case in regard to capital structure, cost of debt, cost of equity and weighted cost of capital.

A. Despite a difference of opinion between ACC Staff and the Company regarding Mr. Rogers' recommendation to require Arizona-American to achieve an equity ratio of 40 percent prior to the Company's next rate case filing, all of the parties to the case, who have filed testimony on cost of capital issues, appear to be in agreement on the Company-proposed capital structure of 63.0 percent debt and 37.0 percent equity. Likewise there appears to be a consensus on the Company-proposed 5.4 percent weighted cost of debt. The main point of contention appears to be a cost of common equity estimate that reflects the Company's debt-heavy capital structure. The costs of common equity being recommended are as follows:

Arizona-American	12.00%
ACC Staff	10.40%
RUCO	10.00%

The parties are much closer in terms of their recommended weighted costs of capital, which are as follows:

Arizona-American	7.80%
ACC Staff	7.20%
RUCO	7.10%

As can be seen above, there is only a 70 basis point difference between the Company-proposed 7.80 percent weighted cost of capital and RUCO's recommended weighted cost of capital of 7.10 percent.

Q. In your direct testimony, you described the differences between how you arrived at your final recommended 10.00 percent cost of common equity and how Company witness Dr. Michael J. Vilbert, arrived at his estimates. Please provide a similar comparison between your estimate and the estimate recommended by ACC Staff witness Dennis Rogers.

A. Mr. Rogers arrived at his original estimate of 9.80 percent by averaging the results of his DCF and CAPM models. He then made an upward adjustment of 60 basis points, to arrive at his final recommended cost of equity figure of 10.40 percent. The 60-basis point adjustment was based on the results that Mr. Rogers obtained from a technique developed by Robert Hamada, which relies on the use of a levered beta in the CAPM.

...

Q. What would your original unadjusted cost of equity estimate be if you were to average the results of your DCF and CAPM models as ACC Staff has?

A. Averaging the results of my water company sample DCF result of 9.50 percent, and my water company sample CAPM result (using an arithmetic mean) of 10.08 percent produces the same 9.80 percent original unadjusted result obtained by Mr. Rogers. My 50 basis point adjustment for Arizona-American's increased leverage, which was based on the return on common equity authorized in the Company's most recent rate case decision, is only ten basis points lower than the results produced by the Hamada technique employed by Mr. Rogers. My final estimate, after averaging the results of my DCF and arithmetic mean CAPM models as ACC Staff has, would be 10.30 percent as opposed to Mr. Rogers' recommended 10.40 percent. Using the aforementioned 10.30 percent cost of common equity in the Company-proposed capital structure produces the same 7.20 percent weighted cost of capital recommended by ACC Staff. Consequently, there is little difference between the result rendered under ACC Staff's methodology versus mine.

COST OF DEBT

Q. Has the Company accepted RUCO's recommended cost of debt?

A. I am not aware of any rebuttal testimony filed by the Company on the cost of debt recommendations made by either ACC Staff or RUCO. Both Mr. Rogers and I are recommending that the Commission adopt the

Company-proposed 5.4 percent cost of debt, which is the weighted cost of Arizona-American's various long-term debt instruments and PILR arrangements. At this juncture I believe it is safe to say that all of the parties to the case are in agreement on the aforementioned 5.4 percent figure and that the cost of debt is not an issue.

COST OF EQUITY CAPITAL

Q. Please summarize the rebuttal testimony of Dr. Kolbe.

A. As I noted in my introduction, Dr. Kolbe agrees with my decision to make an upward adjustment to my original DCF derived cost of equity capital of 9.50 percent, but believes that my final recommended cost of equity of 10.00 percent does not adequately reflect the level of financial risk that Arizona-American faces, and that I have failed to adequately quantify my upward adjustment of 50 basis points. Dr. Kolbe has also taken the position that the views that I expressed in my direct testimony regarding his ATWACC methodology for determining an appropriate cost of capital were unwarranted and has claimed I disparaged his reliance on the work of Profs. Franco Modigilani and Merton Miller. He further states that my dismissal of their work on capital structure is unwarranted given my own reliance on the work of scholars such as Myron Gordon and William Sharpe.

Q. Please address Dr. Kolbe's assertion that you failed to quantify the upward 50 basis point adjustment that you made to your original DCF result of 9.50 percent?

A. I have made no secret of how I arrived at my 50 basis point adjustment. As I stated earlier in my introduction, and also in my direct testimony, I used the 50-basis point adjustment that was authorized in the most recent Arizona-American rate case proceeding. Given the fact that ACC Staff has produced an adjustment that is only ten basis points higher leads me to conclude that my adjustment is in the ballpark for Arizona-American and that I have recommended a reasonable final estimate for the Company's cost of common equity. It is interesting to note here that the Commission recently adopted a 9.50 percent return on common equity for Southwest Gas Corporation (a local gas distribution company that has similar risk characteristics to water providers), which had slightly less common equity in its actual capital structure than Arizona-American. From the perspective of the Commission's decision on Southwest Gas Corporation, the 10.40 percent and 10.00 percent costs of common equity being recommended by Mr. Rogers and myself appear to be generous. They also appear to be much more reasonable than the 12.00 percent cost of common equity being requested by the Company, which is close to the historical 12.40 percent return on the stock market that I used in my CAPM model using an arithmetic mean.

Q. Were your direct testimony remarks intended to disparage Dr. Kolbe's reliance on the work of other noted scholars in the field of finance?

A. No they were not. If I offended Dr. Kolbe, I apologize. However, Dr. Kolbe even admits, on page 30 of his rebuttal testimony, that the same principles he is advocating in this case have only been adopted by one state utility commission out of fifty. As a practitioner in the field of finance, as opposed to being an academician, I tend to take a more practical approach in these cases. My remarks were mainly intended to put a sanity check on this process and to illustrate the fact that as a regulated utility, Arizona-American cannot be viewed in the same light as companies that operate in a purely competitive environment, a point on which Dr. Kolbe and I appear to be at odds.

Q. Can you give an example that supports your position that Arizona-American faces less risk, even with a leveraged capital structure, as a result of being a regulated utility as opposed to a business that operates in a competitive environment?

A. I believe I can. I happen to enjoy eating pizza, so just for the sake of argument I will use a pizza parlor as an example of a business that operates in a competitive environment.

Suppose you are the owner of a pizza parlor in a large metropolitan area such as Phoenix. You not only compete with a large number of small local pizza businesses, such as your own, but also with several large national

pizza chains. Because of this, you not only have to make a good pizza but you also have to price your pizza competitively in order to attract and keep your customers. You are somewhat fortunate by virtue of the fact that all of the assets that you use to make and sell your pizzas have been paid for entirely, so you have 100 percent equity in your pizza business. Now let's say that one night, just before closing, your oven, which is a key asset in your business, breaks down. To your dismay the oven is beyond repair and has to be replaced. This could not have happened at a worse time since you do not have enough funds available in either your pizza business cash account or your own personal savings account to purchase a new oven. In order to stay in business, you have no choice but to borrow money and buy a new oven. The next morning you manage to obtain a 3-year loan for $15,000 from your bank by using your business assets as collateral. You are able to buy a new oven and get it installed before regular business hours. So you are back in business, but it is now costing you more to make the pizzas that you sell. This is because you now have depreciation expense on the new oven, which will be used to pay down the principal portion of the loan that financed it, and you now have interest expense as well. This means your bottom line is not as big as it was when you had no debt so your business is not as profitable. Nor is your business producing the same rate of return that it was before you had to take on the debt to buy the new oven. Does this mean you simply raise the price of your pizza to restore your original level of bottom line

profit and your old rate of return? No. More than likely you can't because you will lose business because your pizza would no longer be competitively priced. Does this mean that you go before the Arizona Pizza Commission and seek an increase in your prices to be able to restore the level of profit that you have become accustomed to, or will make your business attractive to a potential buyer? No, because there is no Arizona Pizza Commission to go to. The pizza business is not a regulated business. You are in a competitive business and if another major asset fails you or your other operating expenses (such as the price of gasoline, needed to deliver your product, or natural gas, used to heat your oven) increase to the point that you are operating at a loss that exceeds your operating cash flows you may not have any other choice but to file for bankruptcy or liquidate your business. Compare this scenario with a regulated utility, like Arizona-American, that does have a regulatory commission to go to and seek increases in its rates when it is not making its required rate of return.

If you think my pizza parlor example is silly, then think about the airline industry for a moment. A good argument could be made that the airline industry has a lot in common with the utility industry. Like utilities, airlines are capital intensive. They must spend large sums of money to obtain their planes either through leasing or debt financing. This of course is a barrier to entry and limits the number of companies that can get into the airline business. The airline industry was regulated once but during the

Seventies the airline industry was deregulated and forced to operate in a competitive environment. As anyone who reads the business pages knows, since the advent of airline deregulation Chapter 11 bankruptcy protection has become routine for the major carriers that have managed to survive in a business that can no longer seek fare increases from a civil aeronautics board[1].

Q. Does the investment community at large recognize the fact that regulated utilities, such as Arizona-American, are indeed different from non-regulated entities in terms of how they recover their costs?

A. Yes, I believe more so than Dr. Kolbe probably would like to admit. For example, over the past year several articles on investing in the water infrastructure industry have appeared on the Internet, such as MSN Money/CNBC, and in the print and online editions of Forbes magazine. In the MSN Money/CNBC piece[2] (Attachment A), author Jon D. Markman, a weekly columnist for CNBC, pitched his suggestions for investing in what some believe to be a coming global water shortage. In regard to domestic utilities, Markman had this to say:

> "Virtually all of the U.S. water utility stocks are regulated by states and counties, which makes them pretty dull. Governmental entities typically give utilities a monopoly in a geographic region, then set their profit margin a smidge above

[1] U.S. Centennial of Flight Commission website: http://www.centennialofflight.gov/essay/Commercial_Aviation/Bankruptcy/Tran9.htm

[2] Markman, Jon D, "Invest in the Coming Global Water Shortage," MSN.com, January 12, 2005, http://moneycentral.msn.com/content/P102152.asp.

> costs. Just about the only distinguishing factor among them are the growth rates of their regions and their ability to efficiently manage their underground pipe and pumping infrastructure."

Even though investors are aware of these facts, it appears that it has not deterred them from investing in water utility stocks according to John Dickerson, an analyst with Summit Global Management of San Diego who offered these observations in the Markman article:

> "Although not widely appreciated, water has been recognized by conservative investors as an investment opportunity -- and it has rewarded them. Over the past 10 years, the Media General water utilities index is up 133%, double the Return of the Dow Jones Utilities Index. Over the past five Years, water utilities are up 32% -- clobbering the flat returns of both the Dow Jones Utilities and the Dow Industrials. One of water's key long-term value drivers as an investment, according to Dickerson: Demand is not affected by inflation, recession, interest rates or changing tastes."

Both Mr. Markman's and Mr. Dickerson's views are shared by Jeffrey R. Kosnett, the senior editor of Kiplinger's Personal Finance, who had this to say in his February 21, 2006 Kiplinger.com column[3] (Attachment C):

> "If only there were more water stocks. The few publicly traded water companies are pumping marvelous total returns: 25% a year over the past ten years at industry giant Aqua America (symbol WTR) and close to that at others, such as California Water Services (CWT), American States Water (AWR) and SJW Corp. (SJW). Water stocks are also remarkably consitent, with double-digit annualized total returns common across one, three, five and ten years."

[3] Kosnett, Jeffrey R, "California Water: Refreshing," Kiplinger.com, February 21, 2006, http://www.kiplinger.com/personalfinance/columns/picks/archive/2006/pick0221.htm.

Mr. Kosnett went on to state:

> "Water companies' returns are regulated, so the companies are clssified as public utilities. But for investors, they're more like dividend-paying growth stocks -- and not just because of their past performance. Water usage expands with population and housing growth, and water companies are also able to grow by making acquisitions. California Water started expanding to other states in 1999 when it bought into Washington and says it is always scouting around for more opportunities."

What is interesting here is that water stocks are performing well despite the fact that they are typically awarded rates of return that only provide them with a thin operating margin over their costs.

Q. Other than the reasons that you cited in your direct testimony, are there any other reasons why you believe that a cost of equity in the area of 10.00 percent, as opposed to the higher return advocated by Dr. Kolbe, is appropriate for Arizona-American at this time?

A. As I noted in my direct testimony, RWE AG, the parent company of Arizona-American, announced its intentions to sell off its water business segments in the UK and North America. In the November 8, 2005 online edition of Forbes magazine John Dickerson, the same analyst interviewed in the Markman article just cited, stated that he believed that RWE AG will make a public offering of its water holdings. This means that Thames Water and American Water, which was one of the largest and most successful of all of the U.S. water utilities prior to RWE AG's acquisition of

it, will probably be purchased on the open market through an initial public offering ("IPO"). From that point the two companies will be traded on a stock market as the other water utilities in my sample are. Mr. Dickerson believes that this is good news for investors, because it will bring down the inflated values of smaller U.S. water utilities. This would mean that water utilities could still offer attractive yields to investors without having to pay out the same percentage of their earnings in dividends that they do now.

Q. Has any of the rebuttal testimony presented by either Dr. Kolbe or the other witnesses for Arizona-American convinced you to make adjustments to your recommended cost of common equity?

A. No.

Q. Does your silence on any of the issues or positions addressed in the rebuttal testimony of the Company's witnesses constitute acceptance?

A. No, it does not.

Q. Does this conclude your surrebuttal testimony on Arizona-American?

A. Yes, it does.

ATTACHMENT A

Jon Markman

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Go back

Posted 1/12/2005

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Invest in the coming global water shortage

Fresh water's getting scarce, and it has no substitutes. For investors in companies that can supply our increasingly thirsty planet, that spells opportunity.

By Jon D. Markman

Ten years ago next Monday, a massive earthquake rolled under the Japanese city of Kobe at dawn, toppling 140,000 buildings, causing 300 major fires, killing more than 5,000 people and leaving 300,000 homeless.

To help cover the story for the L.A. Times, I left my wife to care for our 10-day-old daughter and 2-year-old son and flew into the city with a small team of Los Angeles-based trauma doctors and nurses. We found a surreal, smoking ruin of a city with roads twisted like coils of rope, high-rises tilted at Dr. Seuss angles and thousands of middle-class families jammed into dingy, ice-cold rooms in the few public buildings left standing.

Just as in the tsunami zone of South Asia this month, the immediate health danger, besides a possible outbreak of disease, was a lack of fresh water. More than 75% of the city's water supply was destroyed when underground pipes fractured. As much as they desired pallets of drugs, food, blankets and tents sent from throughout Japan and abroad, the Kobe survivors coveted -- and needed -- clean, bottled water for cooking, drinking and bathing.

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Both incidents are a stark reminder that water is our most precious resource. Because it is seemingly ubiquitous in the United States, it is taken for granted. Massive snowstorms in California this month have loaded up the snowpack that provides water there, and rains in the Southeast are filling reservoirs in that part of the country.

The rest of the world, however, is not so fortunate.

Not making any more water

There is no more fresh water on Earth today than there was a million years ago. Yet today, 6 billion people share it. Since 1950, the world population has doubled, but water use has tripled, notes John Dickerson, an analyst and fund manager based in San Diego. Unlike petroleum, he adds, no technological innovation can ever replace water.

China, which is undergoing a vast rural-to-urban population migration, is emblematic of the places where water has become scarce. It has about as much

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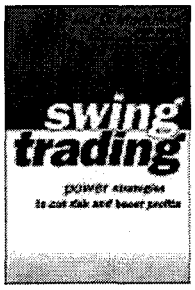

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water as Canada but 100 times more people. Per-capita water reserves are only about a fourth the global average, according to experts. Of its 669 cities, 440 regularly suffer moderate to critical water shortages.

Although not widely appreciated, water has been recognized by conservative investors as an investment opportunity -- and it has rewarded them. Over the past 10 years, the Media General water utilities index is up 133%, double the return of the **Dow Jones Utilities Index** ($UTIL). Over the past five years, water utilities are up 32% -- clobbering the flat returns of both the Dow Jones Utilities and the **Dow Industrials** ($INDU). One of water's key long-term value drivers as an investment, according to Dickerson: Demand is not affected by inflation, recession, interest rates or changing tastes.

Virtually all of the U.S. water utility stocks are regulated by states and counties, which makes them pretty dull. Governmental entities typically give utilities a monopoly in a geographic region, then set their profit margin a smidge above costs. Just about the only distinguishing factor among them are the growth rates of their regions and their ability to efficiently manage their underground pipe and pumping infrastructure. Among the best are **Aqua America** (WTR, news, msgs) of Philadelphia, **Southwest Water** (SWWC, news, msgs) of Los Angeles; **California Water Service Group** (CWT, news, msgs), based in San Jose, Calif.; and **American States Water** (AWR, news, msgs) of San Dimas, Calif.

In a moment, I'll offer a couple of potentially more impactful ways to invest in water, but first let's look a little more broadly at world demand.

Aquifers in India are being sucked dry

The tsunami has focused attention on water demand in South Asia -- and it's a good thing, as it was already reaching critical status in rural areas. Several decades ago, farmers in the Indian state of Gujarat used oxen to haul water in buckets from a few feet below the surface. Now they pump it from 1,000 feet below the surface. That may sound good, but they have been drawing water from the earth to feed a mushrooming population at such a terrific rate that ancient aquifers have been sucked dry -- turning once-fertile fields slowly into sand.

According to New Scientist magazine, farmers using crude oilfield technology in India have drilled 21 million "tube wells" into the strata beneath the fields, and every year millions more wells throughout the region -- all the way to Vietnam -- are being dug to service water-needy crops like rice and sugar cane. The magazine quoted research from the annual Stockholm Water Symposium that the pumps that transformed Indian farming are drawing 200 cubic kilometers of water to the surface each year, while only a fraction is replaced by monsoon

rains. At this rate, the research suggested, groundwater supplies in some areas will be exhausted in five to 10 years, and millions of Indians will see their farmland turned to desert.

In China, the magazine reported, 30 cubic kilometers more water is being pumped to the surface each year than is replaced by rain -- one of the reasons that the country has become dependent on grain imports from the West. This is not just an issue for agriculture. Earlier this year, the Indian state of Kerala ordered the **PepsiCo** (PEP, news, msgs) and **Coca-Cola** (KO, news, msgs) bottling plants closed due to water shortages, costing the companies millions of dollars.

In this country, shareholder activists already are lobbying companies to share water-dependency concerns worldwide with their stakeholders in their financial statements.

Water, water everywhere, but . . .

The central problem is that less than 2% of the world's ample store of water is fresh. And that amount is bombarded by industrial pollution, disease and cyclical shifts in rain patterns. Its increasing scarcity has impelled private companies and countries to attempt to lock up rights to key sources. In an article last month, the Christian Science Monitor suggested that the next decade may see a cartel of water-exporting countries rivaling the Organization of Petroleum Exporting Countries for dominance in the world economy.

"Water is blue gold; it's terribly precious," Maude Barlow, chair of the Council of Canadians, told the Monitor. "Not too far in the future, we're going to see a move to surround and commodify the world's fresh water. Just as they've divvied up the world's oil, in the coming century, there's going to be a grab."

Besides the domestic water utilities listed above -- and similarly plodding foreign utilities such as **United Utilities** (UU, news, msgs) of the United Kingdom, which sports a 6.9% dividend yield, and **Suez** (SZE, news, msgs) of France -- investors interested in the sector can consider a number of variant plays. None are extremely exciting, but my guess is that, over the next few years, some more interesting purification technologies will emerge, along with, perhaps, a vibrant attempt at worldwide industry consolidation.

One current idea is Tennessee-based copper pipe and valve maker **Mueller Industries** (MLI, news, msgs), a $1 billion business with a trailing price/earnings multiple of 15 that is still not expensive despite a 47% run-up in the past year. Its leading outside investor is **Berkshire Hathaway** (BRK.A, news, msgs), the

investment vehicle of legendary investor Warren Buffett.

Another is flow-control products maker **Watts Water Technologies** (WTS, news, msgs), which is a little richer at a $975 million market cap and a trailing P/E multiple of 19, but is still owned by several leading value managers, including Mario Gabelli.

And possibly the most interesting is **Consolidated Water** (CWCO, news, msgs), a $160 million company based in the Cayman Islands that specializes in developing and operating ocean-water desalinization plants and water-distribution systems in areas where natural supplies of drinking water are scarce, such as the Caribbean and South America. It currently supplies water to Belize, Barbados, the British Virgin Islands and the Bahamas, and it has expansion plans. It is the most expensive, but it may also have the greatest growth prospects. Of all of these, it is up the most over the past five years, a relatively steady 355%.

Of course, there is one other benefit to water investing: When these companies say they're going to do a dilutive deal, it's not something to worry about.

Fine Print

Dickerson runs a hedge fund in San Diego strictly focused on water investing, the Summit Water Equity Fund. . . To learn more about Southwest Water, click here. . . . To learn more about California Water Service Group, which runs systems in New Mexico, Hawaii and Washington State, as well as California, click here. . . . To learn more about American States Water, click here. . . To learn more about Mueller, click here, and, for Consolidated Water, click here. . . . Seems like talk is cheap. Since mid-December, the value of the company radio personality Howard Stern is leaving, **Viacom** (VIA.B, news, msgs), has risen 9% while the value of the company he's headed to, **Sirius Satellite Radio** (SIRI, news, msgs), is down 13.5%. . . . For background on the Kobe earthquake, approaching its 10th anniversary, click here and here.

Jon D. Markman is publisher of StockTactics Advisor, an independent weekly investment newsletter, as well as senior strategist and portfolio manager at Pinnacle Investment Advisors. While he cannot provide personalized investment advice or recommendations, he welcomes column critiques and comments at jon.markman@gmail.com; put COMMENT in the subject line. At the time of publication he held positions in the following stocks mentioned in this column: Coca-Cola.

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ATTACHMENT B

Forbes.com

Faces In The News

Money Manager Hails RWE Water Divestiture

Tatiana Serafin, 11.08.05, 2:24 PM ET

In "Liquid Stocks", Summit Global Management's **John Dickerson** discussed opportunities to invest in water companies that were helping build water systems in China and other developing nations. His pick, **RWE**, had investments in the U.K.'s Thames Water and American Water Works of the U.S. and provided investors with dividend yields above the market average and price/earnings ration well below. On November 4, however, RWE announced it would divest its water assets and focus on electricity and gas markets in Europe.

"We are very happy that RWE is planning to get out of the water business," says Dickerson, "and we think in the longer run it will be a healthy development for investors in the U.S. water industry. The disposition of water utility assets in the U.S. is absolutely not an indication that this is a bad business that should be avoided by investors."

Dickerson says that American Water Works was the largest and most successful of all the U.S. water utilities before the RWE purchase (today he says that accolade is with **Aqua-America** (nyse: WTR - news - people)(See "Splash") and predicts that RWE will chose to publicly offer its utility assets because it can get better premiums in public markets. Dickerson does not believe either private equity investors or any other water utility companies would be interested in American Water Works because of the potential high price. He says only **General Electric** (nyse: GE - news - people) would be large enough to swallow American Water Works whole, but companies like GE, **ITT Industries** (nyse: ITT - news - people) and **3M** (nyse: MMM - news - people) have not shown previous interest in water utility assets, preferring to stick to water industrial assets--e.g. filtration, desalination and instrumentation markets.

That's good news for investors. Dickerson says an initial public offering for American Water Works would help bring down inflated multiples of smaller U.S. utilities which is the reason Dickerson moved most of his funds outside the U.S. Better valuations would mean more investment options.

For the moment, Dickerson also recommends sticking with RWE because there is not enough information about pending transactions. He says holding RWE might give existing investors preferential rights with respect to new water shares--a two-for-one bonus.

More Faces In The News

ATTACHMENT C

Kiplinger.com

February 21, 2006
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STOCK WATCH

California Water: Refreshing
by

Water utility stocks are good growth investments, and they have decent dividends.

If only there were more water stocks. The few publicly traded water companies are pumping marvelous total returns: 25% a year over the past ten years at industry giant **Aqua America** (symbol WTR) and close to that at others, such as **California Water Services** (CWT), **American States Water** (AWR) and **SJW Corp.** (SJW). Water stocks are also remarkably consistent, with double-digit annualized total returns common across one, three, five and ten years.

One of the best performers so far in 2006 is California Water, which is headquartered in San Jose and also has operations in Hawaii, New Mexico and Washington. At $42, it's up 9% from $38 at the start of 2006. Cal Water just announced a strong finish to 2005, with fourth-quarter earnings of 32 cents a share, up from 20 cents a year earlier. Cal Water's full-year 2005 profits were basically flat because of the rainy weather early in 2005 that restrained water consumption. But business is improving again. There's also a $1.15-a-share dividend that works out to a yield of 2.7%. California Water has now raised dividends for 39 straight years.

Assuming normal weather conditions in 2006, analysts James Lykins of Hilliard Lyons and David Schanzer of Janney Montgomery Scott are calling for Cal Water's earnings to jump this year, from $1.48 a share for 2005 to $1.75 and $1.86, respectively. Both reviewed the recent quarter and have a buy rating on the shares. Since water companies are generally trading at 25 to 30 times earnings, the shares would then appear to be headed for around $50.

Water companies' returns are regulated, so the companies are classified as public utilities. But, for investors, they're more like dividend-paying growth stocks -- and not just because of their past performance. Water usage expands with population and housing growth, and water companies are also able to grow by making acquisitions. California Water started expanding to other states in 1999 when it bought into Washington and says it is always scouting around for more opportunities.

--*Jeffrey R. Kosnett*

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EXHIBIT
RUCO-11
admitted

ARIZONA AMERICAN WATER COMPANY, INC.
(PARADISE VALLEY WATER DISTRICT)

DOCKET NO. W-01303A-05-0405

DIRECT TESTIMONY

OF

MARYLEE DIAZ CORTEZ

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

JANUARY 17, 2006

1 INTRODUCTION 1

2 PUBLIC SAFETY SURCHARGE 2

3 HIGH BLOCK USAGE SURCHARGE 11

INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Marylee Diaz Cortez. I am a Certified Public Accountant. I am the Chief of Accounting and Rates for the Residential Utility Consumer Office (RUCO) located at 1110 W. Washington, Suite 220, Phoenix, Arizona 85007.

Q. Please state your educational background and qualifications in the utility regulation field.

A. Appendix I, which is attached to this testimony, describes my educational background and includes a list of the rate case and regulatory matters in which I have participated.

Q. Please state the purpose of your testimony.

A. The purpose of my testimony is to respond to Paradise Valley Water Company's (PV Water or Company) request for a Public Safety Surcharge designed to recover the cost of up-sizing its system to increase fire flow and the Company's request for a High Block Usage Surcharge to penalize high water use customers. RUCO witness Timothy Coley will address rate base and rate design, Rodney Moore will address operating income, as well as sponsor RUCO's recommended revenue requirements, and William Rigsby will address cost of capital.

PUBLIC SAFETY SURCHARGE

Q. Please describe PV Water's plans to up-size its system.

A. Pursuant to the request of the Town of Paradise Valley (Town), PV Water developed a capital improvement program that over time will increase fire flow levels in its service territory to 1500 gallons per minute. The program will span approximately five years and was originally estimated to cost $16.6 million.

Q. Other than its initial request for increased fire flows, has the Town participated in the fire flow planning and implementation process?

A. Yes. PV Water and the Town formed a Water Users Advisory Group, which consisted of representation from the Town, PV Water residential and commercial customers, and Rural Metro Fire Department. The Town also formed a Water Utility Subcommittee (Subcommittee) that has met monthly since April 2003 to monitor the progress of the fire flow improvements. There are three water companies that serve the Town: PV Water, the City of Phoenix, and Berneil Water Company, each of which are present at the monthly meetings and report their fire flow improvement progress to the Subcommittee.

Q. Have you attended any of these meetings?

A. Yes. I have attended several of these meetings as well as other RUCO Staff. I have also reviewed the minutes of each Subcommittee meeting since April 2003.

Q. How would you characterize the Town's role in PV Water's fire flow construction program?

A. The Town has played a very active role and is, in fact, directly responsible for PV Water undertaking a $16.6 million fire flow construction program. The report of the Water Users Advisory Group candidly acknowledges that PV Water "committed" to the fire flow construction plan at the request of the Town.

Q. Is PV Water required by the Arizona Corporation Commission (ACC) to meet a fire flow level of 1500 gallons per minute?

A. No. Under Arizona Administrative Code §R14-2-407, water utilities are required to deliver potable water to customers at a minimum pressure of 20 psi. There is no requirement for 1500 gallons per minute fire flow.

Q. Do other regulated water utilities in Arizona have system-wide capacity for 1500 gallons a minute of fire flow?

A. Very few Arizona regulated water utilities have the capacity necessary to generate 1500 gallons per minute.

Q. Why is that?

A. I suspect it is because the Commission does not require it, and the cost of over-sizing Arizona's regulated water utilities to meet a system-wide 1500 gallon per minute fire flow would be cost-prohibitive and result in state wide rate shock.

Q. What size mains would be required to generate 1500 gallons per minute in fire flow?

A. Water systems would have to upsize to at least 12-inch mains to generate that level of fire flow.

Q. Have you done a study of the current size of Arizona's regulated water systems?

A. Yes. I reviewed the 2004 annual reports of 132 Arizona water companies. Specifically, I looked at all water companies with at least $100,000 in annual revenue and only those with fire hydrants.[1] Out of those 132 water utilities, only 24 had mains 12 inches or greater. Of those 24, only 3 companies had any significant portion of their system sized at 12 inches or greater. Thus, PV Water's request for a near doubling of its rate base in order to generate system wide fire flow at 1500 gallons per minute far exceeds the norm and is unwarranted.

[1] Without fire hydrants the size of the main used is irrelevant to fire flow capacity.

Q. Who will pay the cost of the fire flow construction program?

A. Initially, PV Water will pay for the construction. However, the Company is requesting authorization of a special surcharge that would allow it to flow through the additional costs of the fire flow projects to its customers via a number of step surcharges. These surcharges would be similar to the Arsenic Cost Recovery Mechanism (ACRM) that has been authorized, except the proposed safety surcharge would not be limited to two steps, as is the ACRM. The proposed surcharge mechanism would afford PV Water immediate cost recovery for fire flow improvements once in service. No rate case would be required.

Q. What is the approximate rate impact of the fire flow construction project once completed?

A. Assuming that costs do not exceed the estimated $16.6 million, PV Water's rates would have to increase by approximately $2.5 million, or 49%.

Q. Is it realistic to assume the cost will not exceed $16.6 million?

A. No. The Company has already indicated at a Water Subcommittee meeting, in letters, and in response to data requests, that costs are escalating such that the fire flow project will cost substantially more than the originally estimated $16.6 million. In response to data request RUCO 9.05, PV Water stated that the two bids it received on the next phase of

the fire flow project were 162% and 273% above the Company's original estimates.

Q. What are some of the reasons why the costs are more than originally estimated?

A. General price increases are one factor, and actions taken by the Town of Paradise Valley is another factor.

Q. How has the Town contributed to the rising cost of the project?

A. The Town has delayed some projects from the original plan because it does not want its streets torn up during the winter season. The Town also has very restrictive ordinances for pavement resurfacing and requires a full repaving (no patching) with a specialized substance that can only be applied at certain times of the year. In some cases this will necessitate a temporary surfacing, and then a permanent resurfacing at a later date. The Town also has restrictions on the times of day and hours per day that construction activities are permitted. The Town has insisted on special designs and landscaping for certain projects to meet its aesthetic standards, and has gone so far as suggesting an under grounding of water tanks at considerable extra cost. All of these factors contribute to the increasing cost of the project.

Q. How was it decided that PV Water would fund 100% of the fire flow construction project?

A. The June 2003 Subcommittee minutes refer to the need for a Water Users Working Group that would, among other things, "discuss funding of the improvements". This group was subsequently formed and produced a report in January 2004. There is no discussion of funding anywhere in that report. In data request RUCO 6.07 I asked the Company a) to explain when and between whom funding was discussed, and b) to explain how the conclusion that PV Water would fund 100% of the project was reached. The Company responded as follows:

> a) The possible transfer of funds from the Town of Paradise Valley to a private water company were discussed at Water Utility Committee subsequent to the June 3, 2003 meeting, although no specific mention to these discussions is in the minutes. The Water Utility Committee minutes are summarized minutes and do not include all conversations or discussions during a meeting.
>
> b) The discussions focused on how the Town of Paradise Valley might help to fund the infrastructure improvements. It was the opinion of the Town Attorney that the transfer of funds from Paradise Valley to Arizona American for asset improvements would not be possible due to legal statutes binding the Town. This information was passed on to the Paradise Valley Water Users Group.

Q. How are the funding arrangements normally handled when a third party requests the construction of additional water infrastructure from a regulated utility?

A. The regulated utility generally requires an Advance in Aid of Construction (AIAC) or a Contribution in Aid of Construction (CIAC). This arrangement is appropriate where the cost of the project outweighs the potential revenue from the project. The proposed fire flow projects are not required under ACC service standards and, as even the Company admits, are an entirely discretionary undertaking.[2] Accordingly, the party requesting a discretionary service normally funds that request.

Q. Are there other reasons why Town funding of the fire flow infrastructure is appropriate?

A. Yes. The Town can issue bonds at a lower cost than the 12% return on equity that PV Water is requesting. While residents of Paradise Valley will pay for the fire flow projects through property taxes or through their utility rates, the cost will be less if financed with low cost debt as opposed to high cost equity.

[2] Testimony of Company witness Stephenson at page 20, line 20.

Q. If the Town were unwilling to contribute the cost of up-sizing PV's water system for fire flow, should the cost be recovered through rates?

A. No. As discussed above, fire flow is not required under ACC Rules, thus the cost is discretionary for PV Water. Also as previously discussed, no comparable Arizona regulated utility has over-sized its water system beyond what is required by ACC standards. The cost of over-sizing the PV Water system will have the effect of nearly doubling the size of PV Water's rate base and will have the same effect on rates.

Q. What are some of the other ramifications of granting PV Water's request for rate recognition of fire flow projects?

A. Granting PV Water's request for rate recovery of up-sizing its system for fire flow would send a message to all other Arizona water companies that they can double the size of their rate bases by making similar requests, thereby doubling their equity earnings. This is particularly attractive to water utilities like PV Water that are built-out and have no growth potential. Without growth, a utility's rate base has little reason to increase; and because the only way a utility turns a profit is through its return on rate base, it cannot increase its profits. Allowing massive investment in fire flow to be included in rates will allow utilities a perfect opportunity to maximize their earnings at ratepayer expense and create rate shock in Arizona's water industry as a whole.

Q. Are there any other ramifications of granting rate treatment of the fire flow projects?

A. Yes. The Company has proposed that cost recovery of the fire flow projects be through a series of "step" rate increases. As portions of the fire flow projects are completed the Company will receive rate increases to recover those costs. No rate case would be required.

Q. Is this the normal way for water companies to receive rate recognition of plant additions?

A. No. Under Arizona Administrative Code § R14-02-103 rates are examined in the context of a historical test year. Thus, under normal ratemaking practices, companies' plant additions are reviewed in the context of a rate case and the revenue requirement for those additions is determined in conjunction with all the other ratemaking elements.

Q. Has the Commission ever departed from the normal ratemaking practice?

A. Yes, but only under very unique sets of circumstances. An ACRM was approved for several Arizona water companies, including AZ-AM's Havasu and Sun City West systems. The ACRM allowed the costs associated with arsenic removal to be recovered through two-step rate increases that would be implemented outside of a rate case. Arsenic removal, however, was mandated by the Federal government, and was not a discretionary project as is the fire flow.

Q. Please summarize your recommendation.

A. PV Water's request for automatic step rate increases to fund the cost of up-sizing its system for fire flow should be denied. Further, the Commission's Rules do not require this up-sizing, and thus the planned construction projects are discretionary and are not necessary for the provision of water service. The fire flow projects will produce no incremental income to the Company, yet will more than double the Company's rate base. Under these circumstances the appropriate ratemaking treatment is to require the party requesting the service to make a CIAC to fund the infrastructure.

HIGH BLOCK USAGE SURCHARGE

Q. Please describe the Company's request for a High Block Usage Surcharge?

A. The Company is requesting what it describes as "two separate non-cost of service-based surcharges on all units of water consumed by customers in the final block of the approved tariff."[3]

Q. What does "non-cost of service-based" mean?

A. The Company's proposed High Block Usage Surcharges are designed to create revenue in excess of its revenue requirement. The Company proposes to recover its revenue requirement through its authorized

[3] Testimony of Company witness Stephenson at page 34

customer tariffs. The surcharge would generate additional revenue in excess of that revenue requirement. In effect the surcharges will generate windfall profits for the Company.

Q. Are you aware of any rate case where the Commission has authorized tariffs designed to recover revenues in excess of a utility's cost of service?

A. No. The Commission sets rates for the utility to recover its reasonable and prudent cost of service plus a fair return on its rate base.

Q. What is the purpose of the proposed non-cost of service-based surcharges?

A. According to the Company, the purpose of the non-cost of service surcharges is to promote conservation. The charges would apply only to consumption in the final block of the approved tariff. The charge proposed is $2.00 per unit consumed in the high block up to the last 5% of that block which would be charged at $5.00 per unit. At test year consumption levels these surcharges will generate additional annual revenue of approximately $1.6 million.

Q. What is the Company's rationale for proposing surcharges that will generate excess revenues?

A. The Company indicates that it will account for these surcharges as CIAC, which will have the effect of "relieving customers from some of the cost of service".

Q. How so?

A. The Company explains that the revenues collected from the surcharges would be accounted for as contributed plant and serve as a deduction to rate base.

Q. So are the proposed rates in this case lower than they otherwise would be because of these surcharges that will be recorded as CIAC?

A. No. As proposed by the Company, the $1.6 million in annual revenue that will be collected under the surcharge will not impact rates until the Company files another rate case. In the meantime the Company will realize an additional $1.6 million in revenue each year. By May 2010, when the Company will be required to file for permanent rates under the provisions of the ACRM, PV Water will have collected over $6.4 million in ratepayer money for which ratepayers have received no benefit. Conversely, PV Water will have enjoyed $6.4 million in revenue at a zero cost. Considering that PV Water's test year net income was

approximately $600,000, the $1.6 million in surcharge revenue will create a windfall for the Company.

Q. What is your recommendation?

A. The Company's request for the High Block Usage surcharges should be denied. There is no evidence that such charges will have any impact on consumption. More importantly, however, these proposed surcharges are not cost-based and will create windfall revenues for the Company, with no associated revenue requirement. These surcharges will not meet the ratemaking criteria of fair and reasonable rates since there is no cost of service associated with these proposed charges.

Q. Does this conclude your direct testimony?

A. Yes.

APPENDIX I

APPENDIX I

Qualifications of Marylee Diaz Cortez

EDUCATION: University of Michigan, Dearborn
B.S.A., Accounting 1989

CERTIFICATION: Certified Public Accountant - Michigan
Certified Public Accountant - Arizona

EXPERIENCE: Audit Manager
Residential Utility Consumer Office
Phoenix, Arizona 85007
July 1994 - Present

Responsibilities include the audit, review and analysis of public utility companies. Prepare written testimony, schedules, financial statements and spreadsheet models and analyses. Testify and stand cross-examination before Arizona Corporation Commission. Advise and work with outside consultants. Work with attorneys to achieve a coordination between technical issues and policy and legal concerns. Supervise, teach, provide guidance and review the work of subordinate accounting staff.

Senior Rate Analyst
Residential Utility Consumer Office
Phoenix, Arizona 85004
October 1992 - June 1994

Responsibilities included the audit, review and analysis of public utility companies. Prepare written testimony and exhibits. Testify and stand cross-examination before Arizona Corporation Commission. Extensive use of Lotus 123, spreadsheet modeling and financial statement analysis.

Auditor/Regulatory Analyst
Larkin & Associates - Certified Public Accountants
Livonia, Michigan
August 1989 - October 1992

Performed on-site audits and regulatory reviews of public utility companies including gas, electric, telephone, water and sewer throughout the continental United States. Prepared integrated proforma financial statements and rate models for some of the largest public utilities in the United States. Rate models consisted

of anywhere from twenty to one hundred fully integrated schedules. Analyzed financial statements, accounting detail, and identified and developed rate case issues based on this analysis. Prepared written testimony, reports, and briefs. Worked closely with outside legal counsel to achieve coordination of technical accounting issues with policy, procedural and legal concerns. Provided technical assistance to legal counsel at hearings and depositions. Served in a teaching and supervisory capacity to junior members of the firm.

RESUME OF RATE CASE AND REGULATORY PARTICIPATION

Utility Company	Docket No.	Client
Potomac Electric Power Co.	Formal Case No. 889	Peoples Counsel of District of Columbia
Puget Sound Power & Light Co.	Cause No. U-89-2688-T	U.S. Department of Defense - Navy
Northwestern Bell-Minnesota	P-421/EI-89-860	Minnesota Department of Public Service
Florida Power & Light Co.	890319-EI	Florida Office of Public Counsel
Gulf Power Company	890324-EI	Florida Office of Public Counsel
Consumers Power Company	Case No. U-9372	Michigan Coalition Against Unfair Utility Practices
Equitable Gas Company	R-911966	Pennsylvania Public Utilities Commission
Gulf Power Company	891345-EI	Florida Office of Public Counsel

Jersey Central Power & Light	ER881109RJ	New Jersey Department of Public Advocate Division of Rate Counsel
Green Mountain Power Corp.	5428	Vermont Department of Public Service
Systems Energy Resources	ER89-678-000 & EL90-16-000	Mississippi Public Service Commission
El Paso Electric Company	9165	City of El Paso
Long Island Lighting Co.	90-E-1185	New York Consumer Protection Board
Pennsylvania Gas & Water Co.	R-911966	Pennsylvania Office of Consumer Advocate
Southern States Utilities	900329-WS	Florida Office of Public Counsel
Central Vermont Public Service Co.	5491	Vermont Department of Public Service
Detroit Edison Company	Case No. U-9499	City of Novi
Systems Energy Resources	FA-89-28-000	Mississippi Public Service Commission
Green Mountain Power Corp.	5532	Vermont Department of Public Service
United Cities Gas Company	176-717-U	Kansas Corporation Commission

General Development Utilities	911030-WS & 911067-WS	Florida Office of Public Counsel
Hawaiian Electric Company	6998	U.S. Department of Defense - Navy
Indiana Gas Company	Cause No. 39353	Indiana Office of Consumer Counselor
Pennsylvania American Water Co.	R-00922428	Pennsylvania Office of Consumer Advocate
Wheeling Power Co.	Case No. 90-243-E-42T	West Virginia Public Service Commission Consumer Advocate Division
Jersey Central Power & Light Co.	EM89110888	New Jersey Department of Public Advocate Division of Rate Counsel
Golden Shores Water Co.	U-1815-92-200	Residential Utility Consumer Office
Consolidated Water Utilities	E-1009-92-135	Residential Utility Consumer Office
Sulphur Springs Valley Electric Cooperative	U-1575-92-220	Residential Utility Consumer Office
North Mohave Valley Corporation	U-2259-92-318	Residential Utility Consumer Office
Graham County Electric Cooperative	U-1749-92-298	Residential Utility Consumer Office

Graham County Utilities	U-2527-92-303	Residential Utility Consumer Office
Consolidated Water Utilities	E-1009-93-110	Residential Utility Consumer Office
Litchfield Park Service Co.	U-1427-93-156 & U-1428-93-156	Residential Utility Consumer Office
Pima Utility Company	U-2199-93-221 & U-2199-93-222	Residential Utility Consumer Office
Arizona Public Service Co.	U-1345-94-306	Residential Utility Consumer Office
Paradise Valley Water	U-1303-94-182	Residential Utility Consumer Office
Paradise Valley Water	U-1303-94-310 & U-1303-94-401	Residential Utility Consumer Office
Pima Utility Company	U-2199-94-439	Residential Utility Consumer Office
SaddleBrooke Development Co.	U-2492-94-448	Residential Utility Consumer Office
Boulders Carefree Sewer Corp.	U-2361-95-007	Residential Utility Consumer Office
Rio Rico Utilities	U-2676-95-262	Residential Utility Consumer Office
Rancho Vistoso Water	U-2342-95-334	Residential Utility Consumer Office
Arizona Public Service Co.	U-1345-95-491	Residential Utility Consumer Office
Citizens Utilities Co.	E-1032-95-473	Residential Utility Consumer Office
Citizens Utilities Co.	E-1032-95-417 et al.	Residential Utility Consumer Office

Paradise Valley Water	U-1303-96-283 & U-1303-95-493	Residential Utility Consumer Office
Far West Water	U-2073-96-531	Residential Utility Consumer Office
Southwest Gas Corporation	U-1551-96-596	Residential Utility Consumer Office
Arizona Telephone Company	T-2063A-97-329	Residential Utility Consumer Office
Far West Water Rehearing	W-0273A-96-0531	Residential Utility Consumer Office
SaddleBrooke Utility Company	W-02849A-97-0383	Residential Utility Consumer Office
Vail Water Company	W-01651A-97-0539 & W-01651B-97-0676	Residential Utility Consumer Office
Black Mountain Gas Company Northern States Power Company	G-01970A-98-0017 G-03493A-98-0017	Residential Utility Consumer Office
Paradise Valley Water Company Mummy Mountain Water Company	W-01303A-98-0678 W-01342A-98-0678	Residential Utility Consumer Office
Bermuda Water Company	W-01812A-98-0390	Residential Utility Consumer Office
Bella Vista Water Company Nicksville Water Company	W-02465A-98-0458 W-01602A-98-0458	Residential Utility Consumer Office
Paradise Valley Water Company	W-01303A-98-0507	Residential Utility Consumer Office
Pima Utility Company	SW-02199A-98-0578	Residential Utility Consumer Office
Far West Water & Sewer Company	WS-03478A-99-0144 Interim Rates	Residential Utility Consumer Office

Vail Water Company	W-01651B-99-0355 Interim Rates	Residential Utility Consumer Office
Far West Water & Sewer Company	WS-03478A-99-0144	Residential Utility Consumer Office
Sun City Water and Sun City West	W-01656A-98-0577 & SW-02334A-98-0577	Residential Utility Consumer Office
Southwest Gas Corporation ONEOK, Inc.	G-01551A-99-0112 G-03713A-99-0112	Residential Utility Consumer Office
Table Top Telephone	T-02724A-99-0595	Residential Utility Consumer Office
U S West Communications Citizens Utilities Company	T-01051B-99-0737 T-01954B-99-0737	Residential Utility Consumer Office
Citizens Utilities Company	E-01032C-98-0474	Residential Utility Consumer Office
Southwest Gas Corporation	G-01551A-00-0309 & G-01551A-00-0127	Residential Utility Consumer Office
Southwestern Telephone Company	T-01072B-00-0379	Residential Utility Consumer Office
Arizona Water Company	W-01445A-00-0962	Residential Utility Consumer Office
Litchfield Park Service Company	W-01427A-01-0487 & SW-01428A-01-0487	Residential Utility Consumer Office
Bella Vista Water Co., Inc.	W-02465A-01-0776	Residential Utility Consumer Office
Generic Proceedings Concerning Electric Restructuring Issues	E-00000A-02-0051	Residential Utility Consumer Office
Arizona Public Service Company	E-01345A-02-0707	Residential Utility Consumer Office
Qwest Corporation	RT-00000F-02-0271	Residential Utility Consumer Office

Arizona Public Service Company	E-01345A-02-0403	Residential Utility Consumer Office
Citizens/UniSource	G-01032A-02-0598 E-01032C-00-0751 E-01933A-02-0914 E-01302C-02-0914 G-01302C-02-0914	Residential Utility Consumer Office
Arizona-American Water Company	WS-01303A-02-0867	Residential Utility Consumer Office
Arizona Public Service Company	E-01345A-03-0437	Residential Utility Consumer Office
UniSource	E-04230A-03-0933	Residential Utility Consumer Office
Arizona Public Service Company	E-01345A-04-0407	Residential Utility Consumer Office
Qwest Corporation	T-01051B-03-0454 & T-00000D-00-0672	Residential Utility Consumer Office
Tucson Electric Power Company	E-01933A-04-0408	Residential Utility Consumer Office
Arizona-American Water Company	W-1303A-05-0280	Residential Utility Consumer Office
Southwest Gas Corporation	G-01551A-04-0876	Residential Utility Consumer Office

EXHIBIT
RUCO-12
admitted

ARIZONA-AMERICAN WATER COMPANY

DOCKET NO. W-01303A-05-0405
and
DOCKET NO. W-01303A-05-0910

SURREBUTTAL TESTIMONY

OF

MARYLEE DIAZ CORTEZ, CPA

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

MARCH 6, 2006

1 INTRODUCTION 2

2 PUBLIC SAFETY SURCHARGE 3

3 HIGH BLOCK USAGE SURCHARGE 8

INTRODUCTION

Q. Please state your name for the record.

A. My name is Marylee Diaz Cortez.

Q. Have you previously filed testimony in this docket?

A. Yes. I filed direct testimony on January 17, 2006.

Q. What is the purpose of your surrebuttal testimony?

A. In my surrebuttal testimony I will respond to the positions and arguments set forth by the Arizona American witnesses in their rebuttal testimonies.

Q. What areas will you address in your surrebuttal testimony?

A. I will address the following issues in my surrebuttal testimony:

* Public Safety Surcharge
* High Block Usage Surcharge

RUCO witnesses Timothy Coley will address rate base and rate design and Rodney Moore will address the operating income and arsenic plant issues in their surrebuttal testimonies. William Rigsby will address the cost of capital issues in his surrebuttal testimony.

PUBLIC SAFETY SURCHARGE

Q. Please discuss the Company's rebuttal comments regarding RUCO's position on its proposed Public Safety Surcharge.

A. The Company provides very little rebuttal comment to RUCO's position on the proposed Public Safety Surcharge. Company witness Townsley comments that fire flow is "critically" important to the Town of Paradise Valley (Town) leadership and to the residents of the Town, and that PV has worked with the Town to achieve this goal.

Q. As a regulated public utility is it PV Water's responsibility to fulfill the desires of local government?

A. No. As a regulated public utility it is PV Water's responsibility to provide safe, potable, and reliable water service to the customers within its CC&N, not to fund discretionary infrastructure desired by local governments.

Q. What other comments does the Company provide in its rebuttal testimony?

A. In response to RUCO's position that the appropriate treatment of a non-revenue producing infrastructure request made by a third party to a regulated public utility is a Contribution in Aid of Construction (CIAC), the Company merely states that the Town Attorney believes that a transfer of funds to PV Water "would not be legal".

Q. Is this PV Water's argument for why it is not requiring a CIAC from the Town for the fire flow infrastructure?

A. No. The Company's testimony represents this as the Town's position.

Q. Is the Town a party to this docket?

A. No. Thus, there is no evidence in the record in this docket or otherwise that would support this position.

Q. Assuming arguendo there were evidence substantiating a legal conflict to the Town making a CIAC, would your position be any different?

A. No. The issue before the Commission is not the Town of Paradise Valley's legal opinion but rather should the Commission authorize a large rate increase to fund what is admittedly discretionary infrastructure.

Q. Are you aware of any other instances where public utility companies have waived requirements for a CIAC from third parties requesting non-revenue producing infrastructure?

A. No. Normally, if a third party does not make a CIAC the utility does not build the requested infrastructure. For, example if a developer were to request a main extension to serve his planned real estate development, and refuse to make a contribution, the utility would not simply waive the CIAC and fund the developer's project itself. Yet this is precisely what PV Water is doing in this case. The Town will not make a CIAC because of a

perceived legal issue and PV Water benignly agrees to fund the $16.6 million cost of the requested infrastructure.

Q. Does the Company somewhat revise its position on its proposed Public Safety Surcharge in its surrebuttal testimony?

A. Yes. The Company has revised its position somewhat to adopt certain aspects of the Commission Staff's recommendations.

Q. Do you agree with the Staff positions that the Company has adopted?

A. No. While the Staff has opposed the proposal that the fire flow infrastructure be funded by a surcharge, the Staff has recommended that the fire flow projects completed to-date should be included in rate base. Thus, under the Staff's recommendation, PV Water's rates will increase to fund the infrastructure requested by the Town.

Q. What is Staff's rationale for recommending rate base recovery of non-revenue producing infrastructure built at the request of a third party?

A. The Staff testimony is silent on why they believe this to be an appropriate ratemaking treatment.

Q. What ratemaking treatment is the Staff recommending regarding any future fire flow construction?

A. Like RUCO, Staff also opposes automatic surcharge increases to fund future fire flow projects. As discussed in the High Usage Surcharge section of my testimony, Staff, unlike RUCO recommends the approval of that surcharge and that the funds generated by the High Usage Surcharge be used to fund future fire flow projects.

Q. Does the Staff express any concerns about creating precedent in this case for ratepayer funding of discretionary construction projects requested by third parties?

A. No. The Staff testimony is silent on this issue.

Q. Did RUCO make any attempt to ascertain the Staff's rationale for making the recommendation that it did regarding the proposed fire flow infrastructure projects?

A. Yes. RUCO issued a set of data requests to Staff in attempt to understand the rationale for Staff's fire flow recommendations.

Q. Do you now understand the Staff's rationale?

A. No. Staff's response does nothing to shed any further light on their rationale (see Attachment MDC-A for a copy of these data requests and responses).

Q. Do you have any reason to believe approval of ratepayer funding of fire flow infrastructure would create precedent that could have widespread impact on Arizona ratepayers?

A. Yes. In Arizona-American's recent filing for its Mohave Water District the Company indicated that it is attempting to convince Sun City/Youngtown and Mohave ratepayers that they should support funding for over-sizing their system for fire flow, based on the same request they are making in this case.

Q. How have the Mohave and Sun City/Youngtown ratepayers reacted?

A. According to the Company's testimony in that case, "we are still attempting to build community understanding and support for the willingness to pay increased water rates to support the required infrastructure investments to increase fire flows." Thus, it is clear from the Company's testimony[1] that it is actively promoting large unnecessary investments in fire flow infrastructure in its other systems, and that ratepayers have resisted the large rate increases that such investment would require.

[1] See Exhibit B

Q. Has the Company or Staff presented any testimony that would modify RUCO's position regarding the proposed Public Safety Surcharge?

A. No. Neither the Company or Staff has presented any substantive arguments that address RUCO's concerns regarding setting policies that would require ratepayer funding of discretionary non-revenue producing construction projects requested by third parties. Further, the Company has already confirmed RUCO's concerns regarding the potential impact on Arizona water rates if such a fire flow policy were adopted in this case, by promoting fire flow infrastructure expenditures in its other systems. Between the escalating cost of pumping power and the arsenic mandate there is already rate increase pressure on Arizona water rates. A policy of ratepayer funding of discretionary utility investment in fire flow will exacerbate an already costly situation, as well as provide precedent for every other water utility looking for ways to increase their return on investment. Such a policy could ultimately threaten the affordability of water in Arizona.

HIGH BLOCK USAGE SURCHARGE

Q. Please discuss the Company's rebuttal comments concerning RUCO's position on the proposed High Block Usage Surcharge.

A. The Company's rebuttal testimony contains no substantive comments regarding RUCO's opposition to the proposed High Block Usage Surcharge. Company witness Townsley merely states that RUCO

opposes the surcharge, however, provides no testimony that addresses the reasons why RUCO does so. Company witness Kozoman likewise fails to address RUCO's substantive arguments against the proposed surcharge and merely observes that "RUCO just says no to this laudable goal".

Q. What concerns does RUCO have with the proposed surcharge that remain unaddressed?

A. As discussed in my direct testimony, the proposed surcharge is "non-revenue requirement" based. In other words it is designed to collect approximately $1.6 million annually from ratepayers for which the Company has no corresponding revenue requirement. Implementation of this surcharge would essentially cast ratepayers in the role of investors by having them provide large sums of cost free capital to the Company.

Q. Has the Company somewhat modified its High Block Usage Surcharge request in its rebuttal testimony?

A. Yes. In response to a Commission Staff position, the Company now proposes that the money collected from the proposed surcharge be used to fund fire flow construction projects.

Q. Does this new proposal of the Company change your position on this issue?

A. No. RUCO's concerns remain the same. These surcharges are still non-revenue requirement based and will provide the Company with large sums of cost-free capital at ratepayer expense. Further, the Company's new proposal violates the ratemaking principle of cost causation that requires that costs be assigned to those ratepayers who caused those costs. The surcharge would be charged to large water users to fund discretionary fire flow projects. There is no logical relationship between the individuals that would have to pay this surcharge and the use of the funds. Additionally, it continues to cast ratepayers in the role of investors by requiring them to provide up-front funding of infrastructure.

Q. What other problems are there with the Company's revised High Usage Surcharge proposal?

A. The revised surcharge continues to require ratepayers to pay for discretionary fire flow projects that are not required by the Commission and are being undertaken at a third party's request. The revised surcharge has the effect of continuing to require ratepayers to fund what appropriately should be funded by the third party requesting the projects. As discussed in the Public Safety Surcharge section of my surrebuttal testimony, the approval of ratepayer funding of expensive discretionary

projects to over-size Arizona's privately owned water systems will reduce the affordability of water service in Arizona.

Q. Does the Company's revised position on the High Usage Surcharge in any way change RUCO's position on this issue?

A. No. The Company's revisions to its proposed surcharge do nothing to address RUCO's concerns as stated in my direct and surrebuttal testimony.

Q. Does this conclude your surrebuttal testimony?

A. Yes.

ATTACHMENT A

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

ARIZONA CORPORATION COMMISSION

BRIAN C. McNEIL
Executive Director

February 24, 2006

Daniel W. Pozefsky, Attorney
RUCO
1110 West Washington Street
Suite 220
Phoenix, Arizona 85007

Via E-mail and United States Mail

Re: Arizona Corporation Commission's Responses to RUCO's First Set of Data Requests
Docket No. WS-01303A-05-0405

Dear Mr. Pozefskuy:

Enclosed are Staff's responses to RUCO's First Set of Data Requests to the Arizona Corporation Commission in the above-referenced matter. If you have any questions and/or concerns regarding the above, Please give me call.

Very truly yours,

Keith A. Layton
Attorney, Legal Division
(602) 542-3402

KAL:klc

Enclosure

cc: Marylee Diaz Cortez
Darron Carlson
Steve Olea

COMMISSION STAFF'S RESPONSE TO
RUCO'S FIRST SET OF DATA REQUESTS TO STAFF REGARDING
Arizona-American Water Company, Inc.
(Paradise Valley Water District)
ACC Docket No. W-01303A-05-0405

1.01. Does Staff believe that the fire flow projects are required under the Commission's Rules and/or Service Standards?

If so, please identify the specific Commission standard that requires the inclusion of fire flow costs in rate base.

Response from Steve Olea: Staff is unaware of any State standard, Commission or otherwise, that requires fire flow projects, i.e., installation of fire hydrants. However, there may be local government standards that require the installation of fire hydrants. In those cases where a water system has installed fire hydrants, either through its own choice or because of a local government requirement, Staff has recommended that the water system install all the necessary equipment to make the hydrants function properly. The primary reason is because Staff believes that fire hydrants are a benefit to the public and in the public interest.

1.02. Is Staff aware of any Commission policy which approves the inclusion of fire flow costs in rate base?

If so, please state the policy, identify the context in which the policy was made, and list any instances in which the Commission utilized the policy.

Response from Steve Olea: This seems to be a legal question. However, as far as Staff is aware, fire flow costs are treated the same as any other plant costs when it comes to inclusion or exclusion from rate base.

1.03. To the extent not listed in response to the previous question, please identify any precedent for Staff's position that fire flow costs should be included in the Company's rate base.

Response from Steve Olea: *See* response to 1.02.

1.04. Does Staff agree with Company witness Stephenson that the fire flow projects are an entirely discretionary undertaking?

Response from Darron Carlson: Staff would not agree, simply because the Company did not "volunteer" to undertake the investment.

1.05. If Staff does not agree, explain why the fire flow project is not discretionary.

Response from Darron Carlson: The "concept" of the undertaking appears to be from the Town of Paradise Valley, not the Company. The plans were developed in cooperation with the Town of Paradise Valley and the Commission will have regulatory oversight of the undertaking. Staff would not call this discretionary.

1.06. If Staff agrees, explain why ratepayers and not the party requesting the discretionary service should pay for a discretionary project.

Response from Darron Carlson: Whether Staff agrees or not, there are obvious ratepayer benefits such as better fire fighting protection and lower hazard insurance rates.

1.07. Admit* that, in general, the party requesting a discretionary service normally funds that service.

Response from Darron Carlson: In general, Staff would admit; however, Staff treats each request independently and would make any recommendations based upon the individual circumstances of that request. All ratepayers will benefit from this investment.

1.08. If admitted, explain what is different in this situation that ratepayers should fund a discretionary project.

Response from Darron Carlson: Staff believes that every ratepayer will directly benefit from the completion of the fire flow project.

1.09. Admit* that the inclusion of the fire flow costs will nearly double the Company's rate base.

Response from Darron Carlson: Staff admits that the Company's rate base might double, however that is why the Commission has oversight of this investment. The Commission would only allow expenditures that are prudent and in the public interest.

1.10. Admit* that the Town of Paradise Valley could issue debt to pay the costs of the fire flow projects at a lower cost than the 12% return on equity that the Company is requesting.

Response from Darron Carlson: Staff has no information and/or authority to determine the Town of Paradise Valley's cost of debt, so Staff is unable to respond to this data request item.

1.11. If admitted, explain why ratepayers would be better off paying for the fire flow projects through rates rather than through taxes.

Response from Darron Carlson: See response to data request item 1.10.

1.12. Does Staff believe that the fire flow improvements are prudent expenditures?

Why / Why not?

Response from Darron Carlson: The expenditures that Staff included in the rate base of the subject proceeding have been found to be prudent. Staff has not determined the prudence of any future expenditures as they have not yet occurred.

1.13. Does Staff believe that the fire flow improvements are necessary expenditures?

Why / Why not?

Response from Darron Carlson: In this case, yes, because of the Town of Paradise Valley and the Company's cooperation in dealing with the fire flow situation. In addition, see response to 1.01.

1.14. What does Staff believe is the proper ratemaking treatment for the balance of fire flow improvement expenditures that the Company anticipates?

Why?

Response from Darron Carlson: As per Carlson direct testimony at page 3, lines 12 through 19, Staff believes that future fire flow expenditures will be reviewed during future rate case proceedings. The Commission will then decide what the proper ratemaking treatment should be.

1.15. Did Staff's engineer observe each main that makes up the additions described in Staff's Engineering Report at page 7?

Response from Steve Olea: As was stated in the Staff Engineering Report, "It was not practical to visit all of the new hydrants that have been installed." However, "the Company took Staff to the areas where the transmission and distribution mains have been installed..." As is the case with all water companies, Staff does not actually "observe" mains that have been installed and are in operation, since they are underground.

1.16. Did Staff's investigation consider other, less expensive alternatives to provide additional fire-flow protection?

Response from Steve Olea: No.

1.17. If so, please describe what Staff found out, and why the recommended improvements are a better alternative.

Response from Steve Olea: See response to 1.16.

*To the extent the statement is denied, please provide an explanation for the denial.

ATTACHMENT B

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS MOHAVE WATER AND WASTEWATER DISTRICTS	DOCKET NO. W-01303A-06-____

DIRECT TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JANUARY 13, 2006

The Secondary (non-enforceable) Drinking Water Standard for these contaminants is:

Manganese:	0.05 mg/l
Sulfate:	250 mg/l
Chloride:	250 mg/l

The Company plans to make an additional connection to Bermuda Water for purposes of purchasing and blending water. However, we expect only slight improvement in the levels of these contaminants.

Q. FIRE FLOW HAS BEEN AN ISSUE IN SEVERAL OTHER COMMUNITITES SERVED BY ARIZONA-AMERICAN. HAS IT BECOME AN ISSUE IN THE MOHAVE DISTRICT?

A. In November 2005, the Bullhead City Mayor and the Bullhead City Fire Chief called for a meeting with Arizona American Water to discuss this issue. I was unable to attend, however the Mayor and Fire Chief voiced their concern for adequate fire flow to our local Operations Superintendent. The City recently adopted the 2003 International Fire Code and would like to see a minimum of 1000 gallons-per-minute flow throughout Bullhead City. Currently our system cannot meet this standard in many locations. I am working to schedule a meeting in early 2006 to continue the discussion on the issue.

Q. IF BULLHEAD CITY CONTINUES TO PUSH FOR FIRE FLOW SYSTEM IMPROVEMENTS, HOW DO YOU INTEND TO HANDLE THEIR CONCERNS?

A. We have been very successful in two communities, Paradise Valley and Sun City/Youngtown, in forming community-based task forces to address this issue in a comprehensive and strategic manner. I would propose the same task force approach with Bullhead City. These investments are discretionary in nature and the community support

in Paradise Valley has been strong and unwavering. In Sun City / Youngtown, we are still attempting to build community understanding and support for the willingness to pay increased water rates to support the required infrastructure investments to increase fire flows. This same cooperative effort between the Company, the community and the Commission would be necessary in Bullhead City.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

STAFF
1 through 14

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC. FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE AT ITS PARADISE VALLEY WATER DISTRICT.	)	DOCKET NO. W-01303A-05-0405

DIRECT

TESTIMONY

OF

JAMES J. DORF

CHIEF ACCOUNTANT

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

JANUARY 16, 2006

ALL-STATE LEGAL®
EXHIBIT
S-1
admitted

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Witness Qualifications #1

EXECUTIVE SUMMARY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405

The direct testimony of Staff witness James J. Dorf addresses the following issues:

Rate Base

1. Plant Held for Future Use – Staff is recommending an adjustment to decrease test year Plant In-Service by $138,682 for property not currently used and useful.

2. Plant for Public Fire Safety – Staff is recommending an adjustment to increase Plant In-Service by $3,018,867 to provide rate base treatment for the Company's plant expenditures related to its fire safety program that was treated as Construction Work in Progress by the Company.

3. Accumulated Depreciation – Staff is recommending an adjustment to increase the Company's test year Accumulated Depreciation by $107,315 for errors in applying the half-year convention depreciation methodology.

4. Working Capital - Deferred Maintenance – Staff is recommending an adjustment to eliminate $90,286 of maintenance costs that were deferred inappropriately.

5. Working Capital – Cash Working Capital Allowance – Staff is recommending an adjustment to eliminate the Company's calculation of $168,133 for a positive Cash Working Capital Allowance. Staff discovered errors in the Company's calculations and notes that most Class A companies yield a negative, rather than a positive, cash working capital allowance.

Gain on Sale of Land

Staff recommends a shorter amortization period for a surcredit related to the sharing of a gain of $481,680.84 on the sale of land.

INTRODUCTION

Q. Please state your name and business address.

A. My name is James J. Dorf. I am the Chief Accountant employed by the Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. Briefly describe your responsibilities as the Chief Accountant.

A. I am responsible for supervising the examination and verification of financial and statistical information included in utility rate applications, developing revenue requirements, designing rates, preparing written reports and/or testimonies and related schedules that present Staff's recommendations to the Commission. I am also responsible for testifying at formal hearings on these matters.

Q. Please describe your educational background and professional experience.

A. I received a Bachelor of Science degree in Accounting from Northern Michigan University and a Master of Science degree in Business Administration from Northern Illinois University. I am also a Certified Public Accountant. My qualifications and professional experience are summarized on Exhibit 1.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. I am presenting Staff's analysis and recommendations for Rate Base and the rate treatment for a gain on the sale of land regarding Arizona-American Water Company, Inc.'s ("AAWC" or "Company") rate application for its Paradise Valley Water District.

SUMMARY OF ADJUSTMENTS

Q. Please summarize the adjustments addressed in this testimony.

Rate Base

1. Plant Held for Future Use - An adjustment to decrease test year Plant In-Service by $138,682 for property not currently used and useful.
2. Plant for Public Fire Safety - An adjustment to increase Plant In-Service by $3,018,867 to provide rate base treatment for the Company's plant expenditures related to its public fire safety program that was treated as Construction Work in Progress by the Company.
3. Accumulated Depreciation – An adjustment to increase the Company's test year Accumulated Depreciation by $107,315 for errors in applying the half-year convention depreciation methodology.
4. Working Capital - Deferred Maintenance – An adjustment to eliminate $90,286 of maintenance costs that were deferred inappropriately.
5. Working Capital – Cash Working Capital Allowance – An adjustment to eliminate the Company's calculation of $168,133 for a positive Cash Working Capital Allowance. Staff discovered errors in the Company's calculations and notes that most Class A companies yield a negative, rather than a positive, cash working capital allowance.

Gain on Sale of Land

Staff proposes a shorter amortization period of three years for a surcredit related to the sharing of a gain of $481,680.84 on the sale of land.

RATE BASE REVIEW

Q. Please comment on the Staff's review of the Company's rate base.

A. Staff conducted an on-site visit at the Company's local office and reviewed invoices and other documents related to plant additions and retirements since the last general rate application. Based upon that review, Staff is recommending five adjustments to the Company's adjusted test year rate base.

The Company did not prepare a Reconstruction Cost New less Depreciation ("RCND") study and will use Original Cost Rate Base ("OCRB") for its fair value determination.

Q. Did the Company propose any adjustments to its test year plant balance?

A. Yes, it did. The Company included an allocation of capital cost totaling $73,781 related to its corporate and district office and the related accumulated depreciation of $30,033. Staff has reviewed the adjustment and finds it reasonable.

The Company also made an adjustment to exclude $3,646,198 of construction work in progress. Although Staff concurs that construction work in progress should be excluded, Staff has made an adjustment for fire flow construction which was in service in 2005. This is discussed in more detail below.

STAFF RECOMMENDED RATE BASE ADJUSTMENTS

Q. Please describe Rate Base Adjustment #1 for Plant Held for Future Use.

A. The Company has pumping and other miscellaneous equipment at well #17 that is not currently being used to provide water service to its customers. The equipment has not been used for several years. The Company cites the Commission's 1995 Decision No. 59079 as its basis for including the amount in rate base.

The National Association of Regulatory Utility Commissioners' (NARUC") Uniform System of Accounts ("USOA") requires that plant owned and held for future use shall be "held for such service in the future under a definite plan."[1] The Company has evidently not used this equipment in over ten years. The Company has not informed Staff of any definitive plan to use this equipment and it should, therefore, not be included in rate base. Staff is, therefore, excluding $138,682 (Schedule JJD-3) from rate base.

Q. Please describe Rate Base Adjustment #2 regarding Plant for Public Fire Safety.

A. In Commission Decision No. 68303, the Company received a Public Safety/Fire Flows Accounting Order authorizing the deferral of capital costs incurred by the Paradise Valley system for public safety fire flow. The Company had incurred $3,018,867 for the fire flow project as of December 31, 2004. The Company has indicated that this first phase of the project was placed in service during 2005. Staff is recommending that the costs incurred to date be included in rate base at this time rather than deferring the costs for later recovery pursuant to the accounting order (Schedule JJD-4).

Staff witness Alexander Igwe is sponsoring an adjustment to depreciation expense related to the inclusion of these assets in rate base.

The entire fire flow project is expected to cost approximately $16 million and be completed by 2009. Including approximately $3 million in rate base now will help to minimize the cost deferral to future periods of the facilities placed in service during 2005.

[1] NARUC Uniform System of Accounts instruction for Account 103, Plant Held for Future Use.

Q. Does Staff typically recommend that plant placed in service after the end of the test year be included in rate base?

A. No, it does not. Staff is recommending inclusion of the fire flow project to encourage improvement in public fire safety and minimize the deferral of costs to future periods. Additionally, the project is revenue neutral and does not materially reduce operating expenses.

Q. Please describe Rate Base Adjustment #3 for Accumulated Depreciation.

A. Staff performed its own calculation of depreciation expense for each of the years since the Company's last rate case (July 1, 1998 through and including December 31, 2004). The calculation indicated that the Company's proposed Accumulated Depreciation total of $9,913,869 was substantially understated.

The Company reviewed Staff's calculation and made revisions to properly reflect retirements and disposals. The Company and Staff are now in agreement with a revised total for Accumulated Depreciation of $10,021,184 (Schedule JJD-5). An adjustment to test year Accumulated Depreciation of $107,315 has been recorded as Rate Base Adjustment #3.

Q. Please describe Rate Base Adjustment #4 for Working Capital –Deferred Maintenance.

A. In determining the Company's proposed working capital allowance of $350,946, it included $92,226 for Programmed Maintenance. The Company indicated that the balance was for tank painting expenses. The Company stated that "if a maintenance item is costly,

480

the Company will defer these costs and amortize them over the life of the expected benefit."[2]

The USOA only permits painting costs to be capitalized if it is "Painting, first cost."[3] The second and subsequent painting, whether "costly" or not should be expensed, not deferred. Staff is, therefore, recommending elimination of $92,226 from the Working Capital Allowance (Schedule JJD-6).

Q. Please describe Rate Base Adjustment #5 for Working Capital – Cash Working Capital Allowance.

A. The Company included, in its Working Capital calculation, $168,133 as a Cash Working Capital Allowance. Staff has typically found that most sophisticated utilities will have a negative rather than a positive Cash Working Capital Allowance. In reviewing the Company's supporting calculations, one of the largest components of it its cash working capital was property taxes.[4] The Company calculated property taxes to have positive increase in its allowance. Property taxes in Arizona, as a component of a utility's cost of service, are typically collected anywhere from 175 to 200 days before payment is due. Thus, property taxes should always have a negative effect on the cash working capital.

Because of this and other errors, Staff is recommending elimination of the Company's Cash Working Capital Allowance of $168,133 (Schedule JJD-7).

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[2] Response to RUCO Data Request 2-11.
[3] USOA, Account 304, Structures and Improvements.
[4] Company Workpapers, page 148, line 18.

STAFF RECOMMENDED ORIGINAL COST RATE BASE

Q. Based upon the above adjustments, what is Staff recommending as the Company's Original Cost Rate Base.

A. As indicated on Schedule JJD-1, Staff is recommending an OCRB of $14,165,666.

GAIN ON SALE OF LAND

Q. Please describe the Company's proposed surcredit for a gain on the sale of land.

A. The Company sold a parcel of land in 2004 which was previously used as an operations/customer center on Casa Blanca Road. The property was no longer used and useful as operations had been moved to another location.

The sale price was $900,000 and after deducting transaction expenses and taxes, a net of tax gain of $481,680.84 was realized.

Q. What disposition has the Company proposed with respect to this gain?

A. The Company is proposing to share this gain 50/50 between the Company and ratepayers.

Q. Is this typically what is done when utility plant is sold for a gain?

A. Yes it is. Unless there are unusual circumstances, gains are typically shared between shareholders and the ratepayers.

Q. How is the Company proposing to share half of the gain with ratepayers?

A. The Company will utilize a monthly fixed cost surcredit based on meter size, and the surcredit shall be spread over five years. The ratepayer's share of the gain is $240,840.42.

Q. Does Staff agree with the Company's proposal?

A. Staff agrees with all but one aspect of the proposal. Staff is recommending that the amortization period be reduced to three years, similar to the time period selected by Staff for amortization of rate case expense. Since the Company may be filing a rate application in that time frame, Staff will be able evaluate the status of any remaining amounts to be refunded, if any.

Staff recommends that the Company recalculate the surcredit with an amortization period of three years.

Q. Does this conclude your testimony?

A. Yes, it does.

Exhibit 1

WITNESS QUALIFICATIONS FOR JAMES J. DORF
1200 West Washington Street, Phoenix, Arizona 85007

EDUCATION:

Master of Science in Business Administration, specialization in Accounting, Northern Illinois University

Bachelor of Science, Accounting, Northern Michigan University

Certified Public Accountant

EXPERIENCE:

Chief Accountant, Financial & Regulatory Analysis Section, Utilities Division, Arizona Corporation Commission, 2004 to present.

Adjunct Professor of Accounting, Western International University, 2002 to 2004. Introductory & Cost Accounting. On-line Cost Accounting.

Chief Financial Officer/Vice President, Great Lakes Gas Transmission Company, 1978 to 2001. Complete financial, regulatory, and tax compliance responsibilities for a $2 billion interstate natural gas pipeline system. Issued over $750 million in privately placed Senior Notes. Responsible for preparing numerous general rate and purchased gas adjustment filings before the Federal Regulatory Energy Commission.

Audit Supervisor, KPMG Peat Marwick, CPA's, 1973 to 1978. Supervisory responsibility for audits of manufacturing, insurance, contracting, governmental and other entities. Computer audit specialist. Income tax return preparation and compliance.

Appeared as expert witness or submitted written testimony in rate proceedings before the Federal Energy Regulatory Commission, on tax policy and regulatory accounting issues before legislative bodies and tax litigation in Minnesota and Michigan.

Member, American Institute of Certified Public Accountants.
Member, National Association of Regulatory Utility Commissioners, Staff Subcommittee on Accounting and Finance.
Past member of the American Gas Association Accounting Committee.
Past member of the Interstate Natural Gas Association of America Accounting and Tax Committees.

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule JJD-1

RATE BASE - ORIGINAL COST

LINE NO.		[A] COMPANY AS FILED	[B] STAFF ADJUSTMENTS		[C] STAFF AS ADJUSTED
1	Plant in Service	$ 29,478,687	$ 2,880,184	A	$ 32,358,872
2	Regulatory Asset - AFUDC Debt	$ 950			$ 950
3	Less: Accumulated Depreciation	9,913,869	107,315	B	10,021,184
4	Net Plant in Service	$ 19,565,769	$ 2,772,869		$ 22,338,638
	DEDUCTION				
7	Net Contributions in Aid of Construction (CIAC)	6,486,559	-		6,486,559
8	Advances in Aid of Construction (AIAC)	635,912	-		635,912
9	Customer Deposits	3,500	-		3,500
10	Meter Advances	-	-		-
11	Deferred Income Tax Credits	1,139,528	-		1,139,528
12	Total Deduction	8,265,499			8,265,499
	ADDITIONS				
13	Working Capital	350,946	(258,419)	C	92,527
14	Prepayments	-	-		-
15	Supplies Inventory	-	-		
16	Total Additions	350,946	(258,419)		92,527
17	Original Cost Rate Base	$ 11,651,216	$ 2,514,450		$ 14,165,666

Adjustments:
A. Per plant adjustments on Schedule JJD-3 and JJD-4
B. Per accumulated depreciation adjustment on Schedule JJD-5
C. Per working capital adjustments on Schedule JJD-6 and JJD-7

References:
Column [A]: Company Schedule B-1
Column [B]: Staff Schedule JJD-2
Column [C]: Column [A] + Column [B]

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

SUMMARY OF ORIGINAL COST RATE BASE ADJUSTMENTS

LINE NO.	ACCT. NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] Plant-not used ADJ #1	[C] Plant-Fire Safety ADJ #2	[D] Accum. Depreciat. ADJ #3	[E] Work. Capital ADJ #4	[F] Work.Capital ADJ #5	[I] STAFF ADJUSTED
		PLANT IN SERVICE:							
1	300000	Property Held For Future Use	$ 138,682	$ (138,682)					$ -
2	301000	Organization	15,350						15,350
6	303500	Land & Land Rights TD	8,324						8,324
8	304100	Structures & Improvements SS	7,953						7,953
9	304200	Structures & Improvements P	69,131						69,131
10	304300	Struct & Imp WT	3,038,848						3,038,848
11	304400	Struct & Imp TD	23,864						23,864
12	304500	Struct & Imp AG	20,130						20,130
14	304700	Struct & Imp Store,Shop,Gar	93,285						93,285
15	304800	Struct & Imp Misc	149,284						149,284
16	307000	Wells & Springs	1,252,563						1,252,563
17	311200	Pump Equip Electric	3,337,081						3,337,081
18	311300	Pump Equip Diesel	59,421						59,421
20	320100	WT Equip Non-Media	5,825,149						5,825,149
13	330000	Dist Reservoirs & Standpipes	912,619						912,619
14	331100	TD Mains 4in & Less	706,252						706,252
15	331200	TD Mains 6in to 8in	3,974,977		2,788,803				6,763,780
16	331300	TD Mains 10in to 16in	5,485,424						5,485,424
17	333000	Services	2,178,857						2,178,857
18	334100	Meters	328,579						328,579
19	334200	Meter Installations	103,799						103,799
20	335000	Hydrants	746,904		230,064				976,968
21	340100	Office Furniture & Equip	63,617						63,617
22	340200	Comp & Periph Equip	99,216						99,216
23	340300	Computer Software	164,275						164,275
42	340500	Other Office Equipment	25,224						25,224
43	341100	Trans Equip Lt Duty Trks	14,087						14,087
44	341300	Trans Equip Autos	19,307						19,307
45	341400	Trans Equip Other	13,606						13,606
46	343000	Tools,Shop,Garage Equip	83,867						83,867
47	345000	Power Operated Equipment	147,066						147,066
49	346100	Comm Equip Non-Telephone	290,493						290,493
50	346300	Comm Equip Other	81,454						81,454
54			29,478,687	(138,682)	3,018,867	-	-	-	32,358,872
60		AFUDC Debt	950	-	-	-	-	-	950
61		Total Plant in Service	$ 29,479,637	$ (138,682)	$ 3,018,867	$ -	$ -	$ -	$ 32,359,822
62		Less: Accumulated Depreciation	9,913,869			107,315			10,021,184
63		Net Plant in Service (L59 - L 60)	$ 19,565,768	$ (138,682)	$ 3,018,867	$ (107,315)			$ 22,338,638
64									
65		DEDUCTIONS:							
68		Net Contribution in Aid of Construction	6,486,559						6,486,559
69		Advances in Aid of Construction (AIAC)	635,912	-	-	-	-	-	635,912
70		Customer Deposits	3,500	-	-	-	-	-	3,500
71		Meter Advances	-	-	-	-	-	-	-
72		Deferred Income Tax Credits	1,139,528	-	-	-	-	-	1,139,528
73		Total Deductions	$ 8,265,499						8,265,499
74		ADDITIONS:							
75		Cash Working Capital Allowance	350,946	-	-	-	(90,286)	(168,133)	92,527
76		Prepayments	-	-	-	-	-	-	-
77		Supplies Inventory	-	-	-	-	-	-	-
		Total Additions	$ 350,946				(90,286)	(168,133)	92,527
82		Original Cost Rate Base	$ 11,651,215	$ (138,682)	$ 3,018,867	$ (107,315)	$ (90,286)	$ (168,133)	$ 14,165,666

ADJ #		References:
1	Plant Held For Future Use	Schedule JJD-3
2	Plant for Public Fire Safety	Schedule JJD-4
3	Accumulated Depreciation	Schedule JJD-5
4	Working Capital	Schedule JJD-6
5	Working Capital	Schedule JJD-7

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule JJD-3

RATE BASE ADJUSTMENT #1 - PLANT HELD FOR FUTURE USE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Plant Held for Future Use	$ 138,682	$ (138,682)	$ -
2	Total	**$ 138,682**	**$ (138,682)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule B-1, Page 1
Company Workpaper, Page 141

Column [B]: Column [C] - Column [A]

Column [C]: Testimony

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
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Schedule JJD-4

RATE BASE ADJUSTMENT #2 - PLANT FOR PUBLIC FIRE SAFETY

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Public Safety Plant - Fire Hydrants	$ -	$ 230,064	$ 230,064
2	Public Safety Plant - Transmission & Distribution Mains	-	2,788,803	2,788,803
3	Total	$ -	$ 3,018,867	$ 3,018,867

REFERENCES:

Column [A]: Company, Schedule PSS-1

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, All
Company Response to Staff Data Request STF 4.1

Schedule JJD-5

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

RATE BASE ADJUSTMENT #3 - ACCUMULATED DEPRECIATION

CALCULATION OF ACCUMULATED DEPRECIATION

Summary of Accumulated Depreciation

Description	Year	Depreciation	Retirement/ Disposal	Net
Accumulated Depreciation Per Decision No. 61831		3,297,629.00		3,297,629
Accumulated Depreciation for second half of 1998		468,302.41	(41,996.06)	426,306
Accumulated Depreciation	for 1999	1,015,660.06	(341,849.14)	673,811
Accumulated Depreciation	for 2000	1,104,087.99	(14,544.58)	1,089,543
Accumulated Depreciation	for 2001	1,131,952.13	(72,436.77)	1,059,515
Accumulated Depreciation	for 2002	1,179,383.33	(7,630.85)	1,171,752
Accumulated Depreciation	for 2003	1,216,545.82	(28,600.00)	1,187,946
Accumulated Depreciation	for 2004	1,221,495.15	(123,182.97)	1,098,312
Common Plant Allocation		16,368.38		16,368
Total Staff Recommended		10,651,424.27	(630,967.60)	10,021,184
Company Proposed				9,913,869
Staff Adjustment				**$ 107,315**

REFERENCES:

Mr. Joel Reiker's (of Arizona-American Water Company) recalculation of Staff's work-paper on accumulated depreciation.

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule JJD-6

RATE BASE ADJUSTMENT #4 - WORKING CAPITAL - DEFERRED MAINTENANCE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	DDA-Program Maintenance	$ 90,226	$ (90,226)	$ -
2	Total	**$ 90,226**	**$ (90,226)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule B-5
Company Workpaper, Page 146

Column [B]: Column [C] - Column [A]

Column [C]: Testimony

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule JJD-7

RATE BASE ADJUSTMENT #5 - WORKING CAPITAL - CASH WORKING CAPITAL ALLOWANCE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Cash Working Capital Allowance	$ 168,133	$ (168,133)	$ -
2	Total	**$ 168,133**	**$ (168,133)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule B-5
Company Workpaper, Page 148

Column [B]: Column [C] -Column [A]

Column [C]: Testimony

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC. FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE AT ITS PARADISE VALLEY WATER DISTRICT.	)	DOCKET NO. W-01303A-05-0405

SURREBUTTAL

TESTIMONY

OF

JAMES J. DORF

CHIEF ACCOUNTANT

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

MARCH 6, 2006

ALL-STATE LEGAL®
EXHIBIT
S-2
admitted

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EXECUTIVE SUMMARY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405

The surrebuttal testimony of Staff witness James J. Dorf addresses the following issues:

Rate Base

1. Plant Held for Future Use – Staff has reconsidered its position based on information provided by Arizona-American Water Company, Inc. ("Company") and will not recommend an adjustment to decrease test year Plant In-Service by $138,682 for plant held for future use.

2. Plant for Public Fire Safety – The Company agrees with Staff's recommendation to increase Plant In-Service by $3,018,867 to provide rate base treatment for the Company's plant expenditures related to its fire safety program that was treated as Construction in Progress by the Company. Staff does not agree with the Company's proposed additional increase to the fire safety plant of $105,164 for the Jackrabbit mains project or the $420,755 for Nauni Valley Drive.

3. Accumulated Depreciation – The Company agrees with Staff's recommended adjustment to increase the Company's test year Accumulated Depreciation by $107,315 for errors in applying the half-year convention depreciation methodology.

4. Working Capital - Deferred Maintenance – Staff has reconsidered its recommended adjustment and now agrees with the Company to include the deferred tank painting costs in rate base.

5. Working Capital – Cash Working Capital Allowance – Staff continues to recommend its adjustment to eliminate the Company's revised calculation of a positive Cash Working Capital Allowance of $115,182.

Gain on Sale of Land

Staff recommends a shorter amortization period for a surcredit proposed by the Company related to the sharing of a gain of $481,680.84 on the sale of land. The Company has not indicated whether it accepts Staff's recommendation for the shorter time period.

INTRODUCTION

Q. Please state your name and business address.

A. My name is James J. Dorf. I am the Chief Accountant employed by the Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. Briefly describe your responsibilities as the Chief Accountant.

A. I am responsible for supervising the examination and verification of financial and statistical information included in utility rate applications, developing revenue requirements, designing rates, preparing written reports and/or testimonies and related schedules that present Staff's recommendations to the Commission. I am also responsible for testifying at formal hearings on these matters.

Q. Are you the same James J. Dorf who previously submitted pre-filed testimony in this case?

A. Yes, I am.

PURPOSE OF SURREBUTTAL TESTIMONY

Q. What is the purpose of your surrebuttal testimony in this proceeding?

A. The purpose of my surrebuttal testimony is to respond, on behalf of the Utilities Division ("Staff"), to certain rebuttal testimony by Arizona-American Water Company, Inc. ("Company").

SUMMARY OF SURREBUTTAL TESTIMONY

Q. Please indicate the scope and order of your surrebuttal testimony.

A. My surrebutal testimony responds to the Company's rebuttal testimony in the follow areas and in the following order:

Rate Base

1. Plant Held for Future Use – Staff recommended an adjustment to decrease test year Plant In-Service by $138,682 for property not currently used and useful. Staff has reconsidered its position and now agrees with the Company.
2. Plant for Public Fire Safety – The Company agrees with Staff's recommended adjustment to increase Plant In-Service by $3,018,867 to provide rate base treatment for the Company's plant expenditures related to its public fire safety program. The Company proposes to increase this amount by $430,919 for plant placed in service after the Company's filing. Staff does not include this additional amount.
3. Accumulated Depreciation – An adjustment to increase the Company's test year Accumulated Depreciation by $107,315 for errors in applying the half-year convention depreciation methodology has been accepted by the Company.
4. Working Capital - Deferred Maintenance – A Staff adjustment to eliminate $90,286 of deferred maintenance costs has been reconsidered and Staff will now include such amount in rate base.
5. Working Capital – Cash Working Capital Allowance – Staff recommended an adjustment to eliminate the Company's calculation of $168,133 for a positive Cash Working Capital Allowance. Staff discovered errors in the Company's calculations. The Company has recalculated its Cash Working Capital and now proposes an allowance of $115,182. However, Staff continues to recommend a zero allowance.

Gain on Sale of Land

Staff continues to recommend a shorter amortization period of three years for a Company proposed surcredit related to the sharing of a gain on the sale of land. The Company did not comment on this recommendation.

RATE BASE SURREBUTTAL TESTIMONY

Q. Please describe The Company's rebuttal testimony regarding Staff recommended Rate Base Adjustment #1 for Plant Held for Future Use.

A. The Company cites the Commission's 1995 Decision No. 59079 as its basis for including $138,682 of Plant Held for Future use in rate base and also notes similar treatment in Decision No. 61831 dated July 20, 1999.

The Company also indicated that, in fact, one of the back up pumps included in this account was used for a repair to well number 16 during the test year. Since the Company has actually used the equipment, Staff will no longer recommend its adjustment to remove the equipment from rate base.

Because the Company has used this equipment, Staff recommends that the Company transfer the equipment from Plant Held for Future use to its appropriate Uniform System of Accounts ("USOA") capital account and use its authorized rates to depreciate the equipment.

Q. Please describe rebuttal comments on Staff Rate Base Adjustment #2 regarding Plant for Public Fire Safety.

A. The Company agrees with Staff's recommendation to include $3,018,867 in rate base for the fire flow project. The Company also proposes to increase the amount by $430,919 for

additional work orders that have closed since the Company's filing. The two projects that closed were the Jackrabbit/Invergordon mains work order ($105,164) and the Nauni Valley Drive project ($420,755). Company witness Joseph E. Gross stated in his rebuttal testimony that the "Nauni Valley Drive improvements entered service on January 3, 2006." Gross Rebuttal Testimony at p. 1. Company witness Joel M. Reiker did not provide an in service date for the Jackrabbit/Invergordon mains work order. He did, however, request a rate base amount of deferred depreciation and post-in-service AFUDC beginning in October, 2005. Reiker Rebuttal Testimony at p. 21.

Staff does not agree with the increase since both projects were placed into service not only after the Company's filing but also after Staff Engineer's inspection of the system. In Decision No. 61831, the Commission stated that:

> In order to allow Staff and intervenors an adequate time to review and audit any such adjustments, the Company shall limit its adjustments to add post-TY plant to include only plant that is used and useful and in service within 90 days of the date that the rate application is deemed sufficient.

Decision No. 61831 at p. 4. Staff filed a sufficiency letter on July 18, 2005. Therefore, the Nauni Valley Drive improvements did not meet the 90 day test. Staff also has not had sufficient time to review and audit the Jackrabbit/Invergordon mains. Additionally, the Company has an accounting order[1] under which this equipment can be deferred for future rate treatment.

[1] Commission Decision No. 68303.

Q. Has the Company proposed any additional adjustments to rate base related to the fire flow project?

A. Yes, it has. It proposes to include $168,590 of additional plant for the accumulated deferred depreciation and return that will accumulate on the two above noted projects. The Company also proposes a countervailing increase in accumulated depreciation of $56,481.

Q. Does Staff accept these proposed adjustments?

A. No, it does not. Staff's reasons are identical to those offered for the Jackrabbit and Nuani Valley Drive projects. As previously mentioned, the Company has an accounting order which permits the Company to defer depreciation expense and a return until the projects are included a future rate case proceeding.

Q. Has the Company accepted Staff's recommended Rate Base Adjustment #3 for Accumulated Depreciation?

A. Yes. The Company has worked with Staff and now agrees with Staff's recommended adjustment to increase accumulated depreciation by $107,315.

Q. Please describe rebuttal testimony regarding Rate Base Adjustment #4 for Working Capital –Deferred Maintenance.

A. Staff has reviewed the USOA Account No. 186 description and noted that companies can add sub-accounts "if desired (such as deferred tank painting expense)". It appears that tank painting deferrals are a recognized industry practice. Staff, therefore, will not continue to recommend the deletion, from rate base, of $90,286 in deferred tank painting costs.

Q. Please describe rebuttal testimony regarding Staff's Rate Base Adjustment #5 for Working Capital – Cash Working Capital Allowance.

A. The Company has recalculated its cash working allowance to correct for errors, include certain additional expenses and accept certain adjustments proposed by RUCO. The Company's revised cash working capital allowance is $115,182. RUCO's direct testimony supported a cash working capital allowance of negative $71,468.

Staff has concerns regarding the Company's revised calculations. The Company continues to support its computations as yielding a positive cash working capital. The Company has used 175.5 lag days for its property tax computation. The Company asserts that 175.5 days is reflective of its actual property tax payment dates, and it should be adopted in this case.

The Company evidently *chose* to pay its taxes earlier than required. Staff has consistently used approximately 212 days as the appropriate lag days for property taxes and is reflective of when the taxes must be paid. Using 212 days in the Company's revised cash working capital computation would reduce the allowance by approximately $20,000.

Q. Are there other errors in the Company's calculation?

A. Yes, there were. RUCO also noted several errors. In RUCO's direct testimony, witness Coley testified that the expenses in the Company's Schedule B-5 did not correspond with expenses in Schedule C-2. RUCO also indicates that the Company's property tax lag days should be much higher (213.5 lag days)[2]. These discrepancies clearly indicate that the Company has not met the burden of proving that it, in fact, has a positive cash working capital allowance.

[2] See RUCO Direct Schedule TJC-5, page 3 0f 6.

Staff still considers the Company's calculations suspect and will continue to recommend no allowance for cash working capital. Staff recommends the elimination of the Company's revised Cash Working Capital Allowance of $115,182.

GAIN ON SALE OF LAND

Q. Does Staff continue to recommend a shorter amortization period for the Company's proposed surcredit for a gain on the sale of land?

A. The Company proposed a surcredit to refund 50 percent of the gain on a parcel of land sold in 2004. The Company proposed a monthly fixed cost surcredit based on meter size, and the surcredit be amortized over five years. The ratepayer's after tax share of the gain is $240,840.

Staff continues to recommend that the amortization period be reduced to three years rather than five. The Company did not comment on making a revised calculation for the shorter period.

Q. Does this conclude your testimony?

A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

JEFF HATCH-MILLER
Chairman
WILLIAM A. MUNDELL
Commissioner
MARC SPITZER
Commissioner
MIKE GLEASON
Commissioner
KRISTIN K. MAYES
Commissioner

IN THE MATTER OF THE APPLICATION OF ARIZONA AMERICAN 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY WATER DISTRICT	)	DOCKET NO. W-01303A-05-0405

DIRECT

TESTIMONY

OF

DENNIS ROGERS

PUBLIC UTILITIES ANALYST V

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

JANUARY 16, 2006

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EXHIBIT
S-3
admitted

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Calculation of Expected Infinite Annual Growth in Dividends DRR-7

Multi-Stage DCF Estimates DRR-8

EXECUTIVE SUMMARY

The direct testimony of Staff witness Dennis Rogers addresses the following issues:

Capital Structure – Staff recommends that the Commission adopt a capital structure for Paradise Valley ("Applicant") for this proceeding consisting of 63.3 percent debt and 36.7 percent equity.

Cost of Equity – Staff recommends that the Commission adopt a 10.4 percent return on equity ("ROE") for Paradise Valley. Staff's estimated ROE for the Applicant is based on cost of equity estimates for the sample companies ranging from 9.6 percent for the discounted cash flow method ("DCF") to 10.0 percent for the capital asset pricing model ("CAPM"). Staff's ROE recommendation includes a 0.6 percent upward adjustment attributable to the Applicant's greater leverage than the sample companies. Staff advises the Applicant not to expect Staff to recommend similar upward ROE adjustments due to financial risk in subsequent rate cases. Instead, the Applicant is advised to maintain greater equity in its capital structure.

Staff recommends requiring Paradise Valley to attain, and thereafter maintain, a capital structure (equity, long-term debt and short-term debt) with equity representing 40 to 60 percent of total capital prior to its next rate filing.

Overall Rate of Return – Staff recommends that the Commission adopt an overall rate of return ("ROR") of 7.2 percent.

Dr. Kolbe's Testimony – The Commission should reject the Company proposed 12.0 percent ROE because the empirical capital asset pricing model ("ECAPM") used to derive it is erroneously based on a market value capital structure instead of book value capital structure. The Company's DCF, upon which it did not rely on for its ROE estimate, is skewed because of the sole use of analysts' projections.

I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Dennis Rogers. I am a Public Utilities Analyst employed by the Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. Briefly describe your responsibilities as a Public Utilities Analyst.

A. In my position as a Public Utilities Analyst, I perform regulatory audits of rate base and operating income components and perform studies to estimate the cost of capital component in rate filings to determine the overall revenue requirement. I also analyze requests for financing authorization and for issuance of Certificates of Convenience and Necessity ("CC&N").

Q. Please describe your educational background and professional experience.

A. I am a graduate of Arizona State University, receiving a Bachelor of Business Administration with an accounting emphasis. I began employment as a Staff Public Utilities Analyst in 2001. Since that time, I have provided Staff's analysis and recommendations to the Commission through Staff Reports and testimonies at hearings concerning rate base, operating income, revenue requirements, rate design and other matters associated with rate cases and CC&N's. I have also attended numerous schools and seminars related to regulatory and business issues.

Q. What is the scope of your testimony in this case?

A. I provide Staff's recommended rate of return in this case. I discuss the appropriate rate of return ("ROR") for establishing the revenue requirement for Paradise Valley Water Company ("Paradise Valley" or "Applicant").

SUMMARY OF TESTIMONY AND RECOMMENDATIONS

Q. Briefly summarize how Staff's cost of capital testimony is organized.

A. Staff's cost of capital testimony is presented in nine sections. Section I is this introduction. Section II discusses the concept of weighted average cost of capital ("WACC"). Section III presents the concept of capital structure and presents Staff's recommended capital structure for Paradise Valley in this proceeding. Section IV discusses the concepts of return on equity ("ROE") and risk. Section V presents the methods employed by Staff to estimate Paradise Valley's ROE. Section VI presents the findings of Staff's ROE analysis. Section VII presents Staff's final cost of equity estimates for Paradise Valley. Section VIII presents Staff's ROR recommendation. Finally, section IX presents Staff's comments on the direct testimony of the Applicant's witnesses, A. Lawrence Kolbe and Michael J. Vilbert.

Q. Have you prepared any exhibits to accompany your testimony?

A. Yes. I prepared eight schedules (DRR-1 to DRR-8) that support Staff's cost of capital analysis.

Q. What is Staff's recommended rate of return for Paradise Valley?

A. Staff recommends a 7.2 percent overall ROR. Staff's ROR is based on cost of equity estimates for Paradise Valley that range from 10.2 percent to 10.6 percent (inclusive of a

0.6 percent upward financial risk adjustment). Staff's recommended 7.2 percent ROR is calculated in Schedule DRR-1.

PARADISE VALLEY'S PROPOSED OVERALL RATE OF RETURN

Q. Briefly summarize the Applicant's proposed capital structure, cost of debt, return on equity and overall rate of return for this proceeding.

A. Table 1 summarizes the Applicant's proposed capital structure, cost of debt, return on equity and overall rate of return in this proceeding:

Table 1

	Weight	Cost	Weighted Cost
Long-term Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	12.0%	4.4%
Cost of Capital/ROR			**7.8%**

Paradise Valley is proposing an overall rate of return of 7.8 percent.

II. THE WEIGHTED AVERAGE COST OF CAPITAL

Q. Please define the cost of capital concept.

A. The cost of capital is the opportunity cost represented by anticipated returns or earnings that are foregone by choosing one investment over others with equivalent risk.

Q. What is the overall cost of capital?

A. The overall cost of capital is equal to the weighted average cost of capital ("WACC").

Q. How is the WACC calculated?

A. The WACC is calculated by adding the weighted expected returns of a firm's securities. Equation 1 that follows presents the WACC as a mathematical expression.

Equation 1.

$$WACC = \sum_{i=1}^{n} W_i * r_i$$

In this equation, W_i is the weight given to the ith security (the proportion of the ith security relative to the portfolio) and r_i is the expected return on the ith security.

Q. Can you provide an example demonstrating application of Equation 1?

A. Yes. For purposes of this example, assume that an entity has a capital structure composed of 60 percent debt and 40 percent equity. Also, assume that the embedded cost of debt is 7.5 percent and the expected return on equity, i.e. the cost of equity, is 10.0 percent. Calculation of the WACC is as follows:

$$WACC = (60\% * 7.5\%) + (40\% * 10.0\%)$$

$$WACC = 4.50\% + 4.00\%$$

$$WACC = 8.50\%$$

The weighted average cost of capital in this example is 8.50 percent. The entity in this example would need to earn an overall rate of return of 8.50 percent to cover its cost of capital.

III. CAPITAL STRUCTURE

Background

Q. Please explain the capital structure concept.

A. The capital structure of a firm is the relative proportions of short-term debt, long-term debt (including capital leases), preferred stock and common stock that are used to finance the firm's assets.

Q. How is the capital structure expressed?

A. The capital structure of a company is expressed as the percentage of each component of the capital structure (capital leases, short-term debt, long-term debt, preferred stock and common stock) relative to the total capital (the total sum of all the components of the capital structure).

The capital structure for an entity that is financed by $20,000 of capital leases, $40,000 of long-term debt, $5,000 of preferred stock and $35,000 of common stock is shown is Table 2.

Table 2

Component			%
Capital Leases	$20,000	($15,000/$100,000)	20.0%
Long-Term Debt	$40,000	($80,000/$100,000)	40.0%
Preferred Stock	$5,000	($5,000/$100,000)	5.0%
Common Stock	$35,000	($35,000/$100,000)	35.0%
Total	$100,000		100%

The capital structure in this example is composed of 20.0 percent capital leases, 40.0 percent long-term debt, 5.0 percent preferred stock and 35.0 percent common stock.

Q. Does Staff's testimony explain the relationship between capital structure the cost of equity capital?

A. Yes. The relationship between capital structure and the cost of equity capital is discussed in Section IV of this testimony.

Paradise Valley's Capital Structure

Q. What capital structure does the Paradise Valley propose?

A. The Applicant proposes a capital structure composed of 63.3 percent debt and 36.7 percent common equity.

Q. Is the Applicant's proposed capital structure the same capital structure recommended by Staff?

A. Yes, it is.

Q. How does Paradise Valley's capital structure compare to capital structures of publicly traded water utilities?

A. The Applicant's capital structure is composed of 63.3 percent debt and 36.7 percent equity. Schedule DRR-3 shows the capital structures of six publicly traded water companies ("sample water companies") as of October 2005. The average capital structure for the sample water utilities is comprised of approximately 50.9 percent debt and 49.1 percent equity.

IV. RETURN ON EQUITY

Background

Q. Please define the term cost of equity capital.

A. The cost of equity capital is determined by the market. It is the rate of return that investors expect to earn on their equity investment in an entity given its risk. In other words, the cost of equity to an entity is the investors' expected rate of return on other investments of similar risk.

Q. Is there any relationship between interest rates and the cost of equity capital?

A. Yes. The cost of equity moves in the same direction as interest rates. This relationship is integral to the capital asset pricing model ("CAPM") formula. The CAPM is a market based model used for estimating the cost of equity capital that is discussed in Section V of this testimony. Thus, a comparison of current interest rates to historical interest rates provides insight for how the current cost of equity capital might be compared to the cost of equity capital historically.

Q. What has been the general trend of interest rates in recent years?

A. A chronological chart of interest rates is a good tool to show interest rate history and identify trends. Chart 1 graphs intermediate U.S. treasury rates from November 1999 to November 2005.

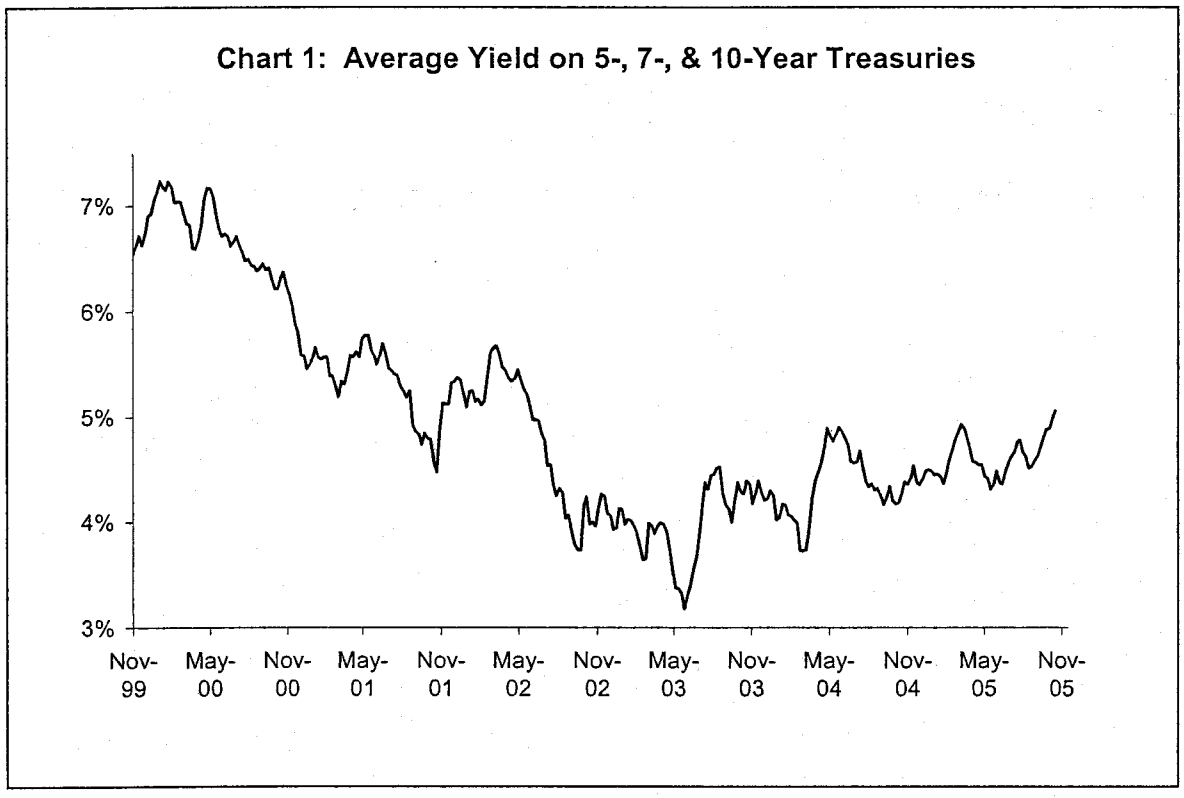
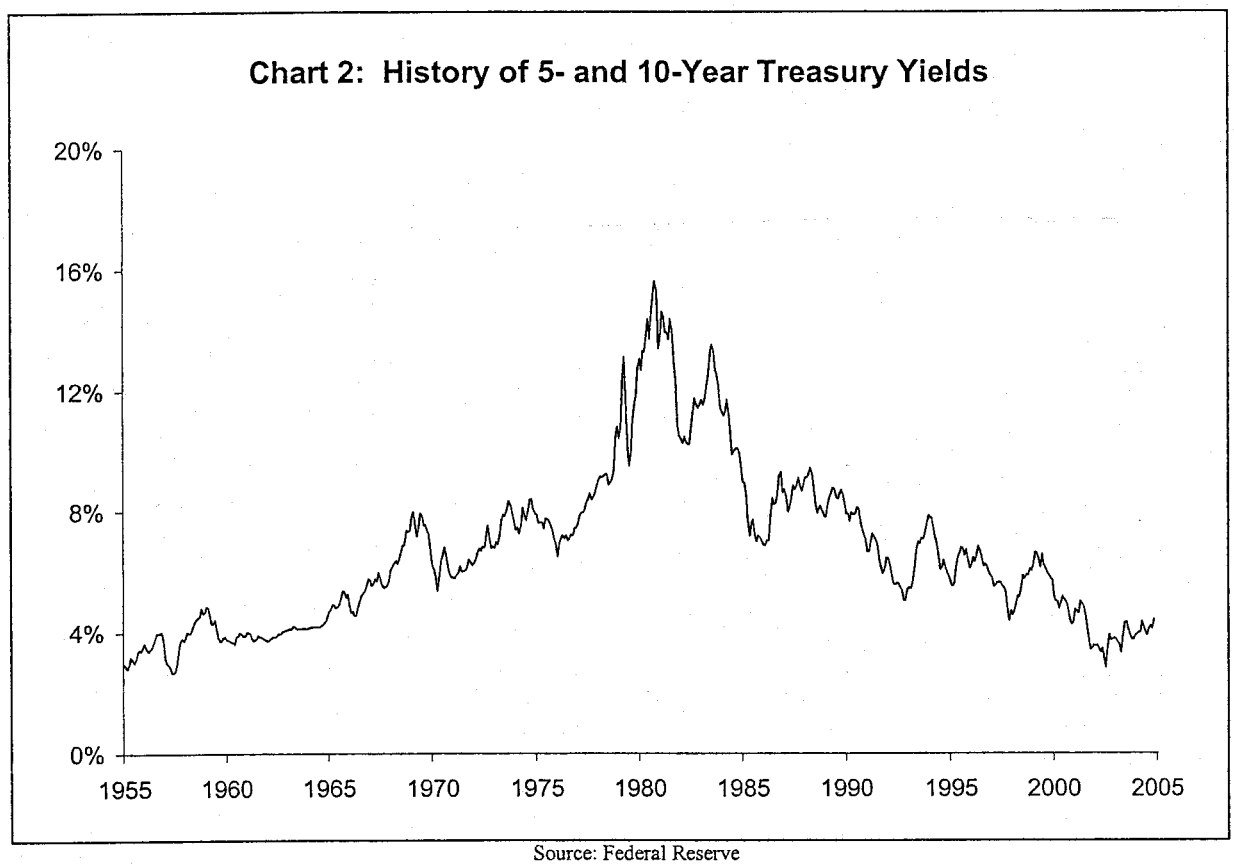


Chart 1 shows that intermediate interest rates trended downward from the end of 1999 to mid-2003 and have remained low despite a slight upward trend in the past two years.

Q. Where are current interest rates compared to a longer term history of interest rates and what does it suggest for capital costs?

A. Chart 2 shows that interest rates have trended downward for more than 20 years. It also shows that interest rates over the past 40 years have been consistently higher than currently. The inference from the relationship between interest rates and the cost of equity capital is that current capital costs are low in comparison to historical capital costs.



Source: Federal Reserve

Q. Do actual returns represent the cost of equity?

A. No. The cost of equity represents investors' *expected* returns not realized returns.

Q. What have historical returns been for average risk securities?

A. Jeremy Siegel, a Wharton School finance professor, found that the average arithmetic and compound annual returns on U.S. equities have been 9.7 percent and 8.3 percent, respectively, using 199 years of data through 2001.[1]

[1] Siegel, Jeremy J. *Stocks for the Long Run*, third edition. McGraw-Hill, New York. 2002. p.13.

Q. Is information available that leads to an understanding of the relationship between the equity returns required for a regulated water utility versus the market?

A. Yes. A comparison of betas, a component of the CAPM discussed in Section V, for the water utility industry and the market provide insight into this relationship. The average beta (0.71)[2] for a water utility is lower than the theoretical average beta for all stocks (1.0). According to the CAPM formula, the cost of equity capital moves in the same direction as beta. Since the beta for the water utility industry is lower than the beta for the market, the implication is that the required return on equity for a regulated water utility is below the average required return on the market.

Risk

Q. Please define risk.

A. Risk, as it relates to an investment, is generally recognized as the variability or uncertainty of the returns on the investment. Risk is often separated into two components. Those components are market risk (systematic risk) and non-market risk (unique risk).

Q. What is market risk?

A. Market risk or systematic risk is the risk that changes in the stock market as a whole will cause changes in the stock price of a particular entity. Market risk is related to the economy-wide perils that affect all business such as inflation, interest rates, and general business cycles. Market risk affects all stocks and it cannot be eliminated by diversification, i.e. it is non-diversifiable. However, the impact on each entity is not necessarily the same. Accordingly, market risk is the only risk that affects the cost of

[2] See Schedule DRR-6

equity. Market risk is measured by beta. Beta reflects both the business risk and financial risk of an entity.

Q. What is non-market risk?

A. Non-market (unique risk) is risk related an individual entity. There is no correlation among entities for unique risk; accordingly, it can be eliminated through diversification. That is, investors can eliminate unique risk by holding a diversified investment portfolio. Unique risk is not measured by beta. Since unique or firm-specific risk can be eliminated through diversification, it does not affect the cost of equity capital.

Q. What additional return can investors expect to account for unique risk?

A. Nothing. Investors who hold diversified portfolios can eliminate unique risk, and therefore do not require any related additional return. Since investors who choose to be less than fully diversified must compete in the market with fully diversified investors, the former cannot expect to be compensated for unique risk.

Q. How are the business and financial risks reflected by beta defined?

A. Business risk is that risk which is associated with the fluctuation in earnings due to the basic nature of an entity's business. Financial risk is that risk which affects shareholders due to a firm's use of fixed obligation (i.e., debt) financing.

Q. Is the cost of equity affected by both business and financial risk?

A. Yes.

Q. What is the relationship between the capital structure of a firm and its financial risk?

A. As previously discussed, the relative proportions of short-term debt, long-term debt (including capital leases), preferred stock and common stock used to finance an entity's assets represent its capital structure. Financial risk increases as an entity includes a greater proportion of fixed obligation financing in its capital structure (i.e., become more leveraged). An increase in financial risk is reflected in the market risk measured by beta resulting in an increase in an entity's cost of equity.

Q. How does Paradise Valley's financial risk compare to the sample water companies' financial risk?

A. Paradise Valley's capital structure is composed of 63.3 percent debt and 36.7 percent equity. The debt in Paradise Valley's capital structure causes its shareholders to bear some financial risk. Schedule DRR-3 shows the capital structures of six publicly traded water companies ("sample water companies") as of October 2005, as well as Paradise Valley's capital structure. As of October 2005, the sample water utilities were capitalized with approximately 50.9 percent debt and 49.1 percent equity, while Paradise Valley's capital structure consists of 63.3 percent debt and 36.7 percent equity. Thus, Paradise Valley's shareholders bear more financial risk than the shareholders of the sample companies.

V. ESTIMATING THE COST OF EQUITY

Introduction

Q. Did Staff directly estimate the cost of equity for the Applicant?

A. No. Staff did not directly estimate Paradise Valley's cost of equity for two reasons. First, Paradise Valley's stock is not publicly traded; therefore, its cost of equity cannot be

estimated because the required information is not available to perform the analysis. Second, Staff using an average of a representative sample group reduces the potential for random fluctuations resulting in a more reliable estimate.

Q. What companies did Staff select as proxies or comparables for Paradise Valley?

A. Staff selected six publicly traded water utilities shown in Schedule DRR-3. Staff chose these six entities because they derive most of their earnings from regulated operations, and they are currently analyzed by *The Value Line Investment Survey Small and Mid Cap Edition* ("*Value Line Small Cap*") and *The Value Line Investment Survey* ("*Value Line*") making the necessary information available for a cost of capital estimation for Paradise Valley.

Q. What models did Staff implement to estimate Paradise Valley's cost of equity?

A. The cost of equity is determined by the market; therefore, Staff used two market-based models to estimate the cost of equity for Paradise Valley: the discounted cash flow ("DCF") model and the CAPM.

Q. Explain why Staff chose the DCF and CAPM market-based models?

A. Staff chose to use the DCF and CAPM models because they are widely recognized as appropriate models and have been used extensively to estimate the cost of equity. A description of the DCF model and then the CAPM model begins immediately below.

Discounted Cash Flow Model Analysis

Q. Please provide a brief summary of the theory upon which the DCF method of estimating the cost of equity is based.

A. The theory underlying the DCF method of estimating the cost of capital is that the cost of equity is that discount rate which equates the current market price to all future cash flows expected by investors. That is, the cost of equity is the rate that future expected cash flows (primarily dividends) must be discounted to equal a given market price.

In the 1960s, Professor Myron Gordon pioneered the use of the DCF method to estimate the cost of capital for a public utility. The DCF model has become widely used due to its theoretical merit and its simplicity.

Q. How is the DCF model applied?

A. The DCF model is applied via a mathematical formula where the current market price, the expected dividend, and projected dividend growth rate are inputs, while the discount rate (cost of equity) is the result. The formula can be applied to a sample of companies that exhibit similar risk to the entity whose cost of equity is being estimated and the results averaged to arrive at an estimate of the cost of equity for the subject entity.

Q. Did Staff apply more than one version of the DCF Model?

A. Yes. Staff applied two versions of the DCF model: the constant-growth DCF Model and the multi-stage or non-constant growth DCF. The constant-growth DCF Model assumes that an entity will grow indefinitely at the same rate. Alternately, the non-constant growth DCF model does not assume one constant, indefinite dividend grow rate.

The Constant-Growth DCF

Q. What is the mathematical formula used in Staff's constant-growth DCF analysis?

A. The constant-growth DCF formula used in Staff's analysis is:

Equation 2:

$$K = \frac{D_1}{P_0} + g$$

where:

K	=	the cost of equity
D_1	=	the expected annual dividend
P_0	=	the current stock price
g	=	the expected infinite annual growth rate of dividends

Equation 2 assumes that the entity has a constant earnings retention rate and that its earnings are expected to grow at a constant rate. According to Equation 2, a stock with a current market price of $10 per share, an expected annual dividend of $0.50 per share and an expected dividend growth rate of 4.0 percent per year has a cost of equity to the entity of 9.0 percent reflected by the sum of the dividend yield ($0.50 / $10 = 5.0 percent) and the 4.0 percent annual dividend growth rate.

Q. How did Staff calculate the dividend yield component (D_1/P_0) of the constant-growth DCF formula?

A. Staff calculated the yield component of the DCF formula by dividing the expected annual dividend[3] (D_1) by the spot stock price (P_0) after the close of the market on November 2, 2005, as reported by *MSN money*.

[3] Value Line Summary & Index. 10-28-05

Q. Why did Staff use the spot stock price rather than a historical average stock price to calculate the dividend yield component of the DCF formula?

A. Use of the current market stock price (spot stock price) is consistent with finance theory, i.e., the efficient market hypothesis. This hypothesis asserts that the current stock price reflects information investors use to form expectations of future returns. Use of a historical average of stock prices illogically discounts the most recent information in favor of less recent information. The latter is stale and is representative of underlying conditions that may have changed.

Q. How did Staff estimate the dividend growth (g) component of the constant-growth DCF model represented by Equation 2?

A. The dividend growth component for Staff's constant-growth DCF model is the average of six different estimation methods as shown in Schedule DRR-7. Staff computed both historical and projected growth estimates on dividend-per-share ("DPS")[4], earnings-per-share ("EPS")[5] and sustainable growth bases.

Q. Why did Staff examine EPS growth to estimate the dividend growth component of the constant-growth DCF model?

A. Staff examined EPS growth (both historical and projected) because dividends are dependent on earnings. Dividend distribution in excess of earnings results in capital contraction. Continued capital contraction is not sustainable in the long run, and it is inconsistent with the constant-growth DCF model. Therefore, EPS growth is an appropriate consideration for estimating expected dividend growth.

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[4] Derived from information provided by *Value Line*

[5] Derived from information provided by *Value Line*

Q. How did Staff estimate historical DPS growth?

A. Staff estimated historical DPS growth by calculating the average rate of growth in DPS of the sample water companies from 1994 to 2004. The results of that calculation are shown in Schedule DRR-4. Staff calculated an average historical DPS growth rate of 2.6 percent for the sample water utilities for the period 1994 to 2004.

Q. How did Staff estimate the projected DPS growth?

A. Staff calculated an average of the projected DPS growth rates for the sample water utilities from *Value Line*. The average projected DPS growth rate is 4.7 percent as shown in Schedule DRR-4.

Q. How did Staff calculate the historical EPS growth rate?

A. Staff estimated historical EPS growth by calculating the average rate of growth in EPS of the sample water companies from 1994 to 2004. The results of that calculation are shown in Schedule DRR-4. Staff calculated an average historical EPS growth rate of 3.5 percent for the sample water utilities for the period 1994 to 2004.

Q. How did Staff estimate the projected EPS growth?

A. Staff calculated an average of the projected EPS growth rates for the sample water utilities from *Value Line*. The average projected EPS growth rate is 14.1 percent as shown in Schedule DRR-4. It is important to take into account that Analysts' projections of the future earnings are usually high[6] and vary widely.

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[6] See Clayman, Michelle R. and Robin A. Schwartz. "Falling in Love Again – Analysts' Estimates and Reality," Financial Analysts Journal, September-October 1994, pg. 68. Dreman, David N. and Michael A. Berry. "Analysts Forecasting Errors and Their Implications for Security Analysts", Financial Analysts Journal, May-June 1995, 30-41.

Q. How did Staff calculate its historical and projected sustainable growth rates?

A. Staff's historical and projected sustainable growth rates were calculated by adding their respective retention growth rate terms (br) to their respective stock financing growth rate terms (vs) as shown in Schedule DRR-5.

Q. What is retention growth?

A. Retention growth is the growth in dividends due to the retention of earnings. Viewed differently, an entity cannot expect to grow dividends if it does not retain any earnings. Retention growth is dependent on the percentage of earnings retained (retention ratio) and the value of earnings. Mathematically, the retention growth rate is the product of the retention ratio and the book/accounting return on equity.

Q. What is the formula for the retention growth rate?

A. The retention growth rate formula is:

Equation 3 :

$$\text{Retention Growth Rate} = br$$

where : b = the retention ratio (1 – dividend payout ratio)
r = the accounting/book return on common equity

Q. How did Staff calculate the average historical retention growth rate (br) for the sample water utilities?

A. First, Staff calculated the retention rate for each of the sample water companies from 1995 to 2004. Then Staff calculated the mean of those results. The historical average retention (br) growth for the sample water utilities is 3.1 percent as shown in Schedule DRR-5.

Q. How did Staff determine projected retention growth rate (br) for the sample water utilities?

A. Staff used the retention growth projections for the sample water utilities for the period 2008 to 2010 from *Value Line*. The projected average retention growth rate is 6.4 percent as shown in Schedule DRR-5.

Q. When can retention growth provide a reasonable estimate of future dividend growth?

A. The retention growth rate is a reasonable estimate of future dividend growth when the retention ratio is reasonably constant and the entity's market price to book value ("market-to-book ratio") is expected to be 1.0. The average retention ratio has been reasonably constant in recent years. However, the market-to-book ratio for the sample water utilities is 2.6, notably higher than 1.0, as shown in Schedule DRR-6.

Q. Is there any financial implication of a market-to-book ratio greater than 1.0?

A. Yes. A market-to-book ratio greater than 1.0 implies that investors expect an entity to earn an accounting/book return on its equity that exceeds its cost of equity. The relationship between required returns and expected cash flows is readily observed in the fixed securities market. For example, assume an entity contemplating issuance of bonds with a face value of $10 million at either 6 percent or 8 percent, and thus, paying annual interest of $600,000 or $800,000, respectively. Regardless of investors' required return on similar bonds, investors will be willing to pay more for the bonds if issued at 8 percent than if the bonds are issued at 6 percent. For example, if the current interest rate required by investors is 6 percent, then they would bid $10 million for the 6 percent bonds and more than $10 million for the 8 percent bonds. Similarly, if equity investors require an 8

percent return and expect an entity to earn accounting/book returns of 12 percent, the market will bid up the price of the entity's stock to provide the required return of 8 percent.

Q. How has Staff generally recognized a market-to-book ratio exceeding 1.0 in its cost of equity analyses in recent years?

A. First, Staff has assumed that investors expect the market-to-book ratio to remain greater than 1.0. Given that assumption, Staff has added a stock financing growth rate (vs) term to the retention ratio (br) term to calculate its historical and projected sustainable growth rates.

Q. Do the historical and projected sustainable growth rates Staff uses to develop its DCF cost of equity in this case continue to include a stock financing growth rate term?

A. Yes.

Q. What is stock financing growth?

A. Stock financing growth is the growth in an entity's dividends due to the sale of stock by that entity. Stock financing growth is a concept derived by Myron Gordon and discussed in his book *The Cost of Capital to a Public Utility.*[7] Stock financing growth is the product of the fraction of the funds raised from the sale of stock that accrues to existing shareholders (v) and the fraction resulting from dividing the funds raised from the sale of stock by the existing common equity (s).

[7] Gordon, Myron J. *The Cost of Capital to a Public Utility*. MSU Public Utilities Studies, Michigan, 1974. pp 31-35.

Q. What is the mathematical formula for the stock financing growth rate?

A. The mathematical formula for stock financing growth is:

Equation 4:

$$\text{Stock Financing Growth} = vs$$

where: v = Fraction of the funds raised from the sale of stock that accrues to existing shareholders

s = Funds raised from the sale of stock as a fraction of the existing common equity

Q. How is the variable *v* presented above calculated?

A. Variable v is calculated as follows:

Equation 5:

$$v = 1 - \left(\frac{book\ value}{market\ value}\right)$$

For example, assume that a share of stock has a $40 book value and is selling for $50. Then, to find the value of v, the formula is applied:

$$v = 1 - \left(\frac{40}{50}\right)$$

In this example, v is equal to 0.20.

Q. How is the variable *s* presented above calculated?

A. Variable s is calculated as follows:

Equation 6:

$$s = \frac{\text{Funds raised from the issuance of stock}}{\text{Total existing common equity before the issuance}}$$

For example, assume that an entity has $100 in existing equity, and it sells $10 of stock. Then, to find the value of *s*, the formula is applied:

$$s = \left(\frac{10}{100}\right)$$

In this example, *s* is equal to 10.0 percent.

Q. What is the *vs* term when the market-to-book ratio is equal to 1.0?

A. A market-to-book ratio equal to 1.0 reflects that investors expect an entity to earn a book/accounting return on their equity investment equal to the cost of equity. When the market-to-book ratio is equal to 1.0, none of the funds raised from the sale of stock by the entity accrues to the benefit of existing shareholders, i.e., the term *v* is equal to zero (0.0). Consequently, the *vs* term is also equal to zero (0.0). When stock financing growth is zero, dividend growth depends solely on the *br* term.

Q. What is the affect of the *vs* term when the market-to-book ratio is greater than 1.0?

A. A market-to-book ratio greater than 1.0 reflects that investors expect an entity to earn a book/accounting return on their equity investment greater than the cost of equity. Equation 5 shows that when the market-to-book ratio is greater than 1.0 the *v* term is also greater than zero. The excess by which new shares are issued and sold over book value per share of outstanding stock is a contribution that accrues to existing stockholders in the form of a higher book value. The resulting higher book value leads to higher expected earnings and dividends. Continued growth from the *vs* term is dependent upon the continued issuance and sale of additional shares at a price that exceeds book value per share.

Q. What *vs* estimate did Staff calculate from its analysis of the sample water utilities?

A. Staff estimated an average stock financing growth of 2.8 percent for the sample water utilities as shown in Schedule DRR-5.

Q. What would occur if an entity had a market-to-book ratio greater than 1.0 due to investors expecting earnings to exceed the cost of equity capital and the entity subsequently experienced newly authorized rates equal to its cost of equity capital?

A. There would be downward pressure on the entity's stock price to reflect the change in future expected cash flows because, in theory, the market-to-book ratio should decline to 1.0.

Q. What is implied by Staff's continued use of the *vs* term in the historical and projected sustainable growth rates Staff uses to develop its DCF cost of equity is this case?

A. The implication is that Staff expects the market-to-book ratio to continue to exceed 1.0, and that the water utilities will continue to issue and sell stock at prices exceeding book value to provide benefits to existing shareholders. If the authorized ROEs for water utilities are established at the cost of equity capital, the market-to-book ratio should decline to 1.0. If that occurs, the stock financing term would no longer be necessary. If investors expect the average market-to-book ratio of the sample water utilities to fall to 1.0 due to authorized ROEs equaling the cost of equity capital, then Staff's inclusion of the *vs* term in its constant-growth DCF analysis might result in an over estimate of its sustainable dividend growth rate and the resulting DCF ROE estimate.

Q. What are Staff's historical and projected sustainable growth rates?

A. Staff's estimated historical sustainable growth rate is 6.0 percent based on an analysis of earnings retention for the sample water companies. Staff's projected sustainable growth rate is 10.2 percent based on retention growth projected by *Value Line*. Schedule DRR-5 presents Staff's estimates of the sustainable growth rate.

Q. What is Staff's expected infinite annual growth rate in dividends?

A. Staff averaged historical and projected dividends per share ("DPS"), earnings per share ("EPS"), and sustainable growth estimates to calculate the expected infinite annual growth rate in dividends. Schedule DRR-7 presents the calculation of the expected infinite annual growth rate in dividends. Staff's estimate is 6.9 percent.

Q. What is Staff's constant-growth DCF estimate?

A. Staff's constant-growth DCF estimate is 9.7 percent, which is shown in Schedule DRR-2.

The Multi-Stage DCF

Q. Why did Staff implement the multi-stage DCF model to estimate Paradise Valley's cost of equity?

A. As previously stated, Staff used the multi-stage DCF model to consider the assumption that dividends may not grow at a constant rate. Staff's multi-stage DCF model incorporates two growth rates: a near term growth rate and a long-term growth rate.

Q. What is the mathematical formula for the multi-stage DCF?

A. The multi-stage DCF formula is shown in the following equation:

Equation 7 :

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

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

As mentioned above, Staff incorporated two growth rates. This assumes that investors expect dividends to grow at a one rate in the near-term ("Stage -1 growth") and another rate in the long-term ("Stage-2 growth").

Q. What steps did Staff take to implement its multi-stage DCF cost of equity model?

A. First, Staff projected a stream of dividends for each of the sample water utilities using near-term and long-term growth rates. Second, Staff calculated the rate (cost of equity) which equates the present value of the forecasted stream of dividends to the current stock price for each of the sample water utilities. Then, Staff calculated an average of the individual sample company cost of equity estimates.

Q. How did Staff calculate near-term (stage-1) growth?

A. Staff projected four years of dividends for each of the sample water utilities. Projections for the first twelve months, to the extent available, were from *Value Line*. The dividend projections for the remainder of stage 1 reflect the average dividend growth rate calculated in Staff's constant growth DCF analysis, or 6.9 percent, as shown in Schedule DRR-7.

Q. How did Staff estimate long-term (stage-2) growth?

A. Staff used the arithmetic average rate of growth in gross domestic product ("GDP") from 1929 to 2004[8]. Using the GDP growth rate assumes that the water utility industry is expected to grow at the same rate as the overall economy.

Q. What is the historical GDP growth rate that Staff used to estimate stage-2 growth?

A. Staff used 6.8 percent to estimate the stage-2 growth rate.

Q. What is Staff's multi-stage DCF estimate?

A. Staff's multi-stage DCF estimate is 9.4 percent as shown in Schedule DRR-8.

Q. What is Staff's overall DCF estimate?

A. Staff's overall DCF estimate is 9.6 percent. Staff calculated the overall DCF estimate by averaging the constant growth DCF (9.7%) and multi-stage DCF (9.4%) estimates as shown in Schedule DRR-2.

[8] www.bea.doc.gov

Capital Asset Pricing Model

Q. Please describe the capital asset pricing model.

A. The Capital Asset Pricing Model is concerned with the determination of the prices of capital assets in a competitive market. The CAPM model describes the relationship between a security's investment risk and its market rate of return. This relationship identifies the expected rate of return which investors expect a security to earn so that its market return is comparable with the market returns earned by other securities of similar risk.[9] The CAPM model assumes that investors require a return that is commensurate with the level of risk associated with a particular security. The model also assumes that investors will sufficiently diversify their investments to eliminate any non-systematic or unique risk.[10] In 1990, Professors Harry Markowitz, William Sharpe, and Merton Miller earned the Nobel Prize in Economic Sciences for their contribution to the development of the CAPM.

Q. What sample did Staff use to compute the CAPM to estimate Paradise Valley's cost of equity?

A. Staff used the same sample water utilities for its CAPM computation that it used for its DCF analysis.

Q. What is the mathematical formula for the CAPM?

A. The mathematical formula for the CAPM is:

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[9] David C. Purcell; Cost of Capital – A Practitioner's Guide Pg. 6-1.

[10] The CAPM makes the following assumptions: 1. single holding period 2. perfect and competitive securities market 3. no transaction costs 4. no restrictions on short selling or borrowing 5. the existence of a risk-free rate 6. homogeneous expectations.

Equation 8:

$$K = R_f + \beta (R_m - R_f)$$

where:

R_f	=	risk free rate
R_m	=	return on market
β	=	beta
$R_m - R_f$	=	market risk premium
K	=	expected return

The equation shows that the expected return (K) on a risky asset is equal to the risk-free interest rate (**R_f**) plus the product of the market risk premium ("Rp") (**$R_m - R_f$**) multiplied by beta (β) where beta represents the riskiness of the investment relative to the market.

Q. What did Staff use as an estimate for the risk-free rate of interest in its historical market risk premium CAPM method?

A. Staff calculated an estimate of the risk-free rate of interest by averaging three (five-, seven-, and ten-year) intermediate-term U.S. Treasury securities' spot rates as published in the November 2, 2005, edition of The Wall Street Journal. Staff's estimated risk-free rate for use in its historical market risk premium CAPM method is 4.6 percent[11] as shown in Schedule DRR-2.

[11] Average yield on 5-, 7-, and 10-year Treasury notes according to the November 2, 2005, edition of *The Wall Street Journal*: 4.49%, 4.56%, and 4.67%, respectively.

Q. What did Staff use as an estimate for the risk-free rate of interest in its current market risk premium CAPM method?

A. Staff used the spot rate on 30-year U.S. Treasury notes as published in the November 2, 2005 edition of *The Wall Street Journal.*

Q. Why do U.S Treasury security spot rates provide an appropriate representation of the risk-free rate?

A. U.S. Treasury spot rates represent a good estimate of a risk free rate because they have virtually no chance of default and are backed by the U.S. Government. In addition, they are verifiable, objective and readily available.

Q. What does beta measure?

A. Beta measures the systematic risk of a particular entity's stock relative to the market's beta which is 1.0. Systematic risk is the only risk that cannot be diversified away; therefore it is the only risk that is relevant when estimating an entity's required return. Since the market's beta is 1.0, a security with a beta higher than 1.0 is riskier than the market and a security with a beta lower than 1.0 is less risky than the market.

Q. How did Staff estimate a proxy for Paradise Valley's beta?

A. Staff averaged the *Value Line* betas of the sample water utilities and used this average as a proxy for Paradise Valley's beta. Schedule DRR-6 shows the *Value Line* betas for each of the sample water utilities. Staff's estimated beta for Paradise Valley is 0.71.

Q. What is a descriptive explanation for the expected market risk premium (Rm – Rf)?

A. Descriptively, the expected market risk premium is the expected return on all common stocks minus the risk free rate. It is the additional amount of return over the risk-free rate that investors expect to receive from investing in the market (or an average-risk security). Staff used two approaches to calculate the market risk premium: the historical market risk premium approach and the current market risk premium approach.

Q. What is the historical market risk premium estimate approach used by Staff?

A. The historical market risk premium estimate approach assumes that if the long-run average market risk premium is used consistently to estimate the expected market risk premium, it should, on average, yield the correct premium. In this approach Staff assumed that the average historical market risk premium estimate is a reasonable estimate of the expected market risk premium.

Q. How did Staff calculate the historical market risk premium?

A. Staff calculated the historical market risk premium by averaging the historical arithmetic differences between the S&P 500 and the intermediate-term government bond income returns published in the Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation 2005 Yearbook* for the period 1926-2004. Ibbotson Associates calculated the historical risk premium by averaging the historical arithmetic differences between the S&P 500 and the intermediate-term government bond income returns. Staff's historical market risk premium estimate is 7.2 percent as shown in Schedule DRR-2.

Q. How did Staff calculate the current market risk premium estimate?

A. Staff first derived a DCF ROE of 12.37 (1.7 + 10.67[12]) percent using the expected dividend yield (1.7 percent over the next twelve months) and the annual per share growth rate (10.67 percent) that *Value Line* projects for all dividend-paying stocks under its review (November 4, 2005) as inputs. Then, Staff used the DCF-derived ROE (12.37 percent), the current long-term risk-free rate (4.80 percent 30-year Treasury note) and the market's average beta of 1.0 as inputs into equation 8 to solve for the implied current market risk premium of 7.57 percent. [13]

Q. What is the range of Staff's expected market risk premium estimates?

A. Staff's market risk premium estimates range from 7.2 percent to 7.6 percent.

Q. What is Staff's overall CAPM estimate?

A. Staff's overall CAPM estimate is 10.0 percent. Staff's overall CAPM estimate is the average of the historical market risk premium CAPM (9.7 percent) and the current market risk premium CAPM (10.2 percent) estimates as shown in Schedule DRR-2.

VI. SUMMARY OF STAFF'S COST OF EQUITY ANALYSIS

Q. What is the result of Staff's constant-growth DCF analysis to estimate of the cost of equity to the sample water utilities?

A. Schedule DRR-2 shows the result of Staff's constant-growth DCF analysis. The result of Staff's constant-growth DCF analysis is as follows:

---

[12] The three to five year price appreciation is 50%. $1.50^{0.25} - 1 = 10.67\%$

[13] 12.37% = 4.80% + (1) (7.57%)

k = 2.8% + 6.9%

k = **9.7%**

Staff's constant-growth DCF estimate of the cost of equity to the sample water utilities is 9.7 percent.

Q. What is the result of Staff's multi-stage DCF analysis to estimate of the cost of equity for the sample utilities?

A. Schedule DRR-8 shows the result of Staff's multi-stage DCF analysis. The result of Staff's multi-stage DCF analysis is:

Company	**Equity Cost Estimate (k)**
American States Water	9.4%
California Water	9.6%
Aqua America	8.5%
Connecticut Water	9.9%
Middlesex Water	9.9%
SJW Corp	8.9%
Average	**9.4%**

Staff's multi-stage DCF estimate of the cost of equity for the sample water utilities is 9.4 percent.

Q. What is Staff's overall DCF estimate of the cost of equity for the sample utilities?

A. Staff's overall DCF estimate of the cost of equity for the sample utilities is 9.6 percent. Staff's overall DCF estimate was calculated by averaging Staff's constant growth DCF and Staff's multi-stage DCF estimates as shown in Schedule DRR-2.

Q. What is the result of Staff's historical market risk premium CAPM analysis to estimate of the cost of equity for the sample utilities?

A. Schedule DRR-2 shows the result of Staff's CAPM analysis using the historical risk premium estimate. The result is as follows:

$$k = 4.6\% + 0.71 * 7.2\%$$

$$k = 9.7\%$$

Staff's CAPM estimate (using the historical market risk premium) of the cost of equity to the sample water utilities is 9.7 percent.

Q. What is the result of Staff's current market risk premium CAPM analysis to estimate the cost of equity for the sample utilities?

A. Schedule DRR-2 shows the result of Staff's CAPM Analysis using the current market risk premium estimate. The result is:

$$k = 4.8\% + 0.71 * 7.6\%$$

$$k = 10.2\%$$

Staff's CAPM estimate (using the current market risk premium) of the cost of equity to the sample water utilities is 10.2 percent.

Q. What is Staff's overall CAPM estimate of the cost of equity for the sample utilities?

A. Staff's overall CAPM estimate for the sample utilities is 10.0 percent. Staff's overall CAPM estimate is the average of the historical market risk premium CAPM (9.7 percent) and the current market risk premium CAPM (10.2 percent) estimates as shown in Schedule DRR-2.

Q. Please summarize the results of Staff's cost of equity analysis for the sample utilities.

A. The following table shows the results of Staff's cost of equity analysis:

Table 2

Method	Estimate
Average DCF Estimate	9.6%
Average CAPM Estimate	10.0%
Overall Average	**9.8%**

Staff's average estimate of the cost of equity to the sample water utilities is 9.8 percent.

VII. FINAL COST OF EQUITY ESTIMATES FOR PARADISE VALLEY

Q. Does Paradise Valley's capital structure affect its cost of equity?

A. Yes, it does. An entity's financial risk increases with increased leverage placing upward pressure on its cost of equity. The sample water utilities capital structure is composed of 49.1 percent equity and 50.9 percent debt as shown on Staff Schedule DRR-3. Paradise Valley's capital structure is composed of 36.7 percent equity and 63.3 percent debt. Since Paradise Valley's capital structure is more highly leveraged than the sample water utilities capital structure, its stockholders bear additional financial risk, and its cost of equity is higher than that of the water sample utilities.

Q. Has Staff quantified the effect of Paradise Valley's capital structure on its cost of equity?

A. Yes. Staff used the methodology developed by Professor Robert Hamada of the University of Chicago, which incorporates capital structure theory with the CAPM, to estimate the effect of Paradise Valley's capital structure on its cost of equity. Staff calculated a financial risk adjustment for Paradise Valley's of positive 60 basis points.

Staff estimated a 10.4 percent cost of equity for Paradise Valley by addition of the financial risk adjustment to Staff's average estimate of the cost of equity to the sample water utilities.

The calculation is as follows:

Equation 7:

Adjusted ROE = Overall average estimated ROE + Financial risk adjustment

Adjusted ROE for Paradise Valley = 9.8% + 0.6%

Adjusted ROE for Paradise Valley = 10.4%

Q. What is Staff's ROE recommendation for Paradise Valley?

A. Staff recommends an ROE of 10.4 percent for the Applicant based on cost of equity estimates for the sample companies ranging from 9.6 percent (DCF) to 10.0 percent (CAPM) and a 60 basis point upward adjustment for the relatively greater financial risk in Paradise Valley's capital structure compared to the sample companies.

Q. Should Staff continue to recommend an upward adjustment for financial risk for future Paradise Valley rate cases?

A. No. Staff recommends that the Company be required to obtain a minimum 40 percent equity position prior to filing its next rate case. Staff is aware that the Company was ordered by the Commission to file a plan by December 31, 2005 describing a plan to maintain a capital structure between 40 and 60 percent.[14]

[14] Arizona Corporation Commission Opinion and Order, November 14, 2005, Decision No. 68310, Page 15.

VIII. RATE OF RETURN RECOMMENDATION

Q. What is Staff's overall rate of return recommendation for Paradise Valley?

A. Staff recommends a 7.2 percent ROR for the Applicant as shown in Schedule DRR-1 and the following table:

Table 3

	Weight	Cost	Weighted Cost
Long-term Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	10.4%	3.8%
Cost of Capital/ROR			**7.2%**

IX. STAFF'S RESPONSE TO PARADISE VALLEY'S COST OF CAPITAL WITNESSES

DIRECT TESTIMONY OF DR. KOLBE

Q. How does Staff respond to Dr. Kolbe's assertion that "THE MARKET-TO-BOOK RATIO TEST CANNOT BE RIGHT"?

A. The market anomalies discussed in Dr. Kolbe's testimony to support his assertion do not invalidate fundamental financial concepts, but only show that markets are imperfect. Fundamental to pricing of securities is that they are priced to recognize the present value of expected future cash flows. The relationship of securities to expected cash flows is readily observable in the bond markets where bonds issued with stated interest rate greater (lower) than the market rate sell at premiums (discounts). The same principle applies to stocks. Accordingly, a market-to-book ratio for a stock exceeding 1.0 reflects that investors expect future cash flows to exceed the cost of equity capital. The cost of equity is determined by the market; it is independent of the cost of equity authorized by the Commission in setting rates.

Q. How does Staff respond to Dr. Kolbe's assertion "The market-value capital structure is the relevant quantity for analyzing the cost of equity evidence, not book value."?

A. Use of a market value capital structure to estimate the cost of equity is predicated on the underlying erroneous logic that the Commission is obligated to maintain stock prices and perpetuate an ongoing rising spiral between revenues and stock prices. As previously discussed, expected returns in excess of the cost of equity cause market values to exceed book values. Increasing revenues, in turn, increases market values resulting a perpetual upward cycle. Use of a market value capital structure overstates the ROR when the market-to-book ration exceeds 1.0. The following example that assumes a 3.0 market-to-book ratio demonstrates that use of a market value capital structure increases the ROR:

Table 4

Market Value Capital Structure						Book Value Capital Structure			
	Dollars	Percent	Cost	WACC		Dollars	Percent	Cost	WACC
Equity	$150	75%	10%	7.5%		$50	50%	10%	5.0%
Debt	$50	25%	8%	2.0%		$50	50%	8%	4.0%
ROR/WACC				9.5%					9.0%

In this example, use of a market value capital structure increased the ROR from 9.0 percent to 9.5 percent.

Q. How does Staff respond to Dr. Kolbe's assessment that, for the reasons given by Mr. Stephenson, because Paradise Valley has been unable to achieve its authorized rate of return on equity, and to prevent takings, "Fair treatment of investors in such a case requires either changes to the regulatory mechanism so the company does expect to earn its allowed rate of return on average, or an allowed rate of return set enough above the cost of capital to make up for the expected shortfall between the cost of capital and the rate of return the company actually expects to earn?"[15]

A. The Company's position erroneously places its inability to earn the authorized return on the regulatory process. If the regulatory process were at fault, virtually all Arizona utilities would fail to generate authorized returns. The continuous requests by investors for new certificates of convenience and necessity ("CC&N") shows that investors do not support the Company's assertion about the Arizona regulatory process. The Company has not shown that the cause of its under-earnings is the regulatory process. The authorized return affords the Company an opportunity to earn its authorized ROE, not guarantee it. Staff does not support any adjustment to increase the cost of equity related to the regulatory process.

DIRECT TESTIMONY OF DR. VILBERT

Q. How does Staff respond to Dr. Vilbert's use of Market Value Cost of Equity in his sample companies?

A. As mentioned previously, determination of cost of equity based on market value is inappropriate and overstates the cost of equity when the market value exceeds the book value.

[15] Id. Pg. 25 of 53.

Q. How does Staff respond to Dr. Vilbert's sole reliance on securities analysts' forecasts in developing growth rates for his discounted cash flow ("DCF") model?

A. Numerous studies show that using a combination of growth projections is superior to the sole reliance on analysts' forecasts.[16] The Commission has previously recognized that analysts' forecasts are overstated.[17] Therefore, Staff used a more balanced approach that included a combination of analysts' forecasts and historic growth in its DCF model.

Q. How does Staff respond to Dr. Vilbert's criticism of Staff using historical growth rates of earnings and dividends as well as forecasts of earnings and dividend growth rates to estimate the growth rate for the DCF model stating, "Finally, averaging wildly different growth rate estimates in the hopes of having the extremes cancel out call into question whether the DCF model is applicable at this time".

A. Dr. Vilbert uses only projected earnings per share when he performs his analysis. In fact, Staff's analysis, as shown in Schedule DRR-7, shows that it is only the estimated growth rate based on projected earnings per share that is wildly different. That is, the growth estimates for historical dividends, projected dividends and historical earnings per share are 2.6 percent, 4.7 percent and 3.5 percent, respectively, a fairly close knit group. On the contrary, Staff's growth estimate based on the projected earnings per share method preferred by Dr. Vilbert is 14.1 percent[18], a wide variance from the other three estimates.

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[16] Conroy, Robert and Robert Harris. "Consensus Forecasts of Corporate Earnings: Analysts' Forecasts and Time Series Methods," Management Science, Vol. 33 No. 6, June 1987, 725-738. Newbold, Paul, J. Kenton Zumwalt, and Srinivasan Kannan. "Combining Forecasts to Improve Earnings Per Share Prediction-An Examination of Electric Utilities," International Journal of Forecasting, 3, 1987, 229-238.

[17] Arizona Corporation Commission Opinion and Order, Arizona Water Company, March 19, 2004, Decision No. 66849, Page 22.

[18] Dr. Vilbert's estimate is 8.3% (MJV-5).

1 **CONCLUSION**

2 **Q. Please summarize Staff's recommendations.**

3 A. Staff recommends that the Commission adopt a capital structure for Paradise Valley in this
4 proceeding composed of 63.3 percent debt and 36.7 percent equity.

5

6 Staff also recommends that the Commission to adopt a 7.2 percent ROR for the Applicant,
7 which is based on Staff's cost of equity estimates that range from 9.4 percent to 10.2
8 percent plus a 60 basis point upward adjustment for financial risk.

9

10 Staff also recommends that Paradise Valley take whatever action(s) necessary to achieve a
11 consistent minimum of 40 percent equity prior to filing its next rate case. Staff is aware
12 that the Company was ordered by the Commission to file a plan by December 31, 2005
13 describing a plan to maintain a capital structure between 40 and 60 percent.[19]

14

15 **Q. Does this conclude your direct testimony?**

16 A. Yes, it does.

[19] Arizona Corporation Commission Opinion and Order, November 14, 2005, Decision No. 68310, Page 15.

Paradise Valley
Capital Structure
And Weighted Average Cost of Capital
Staff Recommended and Company Proposed

[A]	[B]	[C]	[D]
Description	Weight (%)	Cost	Weighted Cost
Staff Recommended Structure			
Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	10.4%	3.8%
Weighted Average Cost of Capital/ROR			**7.2%**
Company Proposed Structure			
Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	12.0%	4.4%
Weighted Average Cost of Capital/ROR			**7.8%**

[D] : [B] x [C]

Supporting Schedule: DRR-3

Paradise Valley
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			2.8%	+	6.9%	=	9.7%
Multi-Stage DCF Estimate						=	9.4%
Average of DCF Estimates							**9.6%**
CAPM Method	Rf	+	β [5]	x	(Rp)	=	k
Historical Market Risk Premium[3]	4.6%	+	0.71	x	**7.2%** [6]	=	9.7%
Current Market Risk Premium[4]	4.8%	+	0.71	x	7.6% [7]	=	10.2%
Average of CAPM Estimates							**10.0%**
					Average		**9.8%**
					Capital Structure Adjustment		0.6%
					Total		**10.4%**

1 MSN Money and Value Line

2 DRR-7

3 Wall Street Journal (Rf) 5, 7, and 10 year Treasury rates

4 Wall Street Journal (Rf) 30 Year Treasury bond rate

5 Value Line

6 Historical Market Risk Premium (Rp) from Ibbotson Associates SBBI 2005 Yearbook

7 Testimony

Paradise Valley
Average Capital Structure of Sample Water Utilities

[A]	[B]	[C]	[D]
Company	Debt	Common Equity	Total
American States Water	50.6%	49.4%	100.0%
California Water	47.1%	52.9%	100.0%
Aqua America	55.8%	44.2%	100.0%
Connecticut Water	44.0%	56.0%	100.0%
Middlesex Water	61.2%	38.8%	100.0%
SJW Corp	46.6%	53.4%	100.0%
Average Sample Water Utilities	**50.9%**	**49.1%**	**100.0%**
Paradise Valley	**63.3%**	**36.7%**	**100.0%**

Sources:
Sample Water Companies from Value Line
Paradise Valley from Company application Schedule D-1

Paradise Valley
Growth in Earnings and Dividends
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]
Company	Dividends Per Share 1994 to 2004 DPS[1]	Dividends Per Share Projected DPS[1]	Earnings Per Share 1994 to 2004 EPS[1]	Earnings Per Share Projected EPS[1]
American States Water	1.1%	1.9%	1.0%	18.9%
California Water	1.3%	2.3%	1.8%	10.2%
Aqua America	5.8%	9.7%	9.3%	13.3%
Connecticut Water	1.4%	No Projection	2.3%	No Projection
Middlesex Water	2.3%	No Projection	0.9%	No Projection
SJW Corp	3.8%	No Projection	5.5%	No Projection
Average Sample Water Utilities	**2.6%**	**4.7%**	**3.5%**	**14.1%**

1 Value Line

Paradise Valley
Sustainable Growth
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]
Company	Retention Growth **1995 to 2004** br	Retention Growth Projected br	Stock Financing Growth vs	Sustainable Growth **1995 to 2004** br + vs	Sustainable Growth Projected br + vs
American States Water	2.5%	6.7%	1.4%	3.9%	8.1%
California Water	2.5%	4.8%	2.7%	5.2%	7.4%
Aqua America	4.4%	7.6%	7.4%	11.8%	15.0%
Connecticut Water	3.0%	No Projection	0.5%	3.5%	No Projection
Middlesex Water	1.4%	No Projection	4.9%	6.3%	No Projection
SJW Corp	5.0%	No Projection	0.0%	5.0%	No Projection
Average Sample Water Utilities	**3.1%**	**6.4%**	**2.8%**	**6.0%**	**10.2%**

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

Paradise Valley
Selected Financial Data of Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Company	Symbol	Spot Price 11/2/2005	Book Value	Mkt To Book	*Value Line* Beta β	Raw Beta βraw
American States Water	AWR	**31.99**	15.23	2.1	**0.70**	0.52
California Water	CWT	**36.91**	16.02	2.3	**0.75**	0.60
Aqua America	WTR	**33.75**	8.33	4.1	**0.80**	0.67
Connecticut Water	CTWS	**25.50**	11.20	2.3	**0.70**	0.52
Middlesex Water	MSEX	**21.24**	8.20	2.6	**0.70**	0.52
SJW Corp	SJW	**49.25**	19.82	2.5	**0.60**	0.37
Average				**2.6**	**0.71**	**0.53**

[C]: Msn Money

[D]: Value Line

[E]: [C] / [D]

[F]: Value Line

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

Paradise Valley
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Utilities

[A]	[B]
Description	g
DPS Growth - Historical[1]	2.6%
DPS Growth - Projected[1]	4.7%
EPS Growth - Historical[1]	3.5%
EPS Growth - Projected[1]	14.1%
Sustainable Growth - Historical[2]	6.0%
Sustainable Growth - Projected[2]	10.2%
Average	**6.9%**

1 Schedule DRR-4

2 Schedule DRR-5

Paradise Valley
Multi-Stage DCF Estimates
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]
		1	2				
Company	Current Mkt. Price (P_o)[1] 11/2/2005	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	32.0	0.96	0.98	0.99	1.01	6.8%	9.4%
California Water	36.9	1.20	1.22	1.25	1.28	6.8%	9.6%
Aqua America	33.8	0.58	0.63	0.67	0.72	6.8%	8.5%
Connecticut Water	25.5	0.87	0.90	0.93	0.97	6.8%	9.9%
Middlesex Water	21.2	0.72	0.75	0.77	0.80	6.8%	9.9%
SJW Corp	49.3	1.13	1.17	1.21	1.26	6.8%	8.9%

Average **9.4%**

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

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

BEFORE THE ARIZONA CORPORATION COMMISSION

JEFF HATCH-MILLER
Chairman
WILLIAM A. MUNDELL
Commissioner
MARC SPITZER
Commissioner
MIKE GLEASON
Commissioner
KRISTIN MAYES
Commissioner

IN THE MATTER OF THE APPLICATIONS OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND ITS PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON UTILITY SERVICE BY ITS PARADISE VALLEY WATER DISTRICT	)	DOCKET NO. W-01303A-05-0405

SURREBUTTAL

TESTIMONY

OF

DENNIS R. ROGERS

PUBLIC UTILITIES ANALYST V

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

MARCH 6, 2006

ALL-STATE LEGAL®
EXHIBIT
S-4
admitted

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EXECUTIVE SUMMARY
ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY WATER DISTRICT
Docket No. W-01303A-05-0405

The surrebuttal testimony of Staff witness Dennis R. Rogers addresses the following issues:

Capital Structure – Staff recommends that the Commission adopt a capital structure consisting of 63.3 percent long-term debt and 36.7 percent equity for this proceeding.

Cost of Debt – Staff recommends that the Commission adopt a 5.42 percent cost of long-term debt.

Cost of Equity – Staff recommends the Commission adopt a 10.3 percent return on equity ("ROE"). Staff bases its ROE recommendation on its discounted cash flow ("DCF") and capital asset pricing model ("CAPM") and an upward adjustment of 60 basis points for financial risk. Staff's recommended ROE range is 10.0 to 10.6 percent.

Overall Rate of Return - Staff recommends the Commission adopt an overall rate of return ("ROR") of 7.2 percent.

Response to the rebuttal testimony of Applicant's witness Lawrence A. Kolbe
Staff responds to the rebuttal testimony of Lawrence A. Kolbe:

> The present value concept is fundamental to modern financial theory for pricing all capital investments. Dr. Kolbe's rejection of the present value concept for pricing stocks contradicts his use of the discounted cash flow method as one of the determinants in his cost of equity estimate.
>
> Dr. Kolbe's use of market-value capital structures to determine the cost of equity is not widely recognized for utility rate-making. Further, Staff is not aware of any instance where the Arizona Corporation Commission has adopted this method and it is inappropriately dependent upon embedded debt cost.
>
> Dr. Kolbe correctly recognized that Staff's financial risk adjustment is based on book values instead of market values as contemplated by the Hamada procedure. Staff prefers to use the book values because they are readily available, do not require making questionable assumptions regarding the market value of debt and their use is consistent with Staff's use of a book value capital structure. Staff recalculated the financial risk adjustment using Dr. Kolbe's market values. The financial risk adjustment calculated using market values is 20 basis points, 40 basis points less than Staff's recommended upward adjustment of 60 basis points.

INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Dennis R. Rogers. I am a Public Utilities Analyst V employed by the Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. Are you the same Dennis R. Rogers who filed direct testimony in this case?

A. Yes, I am.

Q. What is the purpose of your surrebuttal testimony in this proceeding?

A. The purpose of my surrebuttal testimony in this proceeding is to report on Staff's updated cost of capital analysis with its recommendations concerning Arizona-American Water Company - Paradise Valley Water District cost of capital and to respond to the rebuttal testimony of Arizona-American Water Company - Paradise Valley Water District's ("Paradise Valley" or "Applicant") witness Dr. A. Lawrence Kolbe.

Q. Please explain how Staff's cost of capital surrebuttal testimony is organized.

A. Staff's cost of capital surrebuttal testimony presents the following issues in the order listed:

1. Staff's updated cost of capital analysis and recommendations.
2. Present value concepts concerning the price of stocks and market-to-book ratios.
3. Regulatory use of the Market-Value Capital Structure.
4. Application of the Hamada Equation for determining a financial risk adjustment.
5. Staff's recommendations.

COST OF EQUITY AND OVERALL RATE OF RETURN

Q. Did Staff update its analysis concerning the Applicant's overall rate of return ("ROR") since it filed its direct testimony?

A. Yes.

Q. Did Staff prepare schedules to support its updated ROR analysis?

A. Yes. Staff prepared eight schedules (Surrebuttal Schedules DRR-1 to DRR-8) to support its updated cost of capital analysis.

Q. What is Staff's updated overall rate of return?

A. Staff's updated overall rate of return is 7.1 percent.

Q. What is the cost of equity ("COE") estimate resulting from Staff's updated COE analysis?

A. Staff's updated COE estimate is 10.2 percent, a 0.1 percent decrease from its initial 10.3 percent estimate.

Q. What is Staff recommending for Paradise Valley's COE?

A. Staff continues to recommend the 10.3 percent COE from its direct testimony since the updated COE estimate does not significantly change the overall rate of return, and is still within Staff's range.

Q. What is Staff recommending for Paradise Valley's overall rate of return?

A. Staff continues to recommend the 7.2 percent overall rate of return from its direct testimony. Staff's recommendation is based on a COE of 10.3 percent, a cost of debt at

5.4 percent and a capital structure of 36.7 percent equity and 63.3 percent debt as shown on Schedule DRR-1 of Staff's direct testimony.

PRESENT VALUE CONCEPT VERSUS MARKET VALUE CAPITAL STRUCTURE

Q. Please define the present value concept.

A. The present value concept is a widely recognized financial concept for pricing stocks, fixed income securities and other investments. The present value concept maintains that the current price of an investment is the sum of all future cash flows discounted at an appropriate rate. The concepts of time value of money and present value are fundamental to all capital (investment) decisions.

Q. Does Dr. Kolbe use any method that is based on the present value concept to develop his cost of equity estimate?

A. Yes. Dr. Kolbe gives some weight to the results from Dr. Vilbert's gas distribution companies discounted cash flow method ("DCF") for estimating the cost of equity.[1] DCF is based on the theory that the current market stock price is equal to the present value of all future cash flows discounted at a rate equal to the COE.

Q. Did Dr. Kolbe make a statement in his rebuttal testimony that contradicts his reliance on the present value concept that is integral to the DCF?

A. Yes, Dr. Kolbe makes the following statement:

> "… the market-to-book test cannot be valid. Mr. Rogers does not dispute this demonstration, but instead says that the underlying methodology works for bonds, so it must work for stocks. The conclusion does not logically follow. To the contrary, the view that we understand the processes that underlie stock prices well enough to rely on the market-to-

[1] Direct Testimony of A. Lawrence Kolbe, Docket No. W-01303A-05-0405, June 3, 2005, Page 51.

> book test is, unfortunately, based on pure assumption, not the evidence. The evidence contradicts the assumption."[2]

Dr. Kolbe's position is contradicted by the present value concept upon which he gives weight to develop his cost of equity estimate.

Q. Did Dr. Kolbe make another statement in his rebuttal testimony that is inconsistent with the present value concept?

A. Yes, he made the following statement:

> Q. What about the fact that the present value formulation works well for fixed-income securities?
> A. That is enough to support the *hypotheses* that the same model works as well for stocks. Saying that what works for bonds necessarily tells us what works for stock is like saying that if we understand how to build a bicycle, we must understand how to build a car. In the present case, the only way to maintain the hypothesis that the model underlying the market-to-book test works well enough for regulators to rely on the test is to conclude that the cost of equity for utilities is extraordinarily low, and perhaps negative. I think it is more reasonable to reject the hypothesis, rather than to accept that utility equity holders at the very least require little or no premium for bearing risk, and possibly are willing to pay money for the "privilege."[3]

Again, Dr. Kolbe suggests that the present value theory should be discarded. Cost of equity is determined by the market. Substituting personal intuitions for market determined analysis is not a path toward determining a better estimate of equity capital costs. The purpose of a cost of equity analysis is to determine the cost of equity. Dr. Kolbe's statement implies that the analysis is best served by disregarding a widely recognized financial concept in favor of his personal interpretation.

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[2] Rebuttal Testimony of A. Lawrence Kolbe, Docket No. W-01303A-05-0405, February 13, 2006, Page 4.

[3] Id., Page 33.

REGULATORY USE OF THE MARKET-VALUE CAPITAL STRUCTURE

Q. How does Staff respond to Dr. Kolbe's citing that The Surface Transportation Board, the Missouri Public Service Commission, and three foreign countries, Australia, New Zealand, and the United Kingdom have adopted procedures consistent with the use of market-value capital determination of rate of return as evidence that these principles are relevant in the determination of rate of return?[4]

A. The cited examples represent a small portion of the rate regulated universe and show that this is not a widely accepted methodology. Staff is not aware of any Commission decision that has adopted this methodology.

Q. Even if it is accepted that Dr. Kolbe's rebuttal analysis correctly shows that his Market-Value Capital Structure methodology ("MVCS") holds constant the After Tax Weighted Average Cost of Capital ("ATWACC") for market and book value capital structures, is his MVCS fundamentally flawed?

A. Yes. In Dr. Kolbe's MVCS methodology the cost of equity is dependent upon the cost of debt. Debt costs are inappropriate as drivers of equity costs. Further, the embedded debt costs are historical and do not reflect current costs. The latter leads to another flaw in Dr. Kolbe's methodology – debt costs are not reflected at market value creating an inconsistency between the valuation basis of equity and debt recognized in the capital structures in the MVCS methodology. In the MVCS a utility's cost of equity decreases if it uses low cost debt such as Industrial Development Bonds or Water Infrastructure Financing Authority ("WIFA") financing. Accordingly, the MVCS methodology advocated by Dr. Kolbe dysfunctionally provides a disincentive for a utility to seek the lowest cost of debt available.

[4] Id., Page 5.

Q. Has Staff prepared a schedule demonstrating that the cost of debt drives the cost of equity in Dr. Kolbe's MVCS methodology?

A. Yes. Surrebuttal Schedule DRR-9 presents three interest rate scenarios with identical capital structures. These scenarios show that simply increasing the interest rate increases the cost of equity. The interest rates and the corresponding costs of equity are:

	Debt Cost	Equity Cost
Scenario 1	5.0%	19.0%
Scenario 2	6.0%	19.6%
Scenario 3	7.0%	20.2%

The results show that an increase in interest rate causes a domino effect that, in turn, increases the weighted average cost of capital, after tax weighted average cost of capital, and revenue requirement. The overall effect is to provide abnormal profit.

HAMADA PROCEDURE FOR MAKING CAPITAL STUCTURE FINANCIAL ADJUSTMENT

Q. Please respond to Dr. Kolbe's testimony:

> **"However, Mr. Roger's calculations unfortunately do not actually reflect the cited Hamada procedure for making that adjustment, since the Hamada paper relied on market-value capital structures, not book value capital structures."[5]**

A. Dr. Kolbe correctly recognized that Staff's financial risk adjustment is based on book values instead of market values as contemplated by the Hamada procedure. Staff prefers to use the book values because they are readily available, do not require making questionable assumptions regarding the market value of debt and their use is consistent with Staff's use of a book value capital structure.

[5] Id., Page 3.

Q. How would using the market values have changed Staff's financial risk adjustment?

A. Staff recalculated its financial adjustment assuming that Paradise Valley's market-to-book ratio is the same as that shown in Dr. Vilbert's market-value capital structures for the sample water companies. The financial adjustment based on a market-value capital structure is 20 basis points or 40 basis points lower than the book value adjustment Staff used in its cost of equity calculations. Staff's COE estimate would have been 40 basis points lower had it used market values instead of book values to calculate a financial risk adjustment.

STAFF RECOMMENDATIONS

Q. What are Staff's recommendations for Paradise Valley's cost of capital?

A. Staff makes the following recommendations for Paradise Valley's cost of capital:

1. Staff recommends a capital structure of 63.7 debt and 36.3 percent equity.
2. Staff recommends a cost of debt of 5.4 percent.
3. Staff recommends a cost of equity of 10.3 percent.
4. Staff recommends an overall rate of return of 7.2 percent.

Q. Does this conclude your testimony?

A. Yes, it does.

Paradise Valley
Capital Structure
And Weighted Average Cost of Capital
Staff Recommended and Company Proposed

[A]	[B]	[C]	[D]
Description	Weight (%)	Cost	Weighted Cost
Staff Recommended Structure			
Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	10.2%	3.7%
Weighted Average Cost of Capital/ROR			**7.1%**
Company Proposed Structure			
Debt	63.3%	5.4%	3.4%
Common Equity	36.7%	12.0%	4.4%
Weighted Average Cost of Capital/ROR			**7.8%**

[D] : [B] x [C]

Supporting Schedule: DRR-3

Paradise Valley
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			2.9%	+	6.9%	=	9.8%
Multi-Stage DCF Estimate						=	9.4%
Average of DCF Estimates							**9.6%**
CAPM Method	Rf	+	β[5]	x	(Rp)	=	k
Historical Market Risk Premium[3]	4.5%	+	0.74	x	**7.2%** [6]	=	9.8%
Current Market Risk Premium[4]	4.7%	+	0.74	x	5.7% [7]	=	8.9%
Average of CAPM Estimates							**9.4%**
					Average		**9.5%**
					Financial Risk Adjustment		0.7%
					Total		**10.2%**

1 MSN Money and Value Line

2 DRR-7

3 Wall Street Journal (Rf) 5, 7, and 10 year Treasury rates

4 Wall Street Journal (Rf) 30 Year Treasury bond rate

5 Value Line

6 Historical Market Risk Premium (Rp) from Ibbotson Associates SBBI 2005 Yearbook

7 Testimony

Paradise Valley
Average Capital Structure of Sample Water Utilities

[A]	[B]	[C]	[D]
Company	Debt	Common Equity	Total
American States Water	50.8%	49.2%	100.0%
California Water	48.7%	51.3%	100.0%
Aqua America	56.2%	43.8%	100.0%
Connecticut Water	44.9%	55.1%	100.0%
Middlesex Water	60.7%	39.3%	100.0%
SJW Corp	45.1%	54.9%	100.0%
Average Sample Water Utilities	**51.1%**	**48.9%**	**100.0%**
Paradise Valley	**63.3%**	**36.7%**	**100.0%**

Source:
Sample Water Companies from Value Line

Paradise Valley
Growth in Earnings and Dividends
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]
Company	Dividends Per Share 1995 to 2004 DPS[1]	Dividends Per Share Projected DPS[1]	Earnings Per Share 1995 to 2004 EPS[1]	Earnings Per Share Projected EPS[1]
American States Water	0.9%	1.9%	0.2%	18.9%
California Water	1.0%	2.3%	2.2%	10.2%
Aqua America	5.3%	9.9%	8.2%	17.0%
Connecticut Water	1.1%	No Projection	1.9%	No Projection
Middlesex Water	2.0%	No Projection	0.7%	No Projection
SJW Corp	3.8%	No Projection	4.0%	No Projection
Average Sample Water Utilities	**2.4%**	**4.7%**	**2.9%**	**15.4%**

1 Value Line

Aqua America had a stock split 4 -3 on 12/01/05 hence, historical EPS & DPS figures changed.

Paradise Valley
Sustainable Growth
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]
Company	Retention Growth **1995 to 2004** br	Retention Growth Projected br	Stock Financing Growth vs	Sustainable Growth **1995 to 2004** br + vs	Sustainable Growth Projected br + vs
American States Water	2.5%	6.7%	1.4%	3.9%	8.1%
California Water	2.5%	4.8%	2.9%	5.4%	7.7%
Aqua America	4.2%	7.4%	7.6%	11.8%	15.0%
Connecticut Water	3.0%	No Projection	0.5%	3.5%	No Projection
Middlesex Water	1.4%	No Projection	4.4%	5.8%	No Projection
SJW Corp	5.0%	No Projection	0.0%	5.0%	No Projection
Average Sample Water Utilities	**3.1%**	**6.3%**	**2.8%**	**5.9%**	**10.3%**

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

Paradise Valley
Selected Financial Data of Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Company	Symbol	Spot Price 1/25/2006	Book Value	Mkt To Book	*Value Line* Beta β	Raw Beta β *raw*
American States Water	AWR	**32.65**	15.74	2.1	**0.75**	0.60
California Water	CWT	**40.83**	15.73	2.6	**0.75**	0.60
Aqua America	WTR	**27.82**	6.21	4.5	**0.80**	0.67
Connecticut Water	CTWS	**24.25**	11.30	2.1	**0.75**	0.60
Middlesex Water	MSEX	**18.45**	8.25	2.2	**0.75**	0.60
SJW Corp	SJW	**48.29**	19.99	2.4	**0.65**	0.45
Average				**2.7**	**0.74**	**0.58**

[C]: Msn Money

[D]: Value Line

[E]: [C] / [D]

[F]: Value Line

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

Paradise Valley
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Utilities

[A]	[B]
Description	g
DPS Growth - Historical[1]	2.4%
DPS Growth - Projected[1]	4.7%
EPS Growth - Historical[1]	2.9%
EPS Growth - Projected[1]	15.4%
Sustainable Growth - Historical[2]	5.9%
Sustainable Growth - Projected[2]	10.3%
Average	**6.9%**

1 Schedule DRR-4

2 Schedule DRR-5

Paradise Valley
Multi-Stage DCF Estimates
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[H]	[I]
Company	Current Mkt. Price (P_o)[1] 1/25/2006	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	32.7	0.92	0.93	0.95	0.96	6.8%	9.2%
California Water	40.8	1.22	1.24	1.27	1.30	6.8%	9.4%
Aqua America	27.8	0.44	0.47	0.51	0.55	6.8%	8.3%
Connecticut Water	24.3	0.88	0.92	0.95	0.99	6.8%	10.1%
Middlesex Water	18.5	0.69	0.72	0.75	0.77	6.8%	10.2%
SJW Corp	48.3	1.15	1.19	1.24	1.28	6.8%	8.9%
						Average	**9.4%**

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

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 DRR-6
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

PARADISE VALLEY
Cost of Equity Changes With
Changes in Cost of Debt

Scenario One: Cost of Debt 5%

Sample Company	Sample Company Cost of Equity	Equity Percentage	Cost of Debt	Debt Percentage	Tax Rate	ATWACC
A	9.10%	0.56	**5.0%**	0.44	39.5%	8.12%
B	9.50%	0.64	5.0%	0.36	39.5%	9.11%
C	8.70%	0.74	5.0%	0.26	39.5%	9.46%
Average						8.90%

Paradise Valley	Dollars	Percent	Cost	WACC
Equity	$ 37.00	36.7%	**19.0%**	**7.0%**
Debt	$ 63.00	63.3%	5.0%	3.2%
Total	$ 100.00			10.1%

	ATWACC	After Tax Dollar Return
Equity	**7.0%**	**$ 2.58**
Debt	1.9%	1.21
Total	8.90%	$ 3.79

Scenario Two: Cost of Debt 6%

Sample Company	Sample Company Cost of Equity	Equity Percentage	Cost of Debt	Debt Percentage	Tax Rate	ATWACC
A	9.10%	0.56	**6.0%**	0.44	39.5%	8.73%
B	9.50%	0.64	6.0%	0.36	39.5%	9.71%
C	8.70%	0.74	6.0%	0.26	39.5%	10.07%
Average						9.50%

Paradise Valley	Dollars	Percent	Cost	WACC
Equity	$ 37.00	36.7%	**19.6%**	7.2%
Debt	$ 63.00	63.3%	6.0%	3.8%
Total	$ 100.00			11.0%

	ATWACC	After Tax Dollar Return
Equity	**7.2%**	**$ 2.67**
Debt	2.3%	1.45
Total	9.50%	$ 4.11

Scenario Three: Cost of Debt 7%

Sample Company	Sample Company Cost of Equity	Equity Percentage	Cost of Debt	Debt Percentage	Tax Rate	ATWACC
A	9.10%	0.56	**7.0%**	0.44	39.5%	9.33%
B	9.50%	0.64	7.0%	0.36	39.5%	10.32%
C	8.70%	0.74	7.0%	0.26	39.5%	10.67%
Average						10.11%

Paradise Valley	Dollars	Percent	Cost	WACC
Equity	$ 37.00	36.7%	**20.2%**	7.4%
Debt	$ 63.00	63.3%	7.0%	4.4%
Total	$ 100.00			11.9%

	ATWACC	After Tax Dollar Return
Equity	**7.4%**	**$ 2.75**
Debt	2.7%	1.69
Total	10.11%	$ 4.44

BEFORE THE ARIZONA CORPORATION COMMISSION

JEFF HATCH-MILLER
Chairman
WILLIAM A. MUNDELL
Commissioner
MARC SPITZER
Commissioner
MIKE GLEASON
Commissioner
KRISTIN K. MAYES
Commissioner

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	)	DOCKET NO. W-01303A-05-0405

DIRECT TESTIMONY

OF

JOHN A. CHELUS

UTILITIES ENGINEER

UTILITIES DIVISION

Arizona Corporation Commission

January 16, 2006

ALL-STATE LEGAL®
EXHIBIT
S-5
admitted

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Engineering Report Paradise Valley Water District JAC-1

SUMMARY OF DIRECT TESTIMONY
OF JOHN A. CHELUS
ARIZONA-AMERICAN WATER COMPANY, INC.
PARADISE VALLEY DISTRICT
DOCKET NO. W-01303A-05-0405

CONCLUSIONS

1. The Paradise Valley Water District has a non-account water loss of 9.89 percent. This level is acceptable in this rate proceeding. (See Section C, Page 6 of Schedule JAC-1)

2. The most recent lab analysis for the Paradise Valley Water District indicates that six of the seven wells have Arsenic levels at or above 10 ppb. The Company is currently constructing arsenic removal equipment to achieve the new arsenic level of 10 parts per billon. (See Section E, Page 7 of Schedule JAC-1)

3. The Paradise Valley Water District is located within the Phoenix Active Management Area ("AMA") and is in compliance with the AMA's reporting and conservation requirements.

4. The Paradise Valley Water District has no outstanding Arizona Corporation Commission compliance issues.

5. The Paradise Valley Water District has a Curtailment Tariff on File with the Utilities Division.

6. Based on data submitted by the Maricopa County Environmental Services Department (MCESD), MCESD has determined that the Paradise Valley Water District is currently delivering water that meets the water quality standards required by Arizona Administrative Code, Title 18, Chapter 4.

RECOMMENDATIONS

1. It is recommended that the Paradise Valley Water District continue to use depreciation rates as delineated in Exhibit 4 of Schedule JAC-1.

2. The findings of the field audit support the use, without adjustment, of the total post test year plant of $3,018,867 as delineated in the table in Section J.3, Page 7. However, this "used and useful" determination does not imply a specific treatment for rate base or rate making purposes. The direct testimony of Mr. Darron Carlson will discuss the post test year rate base and rate making treatment in this case.

3. Staff recommends the use of the Company's Cost of Service Study in this proceeding.

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is John A. Chelus. My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. By whom and in what position are you employed?

A. I am employed by the Arizona Corporation Commission ("Commission") as a Utilities Engineer - Water/Wastewater for the Utilities Division

Q. How long have you been employed by the Commission?

A. I have been employed by the Commission since September 1990.

Q. What are your responsibilities as a Utilities Engineer - Water/Wastewater?

A. I inspect, investigate, and evaluate water and wastewater systems; obtain data, prepare investigative reports; suggest corrective action and provide technical recommendations on water and wastewater system deficiencies; and provide written and oral testimony on rate and other cases before the Commission.

Q. How many companies have you analyzed for the Utilities Division?

A. I have analyzed approximately 200 companies in various capacities for the Utilities Division.

Q. Have you previously testified before this Commission?

A. Yes, I have.

Q. What is your educational background?

A. I graduated from the Rochester Institute of Technology in 1976 with a Bachelors Degree in Civil Engineering and from Oklahoma State University in 1978 with a Masters Degree in Environmental Engineering.

Q. Briefly describe your pertinent work experience.

A. I worked for the Dallas Water Utilities as an engineer in the Wastewater Division, and then in the Engineering Design Division from 1978 to 1981. I moved to Grand Junction, Colorado and worked for Multi Mineral Corporation as a research engineer until 1982. After this I worked for Westwater Engineering Consultants as a design engineer. In 1983, I was employed by Sauter Construction as a construction engineer for the construction of the Ute Water Treatment facilities in Palisade, Colorado. In 1984 and 1985, I was employed by the City of Grand Junction as a Grade IV wastewater operator at their 12 million gallon per day activated sludge treatment facility. In 1986, I moved to Phoenix and began working for the Arizona Department of Environmental Quality ("ADEQ"), Office of Water Quality, as a design review engineer, and then as a field engineer. I stayed at ADEQ until transferring to the Commission in 1990.

II. PURPOSE OF TESTIMONY

Q. What was your assignment in this rate proceeding?

A. My assignment was to provide engineering evaluations of the Arizona-American Water Company, Inc. ("Az-Am") – Paradise Valley District operations.

Q. What is the purpose of your testimony in this proceeding?

A. To present the Utilities Division Staff's ("Staff") engineering evaluations of the Az-Am – Paradise Valley Water District operations. Those findings are contained in Staff's

Engineering Report which I have prepared for this proceeding. The report is included as Schedules JAC-1 in this direct testimony.

ENGINEERING REPORTS

Q. Would you briefly describe what was involved in preparing the Engineering Reports for the water operations in this rate proceeding?

A. After reviewing Az-Am's Paradise Valley Water District rate application, I physically inspected the water system to evaluate its operations and to determine which plant items were or were not used and useful. I contacted the Maricopa County Environmental Services Department ("MCESD"), Arizona Department of Water Resources ("ADWR") and the Commission's Compliance Section Unit to determine if the Az-Am Paradise Valley District was in compliance with ADEQ, MCESD, ADWR and Commission regulations. I obtained information from Az-Am regarding water usage, water testing, growth, depreciation rates and post-test year plant and analyzed that information. Based on this data, I prepared Staff's Engineering Report.

Q. Does Schedule JAC-1 accurately describe the Az-Am Paradise Valley District as you found it during your investigation?

A. Yes, to the best of my knowledge.

CONCLUSIONS AND RECOMMENDATIONS

Q. Based on your investigation and evaluation, does Staff have any recommendations?

A. Yes.

Q. Please summarize Staff's findings and recommendations for the Paradise Valley Water District contained in Engineering Report JAC-1.

A. Based on Staff's engineering evaluations of the Az-Am – Paradise Valley District operations, Staff concludes and recommends that:

Paradise Valley Water District

CONCLUSIONS

1. The Paradise Valley Water District has a non-account water loss of 9.89 percent. This level is acceptable in this rate proceeding. (See Section C, Page 6 of Schedule JAC-1)

2. The most recent lab analysis for the Paradise Valley Water District indicates that six of the seven wells have Arsenic levels at or above 10 ppb. The Company is currently constructing arsenic removal equipment to achieve the new arsenic level of 10 parts per billon. (See Section E, Page 7 of Schedule JAC-1)

3. The Paradise Valley Water District is located within the Phoenix Active Management Area ("AMA") and is in compliance with the AMA's reporting and conservation requirements.

4. The Paradise Valley Water District has no outstanding Arizona Corporation Commission compliance issues.

5. The Paradise Valley Water District has a Curtailment Tariff on File with the Utilities Division.

6. Based on data submitted by the Maricopa County Environmental Services Department (MCESD), MCESD has determined that the Paradise Valley Water District is currently delivering water that meets the water quality standards required by Arizona Administrative Code, Title 18, Chapter 4.

RECOMMENDATIONS

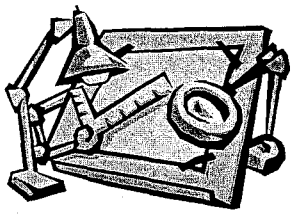
1. It is recommended that the Paradise Valley Water District continue to use depreciation rates as delineated in Exhibit 4 of Schedule JAC-1.

2. The findings of the field audit support the use, without adjustment, of the total post test year plant of $3,018,867 as delineated in the table in Section J.3, Page 7. However, this "used and useful" determination does not imply a specific treatment for rate base or rate making purposes. The direct testimony of Mr. Darron Carlson will discuss the post test year rate base and rate making treatment in this case.

3. Staff recommends the use of the Company's Cost of Service Study in this proceeding.

Q. Does this conclude your direct testimony?

A. Yes, it does.



Engineering Report for Arizona-American Paradise Valley District (Rates)

Docket No. W-1303A-05-0405

By John A. Chelus

January 16, 2006

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A. LOCATION OF COMPANY

Arizona-American Paradise Valley District ("Paradise Valley or Company") is located in Maricopa County. It serves approximately half of the Town of Paradise Valley and portions of the City of Scottsdale. The remainder of the Town of Paradise Valley is served by the City of Phoenix and Berneil Water Company. Exhibit 1 describes the location of the Company within Maricopa County, and Exhibit 2 describes the certificated area of the water company within Maricopa County.

B. DESCRIPTION OF THE WATER SYSTEM

Water is supplied from six Company wells located on the eastern edge of the service area. A seventh well, PCX-1 is operated through an agreement with the owner of the well, Salt River Project ("SRP"). The Company treats the water from PCX-1 at its Miller Road Treatment Facility ("MRTF"). All costs for PCX-1 are paid by Motorola. The Company's wells range in depth from 1,000 to 1,740 feet and have flow rates from 1,900 to 2,500 gallons per minute ("GPM"). The distribution system, which covers about 8.5 square miles, consists of approximately 116 miles of mains ranging in size from two to 24-inches in diameter. The system has nine pressure zones due to the varying elevations in the service area. The combined capacity of the thirteen ground storage tanks is 2.174 million gallons. Chlorination for disinfection is the only form of chemical addition. Fire protection is provided by 530 hydrants.

Water from Well No. 16 is treated with chlorine and pumped directly into the distribution system. Well Nos. 11, 12 and 17 pump to the Miller Road Booster Station ("MRBS"). Water is chlorinated and stored at this site. Distribution pumps deliver the water to the distribution system. Water from Well Nos. 14, 15 and PCX-1 is pumped to the MRTF located adjacent to Well No. 15 before being delivered to the distribution system. This facility consists of packed column aeration stripping towers for trichloroethylene ("TCE") removal and chlorine addition for disinfection. Water is pumped from here into the distribution system.

At present, water from both the PCX-1 and Well No. 15 is flowing through the stripping towers. When TCE is detected in Well No. 14, it will also be pumped through the stripping towers to remove TCE.

The MRBS is equipped with a series of storage tanks which allow sand and other sediment to settle out of the well supplies before being pumped into the distribution system. The MRBS is also used to blend water from Well No. 17 with water from Wells No. 11 and 12 so that the level of water with excess nitrate falls below the Maximum Contaminant Level ("MCL")

The Company is in the process of upgrading its distribution and pumping system to meet new requirements for fire flow in the areas that it serves. The Company is also building an arsenic removal facility that will be used to meet the new 10 microgram per liter (10μg/l) Environmental Protection Agency ("EPA") standard.

The plant facilities were visited on October 6, 2005, by John A. Chelus, Utilities Engineer, in the accompaniment of Rob Antoniak, Community Relations Manager, Steve Lutringer, Network Supervisor, and Richard Moore, Production Superintendent. Richard Barnes, Construction Superintendent, provided a tour of the arsenic removal facilities. The following details the physical plant of the Company.

Wells

	Well No. 11	**Well No. 12**	**Well No. 14**
ADWR Number	55-624805	55-624806	55-624807
Location Number	A(2-4)11dcb	A(2-4)11dbc	A(2-4)11dcc
Year Drilled	1959	1962	1964/65
Pump Horsepower	Turbine 300	Turbine 300	Submersible 400
Well Yield (gpm)	1,800	1,800	2,100
Casing Size	20"-16"	24"-20"	20"-8"
Casing Depth	1,396	1,301	1,743
Static Water Level	334 ft.	395 ft.	343 ft.
Meter Size	*MRBS	20" Sparling	10 " Sensus

* Flow measured at Miller Road Booster Station

	Well No. 15	**Well No. 16**	**Well No. 17**	**PCX-1**
ADWR Number	55-624808	55-624809	55-537967	---------
Location No.	A(2-4)14abc	A(2-4)11dbb	A(2-4)bdd	--------
Year Drilled	1968/69	1980	1993	1996
Pump HP	Submersible 400	Turbine 600	Submersible 600	Submersible 600
Well Yield	2,100	2,200	1,500	2,300
Casing Size	20"-18"-16"	18"	20"	20"-16"
Casing Depth	1,430	1,500	1,100	1,245
Meter Size	10" Sensus	12" Sparling	8" Sparling	----------

Distribution Pumps

Location	Quantity	Horsepower
Miller Road Treatment Facility	3	300

Pressure Tanks

Location	Quantity	Size (Gallons)
Glenn Drive	1	500
Clearwater No. 3 (Highcliff Drive)	1	500

Storage Tanks

Location	Capacity (Gallons)	Pressure Zone
Clearwater Hills #3	22,148	Clearwater Hills 3

Club Estates	31,600	Club Estates
Stone Canyon	94,476	Stone Canyon
Racquet Club	102,313	Stone Canyon
Clearwater Hills #1	102,787	Clearwater Hills #1
Clearwater Hills #2	103,249	Clearwater hills #1
Miller Road #1	151,524	Main
Miller Road Sand Trap	192,228	Main
60th Street	203,407	Main
Miller Road #2	358,837	Main
Country Club #2	360,880	Country Club
Miller Road Treatment Facility	485,000	
Country Club #1	508,800	Country Club
Total Capacity (Gallons)	2,717,249	

Booster Pumps

Location	Quantity	Horsepower
Glenn Drive	3	1-1/2
Clearwater Hills #3 (Highcliff)	2	3
Clearwater Hills #2 (Silvercrest)	2	10
Club Estates	2	10
Country Club	4	30
Stone Canyon	2	40
Clear Water Hills #1	3	60
Miller Road	2	100
Miller Road	1	150
Miller Road	1	300
Las Brisas	3	7.5,15,30
Total	25	

Meters

Size	Quantity
5/8 x ¾ "	2,432
¾"	17
1"	1,974
1 ½"	32
2 "	257
Comp. 3"	13
Comp. 4"	1
Comp. 6"	5
Total	4,731

Distribution Mains

Size	Material	Length (feet)
2"	Various	8,599
2 ½ "	Various	1,149
3"	Various	392
4"	Various	107,326
6"	Various	273,679
8"	Various	127,071
10"	Various	3,018
12"	Various	54,446
16"	Various	28,344
20"	Various	409
24"	Various	10,200
		Total 614,633

Fire Hydrants

Quantity	530

Other Plant Facilities and Equipment

Description	Location
Paradise Valley Country Club Lake Manifold	Desert Fairways Drive & Arroyo Road

TREATMENT EQUIPMENT:

Air Stripping Facility for TCE removal
Sodium Hypochlorite disinfection

C. WATER USE

Water Sold & Non-Account Water

The Company provided water production and water consumption data for the 2004 test year. Because of the way water production and consumption data is collected and processed, there is a lag of one month in billing between production and consumption numbers that makes it difficult to do a monthly analysis of water usage. An analysis based on a quarterly or yearly average is more accurate. Based on the information provided by the Company, water use for the year 2004 totaled 3,165,233,000 gallons. During the same period, the Company reported producing 3,512,659,000 gallons. This resulted in a water loss of 9.89%. This 9.89% is acceptable to Staff.

System Analysis

The water system's current well capacity of 14,800 GPM and storage capacity of 2,207,000 gallons is adequate to serve the 4,700 connections. This does not mean that the Company should not add additional wells and storage to the system in the future, if necessary, to allow for improved reliability, aquifer recovery and maintenance down time.

D. GROWTH

The Company reported that the Paradise Valley District averaged 4,675 customers during the 2004 test year. This compares with an average of 4,685 customers per month in 2002. This indicates that there has been no net growth over the two year time period.

E. ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) COMPLIANCE

Compliance

Based on data submitted by Maricopa County Environmental Services Department ("MCESD"), MCESD has determined that the Paradise Valley Water District, PWS # 04-07-056, is currently delivering water that meets the water quality standards required by Arizona Administrative Code, Title 18, Chapter 4.

Arsenic

The U.S. Environmental Protection Agency has reduced the arsenic maximum contaminant level ("MCL") in drinking water from 50 parts per billion ("ppb") to 10 ppb. The date for compliance with the new MCL is January 23, 2006.

The most recent lab analysis for the Paradise Valley Water District wells is shown in the following table. Six of the seven wells have Arsenic levels at or above 10 ppb.

Well ID	Arsenic Concentration µg/l
11	18
12	13
14	12
15	14
16	18
17	10
PCX-1	9

The Company completed an arsenic evaluation of all wells, performed cost analysis studies, and determined that a centralized treatment facility using ferric chloride coagulation/filtration ("CF") would be the most cost effective alternative. The treatment facility is under construction on an 11.5 acre site currently being used for the Miller Road booster station and a number of the Paradise Valley wells.

It is estimated that the arsenic removal facility will be on-line by the fall of 2006. The cost of the facilities is estimated to be approximately $17.44 million which excludes engineering, permits, and allowance for funds used during construction ("AFUDC")

Paradise Valley Water District is requesting approval of an arsenic recovery mechanism ("ACRM") as a way to pay for the capital improvements and operating costs associated with arsenic removal.

F. ARIZONA DEPARTMENT OF WATER RESOURCES (ADWR) COMPLIANCE

The Paradise Valley Water District is within the Phoenix Active Management Area (AMA), and consequently is subject to reporting and conservation rules (GPCD requirements). The Phoenix AMA reported that the Paradise Valley Water District is in total compliance with the ADWR reporting and conservation rules.

G. ARIZONA CORPORATION COMMISSION COMPLIANCE

A check with the Utilities Division Compliance Section showed no outstanding compliance issues for the Paradise Valley Water District.

H. RECONSTRUCTION COST NEW ("RCN") EVALUATION

The Company did not perform an RCN evaluation in this case.

I. DEPRECIATION RATES

The Paradise Valley Water District is using depreciation rates which it has developed. These depreciation rates are delineated in Exhibit 6.

J. OTHER ISSUES

1. Curtailment Plan Tariff

Arizona American has an approved curtailment tariff on file which applies to all service areas, including the Paradise Valley Water District.

2. Cost of Service

The Company performed a cost of service study using the commodity demand method. It followed the same methodology used by Commission Staff in previous rate cases. Staff's plant in service and expenses are relatively close in magnitude with the Company's, and the differences should not materially affect the outcome of the cost of service study.

It should also be emphasized that a cost of service study is only one of many factors considered in rate design and revenue requirements. For Paradise Valley Water District, conservation requirements may contribute more significantly to rate design. Staff recommends the use of the Company's Cost of Service Study.

3. Paradise Valley Fire Flow Improvement Program – Post Test Year Plant

The Paradise Valley Water District has been cooperating with the Town of Paradise Valley in upgrading its water distribution and pumping system in order to provide improved fire flow and add more hydrants. The Company filed a request for approval of a public safety surcharge ("PSS") in this proceeding.

During the inspection of the Paradise Valley Water District on October 6, 2005, Staff requested the Company to identify any improvements which have been completed relating to the Paradise Valley Fire flow Improvement Project. The Company took Staff to the areas where the transmission and distribution mains have been installed and put in operation after the test year. Several new fire hydrants were pointed out. It was not practical to visit all of the new hydrants that have been installed.

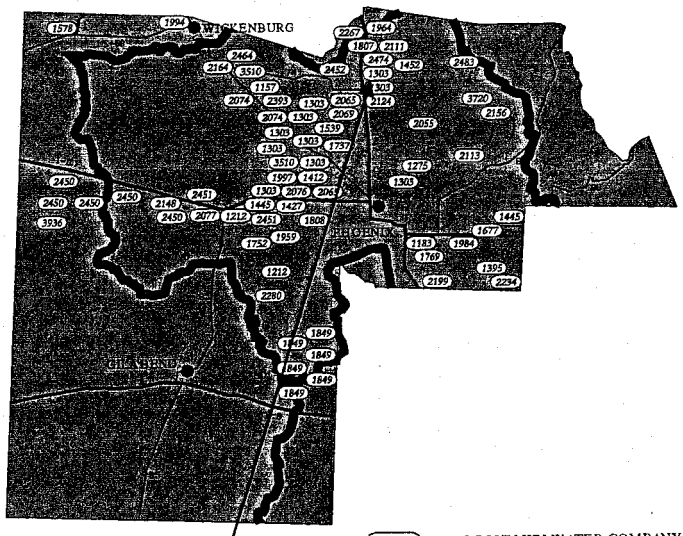
The findings of the field audit support the use, without adjustment, of the total post test year plant shown in the table below of $3,018,867. However, this "used and useful" determination does not imply a specific treatment for rate base or rate making purposes. The direct testimony of Mr. Darron Carlson will discuss the post test year rate base and rate making treatment in this case.

Post Test Year Plant Related to Fire Flow Improvement Project

Account	Project Description	Additions	Retirements	Net Additions
331.3	Jackrabbit/Invergordon Main	$2,050,115	$6,662	$2,043,453
331.3	McDonald Main Extension	747,570	2,221	745,350
335	Fire Hydrants	235,204	5,140	230,064
	Totals	**$3,032,889**	**$14,023**	**$3,018,867**

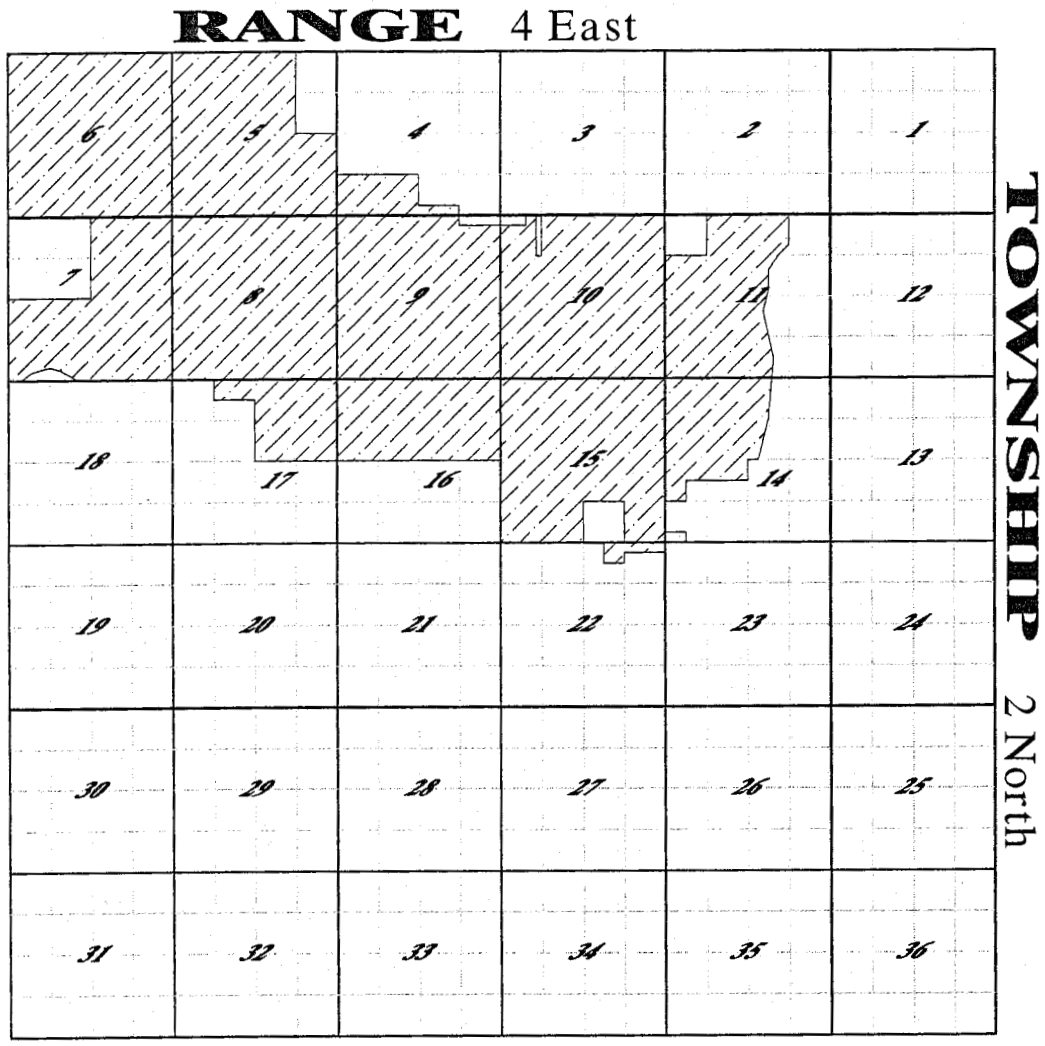
Exhibit 1

MARICOPA COUNTY



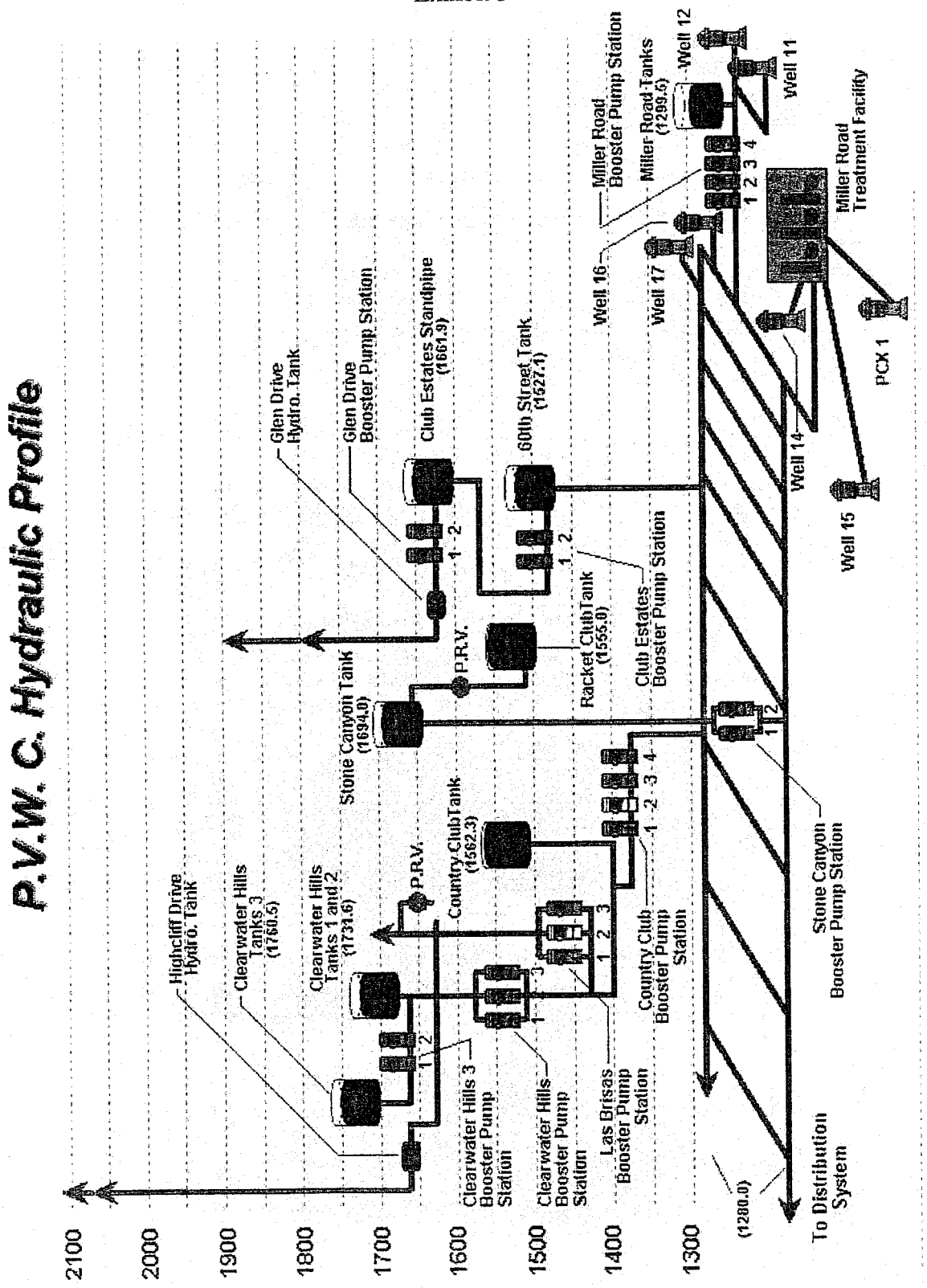
1997 ADAMAN MUTUAL WATER COMPANY
1578 AGUILA WATER SERVICES, INC.
2077 ALLENVILLE WATER COMPANY, INC.
1303 ARIZONA-AMERICAN WATER COMPANY
1445 ARIZONA WATER COMPANY
2074 BEARDSLEY WATER COMPANY, INC.
1275 BERNEIL WATER COMPANY
1964 BLACK CANYON RETREAT WATER COMPANY
1994 CABALLEROS WATER COMPANY, INC.
1452 CAVE CREEK WATER COMPANY
2113 CHAPARRAL CITY WATER COMPANY
2393 CHAPARRAL WATER COMPANY
3510 CIRCLE CITY WATER COMPANY L.L.C.
1752 CLEARWATER UTILITIES COMPANY, INC.
1984 DAIRYLAND WATER CORPORATION
2124 DESERT HILLS WATER COMPANY, INC.
3936 EAGLETAIL WATER COMPANY LC
1959 GRANDVIEW WATER COMPANY, INC.
2234 H2O, INC.
2055 JAMES P. PAUL WATER COMPANY
1769 KYRENE WATER COMPANY
2452 LAKE PLEASANT WATER COMPANY
1427 LITCHFIELD PARK SERVICE COMPANY
2267 MCADAMS WATER COMPANY
1849 MOBILE WATER COMPANY
2164 MORRISTOWN WATER COMPANY
1737 NEW RIVER UTILITY COMPANY
2199 PIMA UTILITY COMPANY
2464 PUESTA DEL SOL WATER COMPANY
1395 QUEEN CREEK WATER COMPANY
1808 RIGBY WATER COMPANY
2156 RIO VERDE UTILITIES, INC.
1539 ROSE VALLEY WATER COMPANY
2111 SABROSA WATER COMPANY
1183 SENDE VISTA WATER COMPANY, INC.
2474 SHANGRI-LA ASSOCIATES, INC.
2280 SOUTH RAINBOW VALLEY WATER COOPERATIVE
2069 SUNRISE WATER COMPANY, INC.
2076 TIERRA BUENA WATER COMPANY
2483 TONTO HILLS UTILITY COMPANY
1677 TURNER RANCHES WATER & SANITATION COMPANY
1212 VALENCIA WATER COMPANY
1412 VALLEY UTILITIES WATER COMPANY, INC.
2148 VALLEY VIEW WATER COMPANY, INC.
2451 WATER UTILITY OF GREATER BUCKEYE, INC.
2450 WATER UTILITY OF GREATER TONOPAH, INC.
3720 WATER UTILITY OF NORTHERN SCOTTSDALE, INC.
1157 WEST END WATER COMPANY
2065 WILHOIT WATER COMPANY, INC.
1807 WRANGLERS ROOST WATER COMPANY

Exhibit 2
Arizona American - Paradise Valley Water District



WS-1303 (14)
Arizona-American Water Company

Exhibit 3



Paradise Valley Water District – Plant Schematic

Exhibit 4. Depreciation Rates for Paradise Valley Water District

NARUC Account Number	Plant Description	Depreciation Rate
304.1	SS Structures and Improvements	14.59%
304.2	Pumping Structures and Improvements	3.99%
304.3	WT Structures and Improvements	2.00%
304.4	Grit Removal Equipment	1.50%
307	Wells and Springs	2.48%
311.2	Electric Pumping Equipment	4.39%
311.3	Diesel Pumping Equipment	4.39%
320	Water Treatment Equipment	7.06%
330	Dist. Reservoirs and Standpipes	3.15%
331.1	Transmission & Distribution Mains 4" & less	4.17%
331.2	Transmission & Distribution Mains 6"-8"	2.52%
331.3	Transmission & Distribution Mains 10" or more	2.34%
333	Services	4.72%
334	Meters	7.21%
334	Meter Installations	1.51%
335	Hydrants	2.10%
340.1	Office Furniture	4.04%
340.2	Computers and Peripherals	15.89%
340.3	Computer Software	37.71%
340.5	Other Office Equipment	7.13%
341.1	Transportation Equipment – Light Trucks	28.05%
341.3	Transportation Equipment – Automobiles	7.80%
341.4	Transportation Equipment – Others	0.93%
343	Tools, Shop, and Garage Equipment	3.61%
345	Power Operated Equipment	4.64%
346	Communication Equipment	9.76%
346.3	Communication Equipment – Other	7.91%
	Allocated Plant/Corporate	4.29%

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC. FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE AT ITS PARADISE VALLEY WATER DISTRICT.	)	DOCKET NO. W-01303A-05-0405

DIRECT

TESTIMONY

OF

ALEXANDER IBHADE IGWE, CPA

PUBLIC UTILITIES ANALYST V

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

JANUARY 16, 2006

ALL-STATE LEGAL®
EXHIBIT
S-6
admitted

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EXECUTIVE SUMMARY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405

Arizona-American Water Company, Inc. ("Company") is the largest, investor-owned water utility in the state of Arizona. It serves approximately 131,000 various types of customers throughout the state. The Paradise Valley Water District serves approximately 4,737 metered customers of various classes, of which more than 93 percent are residential customers in Paradise Valley, Scottsdale, and some unincorporated areas of Maricopa County.

The Company requested a $277,980 or 5.48 percent increase in revenue that allows for annual revenue of $5,348,660 or a 7.84 percent rate of return on an original cost rate base ("OCRB") of $11,651,216. The Company also requested an arsenic cost recovery mechanism ("ACRM") to recover its costs for arsenic treatment in the Paradise Valley District.

Staff recommends a $199,020 or 3.92 percent increase in revenue that allows for annual revenue of $5,269,700 or a 7.24 percent rate of return on an OCRB of $14,165,666. Staff recommends approval of an ACRM as described by Staff.

INTRODUCTION

Q. Please state your name and business address.

A. My name is Alexander Ibhade Igwe. My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. By whom are you employed and in what capacity?

A. I am employed by the Utilities Division ("Staff") of the Arizona Corporation Commission ("Commission") as a Public Utilities Analyst V.

Q. Briefly summarize your educational and professional qualifications related to your responsibility in the field of utility regulation.

A. I hold a Bachelor of Science degree in Accounting from the University of Benin, Nigeria and a Master of Information Systems Management degree from Keller Graduate School of Management of Devry University. I am a Certified Public Accountant and a member of the American Institute of Certified Public Accountants. I have attended training classes and courses regarding regulatory audits, rate-making, and other utility related matters. In addition, in my seven years working for the Utilities Division of the Commission, I have prepared Staff Reports and prefiled testimonies and presented oral testimonies in water, gas and electric utility rate and finance proceedings before this Commission.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. I am presenting Staff's analysis and recommendations for test year operating revenues and expenses, revenue requirement and arsenic cost recovery mechanism ("ACRM") regarding Arizona-American Water Company, Inc.'s ("AAWC" or "Company") filings for its Paradise Valley Water District.

Q. What are Staff's adjusted test year and the Company's reported test year results?

A. Staff's adjusted test year results show Revenue of $5,070,680 and Expenses of $4,167,995 for an Operating Income of $902,685 on an Original Cost Rate Base ("OCRB") of $14,165,666 for a 6.37 percent rate of return. The Company's test year results, as filed, show Revenue of $5,070,680 and Expenses of $4,327,912 for an Operating Income of $742,768 on an OCRB of $11,651,216 for a 6.38 percent rate of return.

SUMMARY OF ADJUSTMENTS

Q. Please summarize the adjustments addressed in this testimony.

A. Staff's analysis addresses the following adjustments:

Purchased Water Expense

Adjustment #1 decreases operating expense by $38,660 to eliminate purchased water expense that is no longer necessary for the provision of service.

Purchased Power Expense

Adjustment #2 removes $15,381 of purchased power expense relating to the Company's accrual for costs it did not incur during the test year.

Temporary Employee

Adjustment #3 decreases operating expense by $32,389 to eliminate the cost of temporary employment services replaced by a permanent employee in the test year. This adjustment corrects for double counting of salaries and wages relating to the referenced position.

Materials and Supplies Inventory

Adjustment #4 eliminates $11,184 of materials and supplies inventory written-off to reflect depletion in value. The Company's proposal does not constitute cost of service and provides no future benefits to ratepayers.

Rate Case Expense

Adjustment #5 reflects Staff's estimation of appropriate rate case expense necessary to process this instant rate case. It reduces operating income by $24,713 to reflect Staff's estimation of rate case expense.

Miscellaneous Allocated Corporate Expenses

Adjustment #6 reflects Staff's removal of this entire account in the amount of $145,648 and reduces operating expense by this same amount. The Company made no attempt to segregate corporate expenses from direct expenses of other operating districts leaving this account unusable for ratemaking purposes.

Depreciation Expense

Adjustment #7 corrects for errors in the Company's calculation of depreciation expense and reflects the impact of Staff's recommendation to capitalize $3,018,867 of Public Safety plant. This adjustment increases operating income by $62,593 to reflect the results of Staff's recalculation of depreciation expense.

Property Taxes

Adjustment #8 decreases operating expense by $1,898 to reflect Staff's recalculation of property taxes based on its recommended revenues.

Income Taxes

Adjustment #9 increases operating expense by $47,363 to reflect Staff's recalculation of income taxes based on its adjusted taxable income.

REVENUE REQUIREMENTS

Q. Please summarize the results of Staff's analysis of the Company's application and state Staff's recommended revenue requirement.

A. As shown on Schedule AII-1, Staff recommends $5,269,700 of revenue requirement. Staff's recommended revenue requirement represents an increase of $199,020 to the adjusted test year revenues of $5,070,680. Staff's recommended revenue requirement is $78,960 less than the Company's proposal of $5,348,660.

REVENUES

Q. Please summarize Staff's recommendation regarding the Company's test year revenues.

A. Staff recommends adoption of the Company adjusted test year revenues.

OPERATING INCOME

Q. How is Staff's testimony on operating income organized?

A. Staff's testimony on operating income separately analyzes each issue for which an adjustment is recommended. For example, each adjustment relating to an account group, such as operations, is separately analyzed and discussed for purposes of clarity.

EXPENSES

Operating Expense Adjustment No. 1 – Purchased Water Expense

Q. What is the Company proposing for purchased water expense in this proceeding?

A. The Company proposes to recover $38,660 of purchased water expense relating to write-offs and amortization of Central Arizona Project ("CAP") costs in cost of service.

Q. Did the Company provide any explanation for requesting recovery of $38,660 of purchased water expense in this proceeding?

A. No.

Q. Please comment on the Company's proposal to recover $38,660 of purchased water expense as cost of service.

A. Staff's audit of the Company's general ledger indicates that its proposed purchased water expense consists of $33,925 of write-offs and $4,735 of amortization of CAP costs, for a total of $38,660. The Company's proposal to write-off $33,925 of historic costs is inconsistent with sound rate making principles because such write-offs are not representative of future cost of service. In addition, write-offs are neither recurring nor provide future benefits to ratepayers. Also, the Company's proposal to recover amortization of CAP costs through cost of service is inconsistent with its CAP surcharge which allows it to separately recover all CAP related costs outside of base rates.

Q. What is Staff's recommendation regarding the Company's proposal to include $38,660 of purchased water expenses as cost of service in this proceeding?

A. As shown on Schedule AII-5, Staff recommends denial of the Company's proposal to include $38,660 of purchased water expenses in cost of service.

Operating Expense Adjustment No. 2 – Purchased Power Expense

Q. What is the Company's proposal regarding inclusion of accruals relating to purchased power expense in cost of service?

A. The Company proposes to include $15,381 of accruals for purchased power expense in this proceeding. The Company's accrual relates to its estimate of future costs of purchased power expense that was reported in its 2004 general ledger.

Q. Did the Company provide any explanation for its proposal to include accruals in cost of service?

A. No.

Q. What was Staff's analysis regarding the Company's proposal to include $15,381 of accruals for purchased power expense in cost of service?

A. Staff reviewed the Company's general ledger to determine if the Company incurred actual costs relating to its accrual for purchased power expense during the test year. In addition, during Staff's on-site audit, Staff interviewed Company witness Stacey Fulter who indicated that is the general practice of the Company to make estimates for future costs prior to the close of each year's accounting records. The Company contends that such accruals are usually trued-up to reflect actual costs incurred during the pertinent year. In this instance, the Company did not provide any evidence that it incurred an additional $15,381 for purchased power expense during the test year. Although Staff's analysis shows that the Company revised its accrual for purchased power expense subsequent to the test year, the reversal was not reflected in its filing. As a result, Staff has determined that the Company's accrual of $15,381 for additional purchase power expense is not representative of test year costs.

Q. What is Staff's recommendation regarding the Company's proposal to include $15,381 of accrual in cost of service?

A. As shown on Schedule AII-6, Staff recommends denial of the Company's proposal to include $15,381 of purchased power accruals in cost of service.

Operating Expense Adjustment No. 3 – Contract Service (Temporary Employee)

Q. Please describe AAWC's proposal regarding the costs of contract service for temporary employees.

A. AAWC proposes to include $32,389, the costs of test year contract service for a temporary employee, in cost of service.

Q. Did the Company provide any justification for its proposal to recover $32,389 of contract service for temporary employees in cost of service?

A. No.

Q. Please comment on the Company's proposal to recover $32,389 of contract service for temporary employees as a component of cost of service.

A. Staff's audit of the Company's financial record indicates that it incurred $32,389 of contract service for temporary employees during the test year. Further inquiry revealed that the Company has filled the temporary position with a permanent employee. The permanent employee's salary is included in the Company's adjusted payroll expenses for the test year. Therefore, Staff finds that the Company's proposal to include $32,389 of contract service for temporary employee in cost of service, results in double counting.

Q. What is Staff's recommendation regarding contract service for temporary employees?

A. As shown on Schedule AII-7, Staff recommends removal of $32,389 of contract service for temporary employee from cost of service. Staff's recommendation eliminates double counting of related employee costs.

Operating Expense Adjustment No. 4 – Materials & Supplies Inventory

Q. Is AAWC proposing to write-off a portion of its material and supplies inventory?

A. Yes. The Company proposes to write-off $33,552 of materials and supplies inventory to cost of service.

Q. Did the Company provide any explanation for its proposal to write-off a portion of materials and supplies inventory to cost of service?

A. Yes. The Company states that its pro forma adjustment reflects an allocation of the costs of materials and supplies inventory written-off during the test year. In the Company's response to Residential Utility Consumer Office's ("RUCO") data request 3-08, it states that the write-off results from depletion in the balance of materials and supplies inventory centrally warehoused at the Sun City Water District. As shown on the Company's Schedule C-2, adjustments B9 and B10, it is proposing to amortize the write-off over three years, at $11,184 per year.

Q. Does Staff agree with the Company's proposal to write-off materials and supplies inventory to cost of service?

A. No. Staff disagrees with the Company's premise for requesting recognition of the costs of materials and supplies inventory written-off in cost of service. In general, write-offs do not constitute cost of service because they are non-recurring and provide no future benefit

to ratepayers. In this instant case, the Company did not provide any cogent explanation for why its proposed write-off will be a necessary cost of service, on a going forward basis. As a result, Staff finds that the Company's proposal is inconsistent with sound principles of ratemaking.

Q. What is Staff's recommendation regarding the Company's proposal to include the write-off relating to materials and supplies inventory in cost of service?

A. As shown on Schedule AII-8, Staff recommends denial of the Company's proposal to recover $11,184 of materials and supplies inventory write-off in cost of service.

Operating Expense Adjustment No. 5 – Rate Case Expense

Q. What is the Company's proposed rate case expense in this proceeding?

A. The Company proposes a total of $282,841 of rate case expense, amortized over three years at $94,280 per year.

Q. Please describe the Company's proposed rate case expense.

A. The Company's proposal is comprised of $167,473 of internal cost, $79,383 of consultant fees for cost of capital analysis, $14,985 for cost of service analysis and rate design as well as $21,000 for other miscellaneous costs. According to the Company's expert witness, Ms. Fulter, at page 3, lines 25 - 27 of Direct Testimony, the Company is proposing to share the cost of capital analysis expense, estimated at $158,767, on a 50/50 basis between its investors and ratepayers. The Company contends that its proposal for equal sharing of the consultant fees relating to cost of capital analysis reflects its assumption that the analysis benefits both ratepayers and investors.

Q. Has the Company revised its estimated rate case expense in this proceeding?

A. Yes. In the Company's response to Staff's audit question number 1, it provided a new estimate for rate case expense, totaling $301,832. The Company's revision reflects actual costs incurred as of the date of its response as well as estimates of future costs of processing this proceeding. While some of the Company's original estimates have been adjusted downward to reflect actual cost incurred to date, other components have been revised upward. For example, the Company seeks full recovery of the $158,267 estimated for cost of capital analysis. The Company's request for full recovery of cost of capital analysis expense is contrary to its original assertion that a 50/50 sharing of the cost between ratepayers and investors is necessary to reflect mutual benefit to both parties. Because the Company did not provide a revised schedule to reflect its proposed changes to rate case expense, there is no change to its requested operating income.

Q. Please comment on the Company's proposed rate case expense in this proceeding.

A. In general, the Company's revised estimates for rate case expense seem reasonable. However, the Company's original proposal to share the cost of capital analysis expense, on a 50/50 basis, between its ratepayers and investors, is more appropriate than its later request for full recovery. Staff finds that the Company's proposal to incur $158,267 for cost of capital analysis is significantly higher than normal and would unduly burden ratepayers. While Staff recognizes the Company's right to engage the services of the best consultants, it appears reasonable to share the related costs when the Company's cost of capital witness, the Brattle Group, primarily argues for a higher than normal cost of equity.

Also, Staff's analysis indicates that the Company has significantly revised its costs estimate for cost of service analysis and rate design, from a total of $14,985 to $42,677, an

increase of $27,692 or 185 percent over its original proposal. Further analysis of the Company's actual costs incurred to date, indicates that it has paid its Consultant, Mr. Kozoman, approximately $15,000 for cost of service analysis and rate design. Therefore, the Company is projecting to incur an additional $27,667 for rate design and administrative hearing costs during the remainder of this proceeding. Staff's analysis shows that the Company's projection does not correlate with the anticipated level of future participation by Mr. Kozoman. Staff's conclusion is driven by the fact that the Company's expert witness has completed the majority of his assigned responsibilities, such as compilation of billing determinants and the related proof of revenue, cost of service analysis and rate design. Although Staff anticipates that Mr. Kozoman may be required to perform additional analysis relating to rate design and provide oral testimony, we find the Company's estimate of $27,667 to be excessive. Based on Mr. Kozoman's billing rate, Staff estimates that the Company may incur an additional $13,677 for rate design and oral testimony during the remainder of this proceeding.

Q. How did Staff organize its proposed adjustment to rate case expense?

A. As shown on Schedule AII-9, Staff's recommended rate case expense is adjusted against the amount reflected in the Company's proposed operating income. Staff's recommendation results in an aggregate decrease of $74,141 or $24,714 over the next three years. This comparison is necessary in order to compare "apples to apples".

Q. What is Staff's recommendation for rate case expense?

A. Staff recommends $208,700 of total rate case expense, a decrease of $74,141 to the Company's original proposal of $282,741. Because Staff agrees with the Company's assertion that it is appropriate to amortize rate case expense over three years, Staff

recommends an annual rate case expense of $69,567, $24,714 less than $94,280 reflected in the Company's requested operating income.

Operating Expense Adjustment No. 6 – Miscellaneous Allocated Corporate Expenses

Q. Please describe the Company's proposal regarding miscellaneous allocated corporate expenses?

A. The Company proposes to include $145,648 of miscellaneous allocated corporate expenses in cost of service.

Q. What was Staff's analysis regarding the Company's inclusion of this account in its cost of service?

A. In reviewing the RUCO data requests and the Company's responses, Staff took notice of the responses to RUCO 9.03 data request. RUCO had questioned the necessity of a number of entries in this account and whether or not they were prudent. After reviewing the account and the invoices the Company had included in its response, Staff noted that the Company made no attempt to segregate miscellaneous corporate expenses from miscellaneous direct expenses that should have been allocated to specific operating districts.

Staff questioned Mr. Joel Reiker of the Company, via telephone, about this account and was told that this is just a miscellaneous account and the Company does not believe it is necessary to do any more than allocate the entire account according to its "4-factor" allocation method.

Q. What is the "4-factor" allocation method?

A. The "4-factor allocation method is the general methodology that the Company utilizes to allocate corporate expenses to its various operation districts. This methodology was used and accepted in the Company's last series of rate cases under Docket No. WS-01303A-02-0867, et al. and earlier rate cases, as well. The Company's work papers contain a breakdown of this methodology.

Q. Did the Company allocate this account according to its "4-factor" allocation method?

A. Yes, it did. The adjusted total of the account was $1,793,696 and the Paradise Valley district portion was 8.12 percent or $145,648.

Q. If the allocation is correct, what is wrong with the amount?

A. The amount includes many items that should not be allocated but should be charged to a specific operating district. In other words, this account is not just corporate miscellaneous expenses but also includes a myriad of other miscellaneous expenses that should have been charged directly to its various operating districts. The Company failed to properly account for these expenses and Staff believes that this account is inappropriate for the purposes of allocation and rate making.

Q. Did Staff attempt to remove certain items and/or otherwise correct the account?

A. No. In the Company's response to RUCO 9.03, it provided some invoices but did not provide enough to enable Staff to make any adjustments or otherwise correct the account. When Staff questioned Mr. Reiker during the telephone conversation, he stated that the Company had already supplied all the necessary information to substantiate the account in its response to RUCO data request 9.03.

Q. What is Staff's recommendation regarding the Company's proposal to include $145,648 of miscellaneous allocated corporate expenses in cost of service?

A. As shown on Schedule AII-10, Staff recommends removal of the entire account in the amount of $145,648 of miscellaneous allocated corporate expenses.

Operating Expense Adjustment No. 7 – Depreciation Expense

Q. Please describe the Company's proposal regarding depreciation expense.

A. The Company proposes $720,578 of depreciation expenses, consisting of $1,203,214 of depreciation on Utility Plant in Service "UPIS", $3,165 of depreciation of common plant allocation, $32,634 of amortization of comprehensive planning studies, $6,570 of amortization of Mummy Mountain Acquisition cost, less $525,004 of amortization of Contribution in Aid of Construction "CIAC".

Q. Did the Company demonstrate how it calculated its proposed depreciation expense?

A. Yes. The Company states that its proposed depreciation expense relating to UPIS is calculated by applying the Commission approved depreciation rate for each account class to the corresponding account balance at the end of the test year. The Company utilized a similar method for determining its proposed amortization of CIAC. As it relates to common plant, the Company's allocation of corporate plant is based on customer count at the end of the test year. The Company indicates that it calculated depreciation expense on common plant allocation by multiplying the amount relating to each account class by the corresponding depreciation rate. Finally, the Company is proposing to amortize comprehensive planning studies costs and Mummy Mountain acquisition costs based on Commission approved rates.

Q. Please comment on the Company's methodology for calculating depreciation expense.

A. The Company's methodology for calculating its proposed depreciation expense is appropriate and consistent with sound rate making principles. However, Staff's analysis revealed some arithmetic errors in the Company's calculations. For example, the Company did not apply depreciation rates to certain sub-accounts of structures and improvement. Second, the Company did not correctly calculate its reported depreciation expense on common plant allocation. Finally, Staff has determined that the Company had a zero balance on its comprehensive studies planning account at the end of the test year. Consequently, the Company's proposal to recognize $32,634 for amortization of comprehensive planning studies costs is erroneous.

Q. Did Staff recalculate the Company's proposed depreciation expense?

A. Yes. As shown on schedule AII-11, Staff has recalculated the Company's depreciation expense on UPIS and common plant allocation to correct for errors in its proposal. In addition, Staff calculated depreciation expense on $2,788,803 of new transmission and distribution mains as well as $230,064 of new fire hydrants, to reflect the impact of Staff's recommendation to capitalize the Company's completed and in-service Public Safety plant. Staff's calculation of depreciation expense on Public Safety plant increases total depreciation expense by $70,089. Also, Staff recommends denial of the Company's proposal to recognize $32,634 of amortization of comprehensive planning studies costs in cost of service. Staff finds that amortization of costs relating to comprehensive planning studies is inappropriate since the account had a zero balance at the end of test year.

Q. What is Staff's recommendation for depreciation expense?

A. Staff recommends $783,171 of total depreciation expense, $62,593 over the Company's proposal of $720,758.

Operating Expense Adjustment No. 8 – Property Taxes

Q. What is the Company proposing regarding property taxes?

A. The Company proposes $213,241 of property taxes, $14,879 less than its actual test year expense of $228,120.

Q. Did the Company adapt ADOR's centrally valued methodology similar to the utilized by Staff for determination of property taxes?

A. Yes. The Company's calculation is based on the methodology developed by Staff and used as an acceptable adaptation for determining property tax expense. Staff agrees with the Company's description of the methodology.

Q. Please comment on the computation of property taxes using the ADOR methodology.

A. The ADOR methodology begins with the calculation of the average revenue for three historical years. The calculated average revenue is a major component used in the determination of property taxes under the ADOR methodology. Since the ADOR calculates property taxes solely on historical revenues, its method fails to capture the effects of new rates established by the Commission until after those rates are implemented. Using only historical revenues to calculate property taxes used in cost of service will cause a mismatch between the property taxes used in ratemaking and actual bills as the revenues generated by new rates become historical and incorporated into ADOR's calculation of property tax bills.

Staff has developed an adaptation of the ADOR's methodology by utilizing two historical years and Staff's recommended revenues for calculating the three-year average revenue. Staff's inclusion of its recommended revenues in the calculation of a three-year average, recognizes that the ADOR will calculate future property taxes based on the revenue derived from Commission approved rates in this proceeding. Except for the above modification, Staff has utilized the ADOR's prescribed methodology for calculating its recommended property taxes. As stated previously, the Company employed Staff's adaptation of the ADOR methodology in calculating its proposed property taxes. Therefore, any variance between the Company's proposal and Staff's recommended property taxes results from difference in both parties estimation of future revenues.

Q. Please provide a detailed explanation of Staff's computation of test year property taxes.

A. As shown on Schedule AII-12, Staff utilized its adaptation of the ADOR methodology in the determination of property taxes. Staff derived a three-year average by multiplying the Company's reported test year revenues by 2 and adding Staff recommended revenues, for a total of $15,411,060. Then, Staff divided the result by 3 to yield a three year average of $5,137,020. The three-year average of $5,137,020 was multiplied by a factor of two, resulting in an income value indicator of $10,274,040. Staff calculated the full cash assessed valued of $10,274,040 by deducting $8,933, the net book value of licensed vehicles from the income value indicator. Finally, Staff's recommended property taxes of $211,343 results from multiplying the full cash assessed value of $10,265,107 by an assessment ratio of 25 percent and the Company's composite property tax rate of 8.2354 percent.

Q. What is Staff's recommendation for property taxes?

A. As shown on Schedule AII-12, Staff recommends $211,343 of property taxes, $1,898 less than the Company's proposal of $213,241.

Operating Expense Adjustment No. 9 - Income Taxes

Q. What is the Company proposing for test year incomes taxes?

A. The Company's reports an adjusted test year state income tax of $38,940 and federal income tax of $176,765, for a total of $215,705.

Q. Did the Company provide a schedule depicting its computation of income taxes?

A. Yes. Schedule C-3, page 1, of the Company's filing shows the federal tax rate as 31.63 percent, state tax rate as 6.97 percent and the applicable total tax rate of 38.60 percent.

Q. Does Staff agree with the Company's suggested tax rate of 38.6 percent as the applicable federal and state tax rates?

A. Yes. As shown on Schedule AII-2, line 17, Staff has confirmed that the Company's combined federal and state income tax rate is approximately 38.60 percent.

Q. Did Staff prepare any schedule showing the computation of income taxes?

A. Yes. Staff's computation of income taxes is shown on Schedule AII-2.

Q. What is Staff's recommendation for test year income taxes?

A. As shown on Schedules AII-2, Staff recommends $263,068 of test year income taxes, consisting of $47,490 of state income tax and $215,578 of federal income tax. Staff's recommendation is consistent with Staff's adjusted test year taxable income.

ARSENIC COST RECOVERY MECHANISM

Q. Please describe the Company's proposal regarding the Arsenic Cost Recovery Mechanism ("ACRM") for its Paradise Valley Water District.

A. The Company is requesting that the Commission approve an ACRM for its Paradise Valley Water District as well as an interim Accounting Order authorizing it to defer all capital costs relating to arsenic-removal facilities placed in service prior to the effective date of an ACRM surcharge. The Company claims that upon approval of an ACRM in this proceeding, it will make a series of filings for specific ACRM surcharges to recover its capital costs and recoverable operating and maintenance expenses.

Q. Has the Company separately filed a request for an interim accounting order to defer arsenic costs?

A. No, it has not.

Q. What does Staff recommend regarding an interim accounting order to defer arsenic costs?

A. Staff recommends approval of an accounting order to allow the Company to defer only depreciation expense on arsenic-removal facilities once placed in service until the effective date of a Decision in this proceeding.

Q. Does this recommendation allow the Company to begin deferring depreciation expense immediately?

A. No, it does not. Only the Commission itself can authorize an accounting order. At this stage, if the Company wishes to obtain an interim accounting order prior to a Decision in this case, it should petition the Hearing Division to request bifurcation of this issue from the rate case and to accelerate consideration of the accounting order issue.

Q. Did the Company provide any explanation for requesting an ACRM in this proceeding?

A Yes. The Company claims that its request for an ACRM is predicated on United States Environmental Protection Agency's ("EPA") new arsenic contamination standard. The new EPA standard requires public water utility companies to reduce the maximum arsenic contamination level in drinking water from 50 parts per billion ("ppb") to 10 ppb, by January 23, 2006. The Company states that in order to comply with the new arsenic contamination level, it has budgeted approximately $19 million of capital investment in new arsenic remediation facilities. The Company estimates that its new arsenic remediation facilities will be completed and placed in service prior to the January 23, 2006 deadline for complying with the new arsenic contamination standard. The Company states that its request for an ACRM is necessary for recovery of the capital cost of arsenic remediation facilities as well as the related operating and maintenance costs.

Q. What is the purpose of an ACRM?

A. In general, an ACRM provides a methodology for recovering certain defined costs related to arsenic treatment as well as to establish a mechanism for recovery of arsenic related costs from customers. Recovery of arsenic related costs through an ACRM surcharge terminates upon inclusion of arsenic related plant in rate base.

Q. Please describe AAWC's proposed ACRM.

A. According to the Company, its proposal for an ACRM is identical to the filing in Docket No. WS-1303A-05-0280, et al. The Company's witness, Mr. David P Stephenson[1], describes the ACRM as follows:

[1] Direct testimony of David P. Stephenson, at page 15 & 16.

1. The ACRM is to be based solely on actual costs and eligible for recovery, which are depreciation, gross return, and recoverable operations and maintenance expense ("O&M").
2. Actual rate recovery via the ACRM commences after new arsenic facilities are in service and are in compliance with the new US EPA standard for arsenic.
3. Establishment of deadlines for filing the next rate case, without limit of Arizona-American's ability to file as per existing Commission orders.
4. An ACRM rate design composed of 50/50 split between monthly minimum charge and volumetric charges. The volumetric charges will be based on the same inclining block as will be approved in this Decision.
5. A financial presentation composed of ten standard schedules.
6. Recoverable O&M costs include only media replacement or regeneration, media replacement or regeneration service, and waste disposal.
7. A deferral for future recovery of up to 12 months of recoverable O&M, without return, commencing with the in-service of facility(s).
8. Two step-rate increases.
9. No true-up of the ACRM for over or under collection.
10. Gross return included in the ACRM based on the return authorized in this proceeding.

Q. How does the Company propose to finance its new arsenic facilities?

A. The Company indicates that its new arsenic facilities will be financed through a combination of equity and debt. It proposes to obtain the debt component of the total cost of arsenic remediation facilities from American Water Capital Corporation ("AWCC"), a subsidiary of its parent, American Water Works. The Company projects that it can borrow from AWCC at an interest rate 70 basis points above the prevailing treasury rate.

Q. Please comment on the Company's proposal for ACRM.

A. Staff's analysis indicates that the Company's proposal is similar to the ACRM approved for Arizona Water Company in Decision No. 66400. Also, the Company's proposal is not materially different from the ACRM approved for its other districts in Decision No. 68310.

Q. Please summarize Staff's recommendations.

A. Staff recommends the following:

1. Authorization of an ACRM.
2. The Company should file by July 1st of each year, subsequent to any year that it has ACRM collections, a report with Docket Control showing its ending capital structure (equity, long-term debt, and short-term debt) by month for the prior year.
3. The Earnings Test schedule filed in support of the ACRM should incorporate adjustments conforming to Decision No. 67093. For example, the acquisition adjustment should be removed from rate base and the amortization of the adjustment should be removed from the income statement. The actual period results, adjustments, and adjusted period should be clearly shown on each Earnings Test Schedule. The earnings test places a cap on the ACRM surcharge based on the existing rate of return.
4. Microsoft Excel or compatible electronic versions of the filings and all work papers be concurrently provided to Staff with all ACRM filings.
5. The Company should file the schedules discussed in its application. In addition, Staff reserves the right for further discovery as it deems necessary related to the ACRM filings.
6. Rate design volumetric charges must be applied equally to all usage tiers.

7. The Company should file an application for a permanent rate increase no later than September 30, 2008.

Q. Are the schedules and information that AAWC proposes to be filed for its ACRM the same as those required in Decision No. 66400 for the Arizona Water ACRM?

A. Yes. Staff reviewed the schedules required per Decision No. 66400[2] and found that they are the same as those proposed by AAWC. The schedules and information that Arizona-American proposes to file are as follows:

1. Balance Sheet – The most recent balance sheet for the total Company at the time of filing the ACRM request.
2. Income Statement – The most recent income statement for the total Company and for the Paradise Valley District.
3. Earnings Test – An earnings test calculation for the Paradise Valley District.
4. Rate Review Filing – A rate review calculation for the Paradise Valley District.
5. Arsenic Compliance Revenue Requirement – An arsenic compliance revenue requirement calculation for the Paradise Valley District that is based upon arsenic plant and recoverable arsenic operating expenses.
6. Surcharge Calculation – A detailed calculation of the surcharge.
7. Rate Base Schedule – A schedule showing the elements and the calculation of the rate base.
8. CWIP Ledger – A ledger showing the transactions recorded in the construction work in progress account.

[2] At page 14, beginning at line 9.

Q. What ACRM filing requirements is Staff recommending?

A. Staff recommends that the Company's ACRM filings include hard copies of the ten schedules. In addition to the hard copy filings, Staff recommends that Microsoft Excel or compatible electronic versions of the filings and all work papers be concurrently provided to Staff. Further, Staff reserves the right for further discovery as it deems necessary related to the ACRM filings.

Q. What is Staff's recommendation regarding the ACRM?

A. Staff recommends approval of the ACRM reflecting Staff's recommendations.

Q. Does this conclude your testimony?

A. Yes, it does.

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Schedule AII-1

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	[A] COMPANY FAIR VALUE	[B] STAFF ORIGINAL COST
1	Adjusted Rate Base	$ 11,651,216	$ 14,165,666
2	Adjusted Operating Income/(Loss)	$ 742,769	$ 902,685
3	Current Rate of Return (L2 / L1)	6.38%	6.37%
4	Required Rate of Return	7.84%	7.24%
5	Required Operating Income (L4 x L1)	$ 913,455	$ 1,024,886
6	Operating Income Deficiency/(Excess) (L5 - L2)	$ 170,686	$ 122,201
7	Gross Revenue Conversion Factor	1.62860	1.62863
8	Required Revenue Increase/(Decrease) (L7 x L6)	$ 277,980	**$ 199,020**
9	Adjusted Test Year Revenue	$ 5,070,680	$ 5,070,680
10	Proposed Annual Revenue (L8 + L9)	$ 5,348,660	$ 5,269,700
11	Required Increase/Decrease in Revenue (%)	5.48%	3.92%

References:
Column [A]: Company Schedules A-1, A-2, & D-1
Columns [B]: Staff Schedules AII-2, AII-3, & DRR-1

Rate of Return:

5.4%	63.3%	3.42%	DEBT
10.4%	36.7%	3.82%	EQUITY
		7.24%	

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Schedule AII-2

GROSS REVENUE CONVERSION FACTOR

LINE NO.	DESCRIPTION	[A]	[B]	[C]	[D]
	Calculation of Gross Revenue Conversion Factor:				
1	Billings	100.0000%			
2	Uncollectible Factor (Line 11)	0.0000%			
3	Revenues (L1 - L2)	100.0000%			
4	Combined Federal and State Tax Rate (Line 17)	38.5989%			
5	Subtotal (L3 - L4)	61.4011%			
6	Revenue Conversion Factor (L1 / L5)	**1.628635**			
	Calculation of Uncollectible Factor:				
7	Unity	100.0000%			
8	Combined Federal and State Tax Rate (Line 17)	38.5989%			
9	One Minus Combined Income Tax Rate (L7 - L8)	61.4011%			
10	Uncollectible Rate	0.0000%			
11	Uncollectible Factor (L9 x L10)	0.0000%			
	Calculation of Effective Tax Rate:				
12	Operating Income Before Taxes (Arizona Taxable Income)	100.0000%			
13	Arizona State Income Tax Rate	6.9680%			
14	Federal Taxable Income (L12 - L13)	93.0320%			
15	Applicable Federal Income Tax Rate (Line 40)	34.0000%			
16	Effective Federal Income Tax Rate (L14 x L15)	31.6309%			
17	Combined Federal and State Income Tax Rate (L13 + L16)	38.5989%			
18	Required Operating Income (Schedule DWC-1, Col. [B], Line 5)	$ 1,024,886			
19	Adjusted Test Year Operating Income (Loss) (Sch. AII-1, Col. [C], Line 28)	$ 902,685			
20	Required Increase in Operating Income (L18 - L19)	$ 122,201			
21	Income Taxes on Recommended Revenue (Col. [D], L39)	$ 339,887			
22	Income Taxes on Test Year Revenue (Col. [B], L39)	$ 263,068			
23	Required Increase in Revenue to Provide for Income Taxes (L21 - L22)	$ 76,820			
24	Recommended Revenue Requirement (Schedule xxx)	$ 5,269,700			
25	Uncollectible Rate (Line 10)	0.0000%			
26	Uncollectible Expense on Recommended Revenue (L24 x L25)	$ -			
27	Adjusted Test Year Uncollectible Expense	$ -			
28	Required Increase in Revenue to Provide for Uncollectible Exp. (L26 - L27)	$ -	$ -		
29	Total Required Increase in Revenue (L20 + L23 + L28)		$ 199,020		
	Calculation of Income Tax:	Test Year		STAFF Recommended	
30	Revenue (Schedule AII-1, Col. [C], Line 5 & Sch. xxx)	$ 5,070,680		$ 5,269,700	
31	Operating Expenses Excluding Income Taxes	$ 3,904,927		$ 3,904,927	
32	Synchronized Interest (L43)	$ 484,211		$ 484,211	
33	Arizona Taxable Income (L30 - L31 - L32)	$ 681,543		$ 880,563	
34	Arizona State Income Tax Rate	6.9680%		6.9680%	
35	Arizona Income Tax (L33 x L34)		$ 47,490		$ 61,358
36	Federal Taxable Income (L33 - L35)	$ 634,053		$ 819,205	
37	Federal Income Tax Rate	34.0000%		34.0000%	
38	Federal Income Tax (L36 x L37)		$ 215,578		$ 278,530
39	Combined Federal and State Income Tax (L35 + L38)		$ 263,068		$ 339,887
40	Applicable Federal Income Tax Rate (Col. [D], L38 - Col. [B], L38) / (Col. [C], L36 - Col. [A], L36)				34.0000%
	Calculation of Interest Synchronization:				
41	Rate Base (Schedule DWC-3, Col. [C], Line 17)	$ 14,165,666			
42	Weighted Average Cost of Debt	3.42%			
43	Synchronized Interest (L41 x L42)	$ 484,211			

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Schedule AII-3

OPERATING INCOME STATEMENT - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
1	*REVENUES:*					
2	Operating Revenue	$ 5,070,680	$ -	$ 5,070,680	$ 199,020	$ 5,269,700
5	Total Operating Revenues	$ 5,070,680	$ -	$ 5,070,680	$ 199,020	$ 5,269,700
6						
7	*OPERATING EXPENSES:*					
8	Operations	$ 2,826,742	$ (267,975)	$ 2,558,767	$ -	$ 2,558,767
9	Maintenance	296,930	$ -	$ 296,930	$ -	$ 296,930
10	Depreciation Expense	720,578	$ 62,593	$ 783,171	$ -	$ 783,171
11		3,844,250	$ (205,382)	$ 3,638,868	$ -	$ 3,638,867
12	TAXES					
13	Property Taxes	213,241	$ (1,898)	$ 211,343	$ -	$ 211,343
14	Payroll	54,716	$ -	$ 54,716	$ -	$ 54,716
15	State Income	38,940	$ 8,550	$ 47,490	$ 13,868	$ 61,358
16	Federal Income	176,765	$ 38,813	$ 215,578	$ 62,952	$ 278,530
17	Total Taxes	483,662	$ 45,465	$ 529,127	$ 76,819	$ 605,947
30						
31	Total Operating Expenses	$ 4,327,912	$ (159,917)	$ 4,167,995	$ 76,819	$ 4,244,814
32	Operating Income (Loss)	$ 742,768	$ 159,917	$ 902,685	$ 122,201	$ 1,024,886

References:
Column [A]: Company Schedule C-1
Column [B]: Schedule AII-4
Column [C]: Column [A] + Column [B]
Column [D]: Schedules AII-1 & AII-2
Column [E]: Column [C] + Column [D]

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Schedule AII-4

SUMMARY OF OPERATING INCOME STATEMENT ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] ADJ #1	[C] ADJ #2	[D] ADJ #3	[E] ADJ #4	[F] ADJ #5	[G] ADJ #6	[H] ADJ #7	[I] ADJ #8	[J] ADJ #9	[K] STAFF ADJUSTED
1	*REVENUES:*											
2	Operating Revenue	$ 5,070,680										$ 5,070,680
3	Total Operating Revenues	5,070,680										5,070,680
4												
5	*OPERATING EXPENSES:*											
6	Operations	2,826,742	(38,660)	(15,381)	(32,389)	(11,184)	(24,713)	(145,648)				2,558,767
7	Maintenance	296,930										296,930
8	Depreciation Expense	720,578							$ 62,593			$ 783,171
9		3,844,250	(38,660)	(15,381)	(32,389)	(11,184)	(24,713)	(145,648)	62,593	-		3,638,868
10	TAXES	-										
11	Property Taxes	213,241								(1,898)		211,343
12	Payroll	54,716										54,716
13	State Income	38,940									8,550	47,490
14	Federal Income	176,765									38,813	215,578
15	Total Taxes	483,662	-	-	-	-	-	-	-	(1,898)	47,363	529,127
16												-
17	Total Operating Expenses	4,327,912	(38,660)	(15,381)	(32,389)	(11,184)	(24,713)	(145,648)	62,593	(1,898)	47,363	4,167,995
18												
19	Operating Income (Loss)	742,768										902,685
20												
21												
22												

ADJ #	DESCRIPTION	REFERENCES:
1	Purchased Water (Outside) Account	Schedule AII-5
2	Purchased Power - Source of Supply	Schedule AII-6
3	Contract Service - Temporary Employee Operation (T&D)	Schedule AII-7
4	Materials and Supplies Inventory	Schedule AII-8
5	Rate Case Expense	Schedule AII-9
6	Miscellaneous Allocated Corporate Expenses	Schedule AII-10
7	Drepreciation Expense	Schedule AII-11
8	Property Taxes	Schedule AII-12
9	Income Taxes	Schedule AII-2

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule AII-5

OPERATING INCOME ADJUSTMENT #1 - PURCHASED WATER EXPENSE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Purchased Water (Outside) Account 510100.11	$ 38,660	$ (38,660)	$ -
2	Total	**$ 38,660**	**$ (38,660)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule C-1, Page 1
Company, Schedule E-2, Page 1
Company Workpaper, Page 028

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, AII

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
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Schedule AII-6

OPERATING INCOME ADJUSTMENT #2 - PURCHASED POWER EXPENSE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Purchased Power - Source of Supply - Account # 515100.11	$ 15,381	$ (15,381)	$ -
2	Total	**$ 15,381**	**$ (15,381)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule C-2, Page 1
Company, Schedule E-2, Page 1
Company Workpaper, Page 028

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, AII
General Legder - Account 515100.11

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
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OPERATING ADJUSTMENT #3 - CONTRACT SERVICE (TEMPORARY EMPLOYEE)

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Contract Service - Temporary Employee Operation TD Account # 535001.14	$ 32,389	$ (32,389)	$ -
2	Total	$ 32,389	$ (32,389)	$ -
5				

REFERENCES:

Column [A]: Company, Schedule C-1, Page 1
Company, Schedule E-2, Page 1
Company Workpaper, Page 029

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, AII
General Legder - Account 535001.14

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
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Schedule AII-8

OPERATING INCOME ADJUSTMENT #4 - MATERIALS AND SUPPLIES INVENTORY

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Materials and Supplies Inventory	$ 11,184	$ (11,184)	$ -
2	Total	**$ 11,184**	**$ (11,184)**	**$ -**

REFERENCES:

Column [A]: Company, Schedule C-1, Page 1
Company, Schedule C-2, Page 1 of 2

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, All
Company's Response to Data Request - RUCO 3-08(a)
Company's Response to Data Request - RUCO 5-11

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule AII-9

OPERATING INCOME ADJUSTMENT #5 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Rate Case Expense	$ 94,280	$ (24,713)	$ 69,567
2	Total	**$ 94,280**	**$ (24,713)**	**$ 69,567**

Calculation of Rate Case Expense			
Description	Company Proposed	Staff Adjustment	Staff Recommended
Jim Harrison - Consultant	$ 14,500	$ (5,212)	$ 9,288
Legal Fees	$ 36,000	$ (36,000)	$ -
Shared Service Center (SSC)	$ 72,949	$ (50,262)	$ 22,687
SSC Expense	$ 4,100	$ (850)	$ 3,250
Company labor	$ 39,594	$ 17,965	$ 57,559
Company expenses	$ 14,830	$ (9,975)	$ 4,855
Cost of Capital/Brattle Group	$ 79,383	$ (249)	$ 79,134
Witness Training	$ 6,500	$ (3,250)	$ 3,250
Cost of service	$ 4,995	$ 13,461	$ 18,456
Rate Design	$ 9,990	$ 231	$ 10,221
Miscellaneous Expenses			
Total	$ 282,841	$ (74,141)	$ 208,700
Three Year Average	$ 94,280	$ (24,714)	$ 69,567

REFERENCES:
Column [A]: Company, Schedule C-1, page 1
Company, Schedule C-2, page 3

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, AII
Company Response to Audit Question No. 1

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule AII-10

OPERATING INCOME ADJUSTMENT #6 - MISCELLANEOUS ALLOCATED CORPORATE EXPENSES

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENT	[C] STAFF PROPOSED
1	Miscellaneous Allocated Corporate Expenses	$ 145,648	$ (145,648)	$ -
2	Total	145,648	(145,648)	-

REFERENCES:

Column [A]: Company, Schedule C-1, Page 1
Company, Schedule E-2, Page 1
Company Workpaper, Page 098

Column [B]: Column [C] - Column [A]

Column [C]: Testimony, AII
Company's Response to Data Request - RUCO 9.03

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule AII-11

OPERATING INCOME ADJUSTMENT #7 - DEPRECIATION EXPENSE

LINE NO.	DESCRIPTION	ORIGINAL COST	RATE		EXPENSE
1	Property Held For Future Use	138,682.25	0.00%	$	-
2	301000 Organization	15,349.83	0.00%	$	-
3	303200 Land & Land Rights SS	-	0.00%	$	-
4	303300 Land & Land Rights P	-	0.00%	$	-
5	303400 Land & Land Rights WT	-	0.00%	$	-
6	303500 Land & Land Rights TD	8,324.25	0.00%	$	-
7	303600 Land & Land Rights AG	-	0.00%	$	-
8	304100 Struct & Imp SS	7,953.49	14.59%	$	1,160
9	304200 Struct & Imp P	69,130.88	3.99%	$	2,758
10	304300 Struck & Imp WT	3,038,847.79	2.00%	$	60,777
11	304400 Struct & Imp TD	23,863.77	1.50%	$	358
12	304500 Struct & Imp AG	15,172.89	4.63%	$	703
13	304600	-	4.63%	$	-
14	304700 Struct & Imp Store, Shop, Gar	93,284.70	4.63%	$	4,319
15	304800 Struct & Imp Misc	149,284.17	4.63%	$	6,912
16	307000 Wells & Springs	1,252,562.73	2.48%	$	31,064
17	311200 Pump Equip Electric	3,337,081.01	4.39%	$	146,498
18	311300 Pump Equip Diesel	59,421.23	4.39%	$	2,609
19	320100 WT Equip Non-Media	5,825,148.50	7.06%	$	411,255
20	330000 Dist Reservoirs & Standpipes	912,618.67	3.15%	$	28,747
21	331100 TD Mains 4 inch & Less	706,251.66	4.17%	$	29,451
22	331200 TD mains 6 inch to 8 inch	3,974,977.39	2.52%	$	100,169
23	331300 TD Mains 10 inch to 16 inch	8,274,227.29	2.34%	$	193,617
24	333000 Services	2,178,856.88	4.72%	$	102,842
25	334100 Meters	328,579.41	7.21%	$	23,691
26	334200 Meter Installations	103,798.95	1.51%	$	1,567
27	335000 Hydrants	976,968.39	2.10%	$	20,516
28	339600 Other P/E CPS	-	0.00%	$	-
29	340100 Office Furniture & Equip	43,930.67	4.04%	$	1,775
30	340200 Comp & Periph Equip	98,019.42	15.89%	$	15,575
31	340300 Computer Software	134,173.75	37.71%	$	50,597
32	340500 Other Office Equipment	25,223.99	7.13%	$	1,798
33	341100 Trans Equip Lt Duty Trks	2,882.41	28.05%	$	809
34	341300 Trans Equip Autos	19,307.08	7.80%	$	1,506
35	341400 Trans Equip Other	13,605.63	0.93%	$	127
36	343000 Tools, Shop, Garage Equip	83,290.90	3.61%	$	3,007
37	345000 Power Operated Equipment	147,065.93	4.64%	$	6,824
38	346001	-	0.00%	$	-
39	346100 Comm Equip Non-Telephone	284,555.82	9.76%	$	27,773
40	346300 Comm Equip Other	81,330.95	7.91%	$	6,433
41	Total	32,423,772.68		$	1,285,236
42	Corporate Allocation			$	16,368
43	Amortization of Mummy Mountain Acquisition Costs			$	6,570
44	Less: Amortization of CIAC			$	(525,004)
45					
46					
47	Staff Recommended Depreciation Expense			$	783,171
48	Company Proposed Depreciation Expense			$	720,578
49	Staff Adjustment			$	62,593

ARIZONA-AMERICAN WATER COMPANY, INC. - PARADISE VALLEY DISTRICT
Docket No. WS-01303A-05-0405
Test Year Ended December 31, 2004

Schedule AII-12

OPERATING INCOME ADJUSTMENT #8 - PROPERTY TAXES

LINE NO.	DESCRIPTION	AMOUNT
1	Staff Adjusted Test Year Revenues	$ 5,070,680
2	Weight Factor	2
3	Subtotal (Line 1 x Line 2)	$ 10,141,360
4	Staff Recommended Revenue	$ 5,269,700
5	Subtotal (Line 4 + Line 5)	$ 15,411,060
6	Number of Years	3
7	Three Year Average (Line 5 / Line 6)	$ 5,137,020
8	Department of Revenue Multiplier	2
9	Revenue Base Value (Line 7 x Line 8)	$ 10,274,040
10	Plus: 10% of CWIP - 2001	$ -
11	Less: Net Book Value of Licensed Vehicles	$ 8,933
12	Full Cash Value (Line 9 + Line 10 - Line 11)	$ 10,265,107
13	Assessment Ratio	25%
14	Assessment Value (Line 12 x Line 13)	$ 2,566,277
15	Composite Property Tax Rate	8.23540%
16	Staff Recommended Property Tax Expense	$ 211,343
17	Company Proposed Property Tax Expense	$ 213,241
18	Staff Adjustment	$ (1,898)

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC. FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE AT ITS PARADISE VALLEY WATER DISTRICT.	)	DOCKET NO. W-01303A-05-0405

DIRECT

TESTIMONY

OF

DARRON W. CARLSON

PUBLIC UTILITIES ANALYST MANAGER

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

JANUARY 16, 2006

ALL-STATE LEGAL®
EXHIBIT
S-1
admitted

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PURPOSE OF TESTIMONY 1

RATE DESIGN 2

SCHEDULES

Rate Design DWC-1

Typical Bill Analysis DWC-2

EXECUTIV E SUMMARY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405

Arizona-American Water Company, Inc. ("Company") is the largest, investor-owned water utility in the state of Arizona. It serves approximately 131,000 customers of various types throughout the state. The Paradise Valley Water District serves approximately 4,737 metered customers of various classes, of which more than 93 percent are residential customers in Paradise Valley, Scottsdale, and some unincorporated areas of Maricopa County.

Staff generally concurs with the Company's rate design. Staff adjusted a few of the commodity charges to reflect the difference in Staff's recommended revenue requirement. The Company's proposed rates would increase the bill for a typical residential customer using the median of 11,500 gallons per month from $16.81 to $18.35 for an increase of $1.54 or 9.16 percent. Staff's recommended rates would increase the bill for a typical residential customer using the median of 11,500 gallons per month from $16.81 to $17.66 for an increase of $0.85 or 5.06 percent.

The Company proposed a new service charge mechanism to recover costs of investments in Public Fire Safety ("PFS") plant additions. Staff recommends denial of the Company's proposal for a service charge mechanism to recover costs of investments in PFS plant additions. The Arizona Corporation Commission ("Commission") recently approved an Accounting Order that allows the Company to accrue a post-in-service allowance for funds used during construction ("AFUDC") on PFS plant investments until the related plant is placed in rate base and rates are established on that rate base. This precludes the need for a service charge as the Company will be compensated for the time value of its investment until the PFS plant is placed in rates.

Additionally, the Company proposed a new high-block usage surcharge that will create funds to be treated as contributions-in-aid-of-construction ("CIAC"). Staff recommends approval of the Company's proposed high-block usage surcharge but including Staff's more definitive description of the surcharge. Staff also recommends that the funds collected be used (as CIAC) to offset the PFS investments and minimize AFUDC accruals.

INTRODUCTION

Q. Please state your name and business address.

A. My name is Darron W. Carlson. My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. By whom are you employed and in what capacity?

A. I am employed by the Utilities Division ("Staff") of the Arizona Corporation Commission ("Commission") as a Public Utilities Analyst Manager.

Q. Briefly summarize your educational and professional qualifications related to your responsibility in the field of utility regulation.

A. I hold a Bachelor of Arts Degree in both Accounting and Business Management from Northeastern Illinois University in Chicago, Illinois. I have participated in a number of seminars and workshops related to utility ratemaking, cost of capital, and similar issues, sponsored by the National Association of Regulatory Commissioners ("NARUC"), Duke University, Florida State University, Michigan State University, New Mexico State University, and others. I have led or actively participated in over 125 cases before this Commission in my fourteen years in various positions with the Utilities Division of the Commission.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. First, I am adopting the direct testimony and schedules of Staff witness, Mr. Alexander I. Igwe. Mr. Igwe recently left the employment of the Utilities Division and, as his supervisor, I am replacing him as the lead Staff witness in this proceeding. Second, I am presenting Staff's analysis and recommendations for the rate design regarding Arizona-

American Water Company, Inc.'s ("AAWC" or "Company") rate filing for its Paradise Valley Water District.

RATE DESIGN

Q. Did Staff prepare a schedule depicting the present rates, the Company's proposed rates, and Staff's recommended rates?

A. Yes. Schedule DWC-1 reflects a full summary of the present rates, the Company's proposed rates, and Staff's recommended rates.

Q. Please summarize the rate design.

A. The Company's Paradise Valley District currently has a conservation-type rate design, in that it has no gallons included in its base rates and has three-tier inverted block commodity rates. Its Mummy Mountain acquisition does carry 1,000 gallons included in the minimum and only a single-tier commodity rate but the Company is changing this situation (and Staff concurs) by consolidating the rate designs and eliminating the Mummy Mountain, non-conservation rates.

The Company's proposed rates and Staff's recommended rates are quite similar in this case because it is a continuation of the rate design policies previously ordered by this Commission. Staff has adopted and recommends very similar rates and identical tier levels to those proposed by the Company. The difference in the actual commodity rates is caused by Staff's adjustment to a lower revenue requirement.

The Company did not request any increases in its miscellaneous service charges and Staff concurs. The Company did not itemize, but requested increases in the Service Line and

Meter Installation Charge. Staff set the increase at the mid-point of the Staff recommended range for each meter size.

Q. Has the Company requested any other new rates or charges that are not included in its current tariff?

A. Yes. The Company has requested two new tariff items that are not included in its current tariff.

First, the Company has proposed a service charge mechanism to recover the costs of investments in Public Fire Safety ("PFS") plant additions. Please refer to the direct testimony of Staff witness, Mr. James Dorf, for a discussion of the PFS plant investments themselves. As to the service charge, Staff recommends denial of the Company's proposal for a service charge mechanism to recover these costs because the Commission recently approved an Accounting Order that allows the Company to accrue a post-in-service allowance for funds used during construction ("AFUDC") on PFS plant investments until the related plant is placed in rate base and rates are established on that rate base. Staff believes that this precludes the need for a service charge as the Company will be compensated for the time value of its investment through post-in-service AFUDC until the plant is placed in rate base and reflected in rates.

Second, the Company has proposed a high-block usage surcharge. This surcharge is being proposed because, in the past, the Paradise Valley Water District's water usage patterns have demonstrated tendencies of being in-elastic regardless of price signals that the Company and this Commission have sent. The Company's proposed surcharge, as worded, appears confusing, so Staff has reworded and simplified the surcharge. The Company proposed that the surcharge per unit of water (1,000 gallons) consumed in the

high-block up to the last 5 percent of usage be charged an additional $2.00 and the surcharge per unit of water (1,000 gallons) consumed in the last 5 percent of the high-block be charged an additional $5.00. Staff has clarified/simplified this to a residential surcharge rate of $2.15 per 1,000 gallons for all usage in the third tier and a commercial surcharge rate of $2.15 per 1, 000gallons for all usage in the second tier. Of course, this is in addition to the normal tier charge. Staff estimates that this surcharge could produce approximately $1.7 million per year.

Further, the Company proposes that the funds collected through this surcharge be considered contributions-in-aid-of-construction ("CIAC"). Staff concurs with the Company that the funds should be classified as CIAC but further, Staff recommends that the funds collected be used directly to offset the PFS investments and minimize the post-in-service AFUDC accruals.

Q. Has Staff prepared a typical bill analysis to reflect the effects of the proposed and recommended rate changes?

A. Yes. Schedule DWC-2 is a typical bill analysis for a residential 5/8" meter customer. Note that the Company's proposed rates would increase the bill for a residential customer using the median of 11,500 gallons per month from $16.81 to $18.35 for an increase of $1.54 or an increase of 9.16 percent. Staff's recommended rates would increase the bill for a residential customer using the median of 11,500 gallons per month from $16.81 to $17.66 for an increase of $0.85 or an increase of 5.06 percent.

Also note that at the bottom of Schedule DWC-2, the last 7 line items reflect the potential effect of the high-block usage surcharge.

1 **Q. Does this conclude Staff's testimony?**

2 A. Yes, it does.

RATE DESIGN

Monthly Usage Charge	Present Rates	Company Proposed Rates	Staff Recommended Rates
5/8" x 3/4" Meter	$ 8.41	$ 9.26	$ 9.26
5/8" x 3/4" Meter - Mummy Mountain	9.00	9.26	9.26
3/4" Meter	8.74	9.62	9.62
1" Meter	14.01	15.42	15.42
1" Meter - Mummy Mountain	9.75	15.42	15.42
1½" Meter	28.02	30.83	30.83
1½" Meter - Mummy Mountain	14.00	30.83	30.83
2" Meter	44.83	49.32	49.32
2" Meter - Mummy Mountain	25.75	49.32	49.32
3" Meter	84.06	92.47	92.47
4" Meter	140.10	154.11	154.11
6" Meter	280.20	308.22	308.22
Paradise Valley Country Club	12,817.00	14,784.00	See Below
Fire Hydrants	5.00	5.00	5.00

Commodity Rates

Residential - All Meter Sizes	Paradise Valley	Mummy Mountain	Paradise Valley	Mummy Mountain	Paradise Valley	Mummy Mountain
Gallons Included in Minimum	-	1,000		-		-
Excess of Minimum - per 1,000 Gallons						
All Gallons	N/A	$ 1.74	N/A	N/A	N/A	N/A
From 1 to 25,000 Gallons	$ 0.73	N/A	$ 0.79	$ 0.79	$ 0.73	$ 0.73
From 25,001 to 80,000 Gallons	1.68	N/A	1.75	1.75	1.69	1.69
Over 80,000 Gallons	2.17	N/A	2.25	2.25	2.20	2.20
Commercial - All Meter Sizes						
Gallons Included in Minimum		-		-		-
Excess of Minimum - per 1,000 Gallons						
From 1 to 400,000 Gallons		$ 1.17		$ 1.26		$ 1.26
Over 400,000 Gallons		1.46		1.57		1.57
Turf Facility Customers						
Gallons Included in Minimum		-		-		-
Excess of Minimum - per 1,000 Gallons						
All Gallons		$ 0.90		$ 1.00		$ 1.00
Paradise Valley Country Club (Contract Rate)						
Gallons included in Minimum		-		-		-
Mininum Charge Based Upon Applicable Meter Size						x
Excess of Minimum - per 1,000 Gallons						
All Gallons Included In Monthly Charge				x		
All Gallons @ Turf Rate Less 15 Percent						x
All Applicable Surcharges Less 15 Percent						x
Other General Metered						
Gallons Included in Minimum		-		-		-
Excess of Minimum - per 1,000 Gallons						
All Gallons		$ 1.32		$ 1.46		$ 1.46
Fire Hydrant Irrig./Const.						
Gallons Included in Minimum		-		-		-
Excess of Minimum - per 1,000 Gallons						
All Gallons		All		All		All
Resale Customers						
All Gallons		$ 1.18		$ 1.46		$ 1.46

Service Line and Meter Installation Charges	Total	Total	Total
5/8" x 3/4" Meter	$ 330	$ 480	$ 480
3/4" Meter	360	560	560
1" Meter	411	650	650
1½" Meter	550	895	895
2" Meter	604	1,555	1,555
3" Meter	1,062	2,235	2,235
4" Meter	1,806	3,440	3,440
6" Meter	3,872	6,195	6,195

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Service Charges			
Establishment	$ 20.00	$ 20.00	$ 20.00
Establishment (After Hours)	40.00	40.00	40.00
Reconnection (Deliquent)	30.00	30.00	30.00
Reconnection (Deliquent and After Hours)	60.00	60.00	60.00
Meter Test, if meter is correct	15.00	15.00	15.00
Deposit	*	*	*
Deposit Interest	*	*	*
Re-Establishment (With-in 12 Months)	**	**	**
NSF Check	12.00	12.00	12.00
Deferred Payment, Per Month	1.50%	1.50%	1.50%
Meter Re-Read	10.00	10.00	10.00
Late Charge per month	1.50%	1.50%	1.50%
Monthly Service Charge for Fire Sprinkler			
4" or Smaller	***	***	***
6"	***	***	***
8"	***	***	***
10"	***	***	***
Larger than 10"	***	***	***

* Per Commission Rules (R14-2-403.B)
** Months off system times the minimum (R14-2-403.D)
*** 1.00% of monthly minimum for a comparable sized meter connection, but no less than $5.00 per month. The service charge for fire sprinklers is only applicable for service lines seperate and distinct from the primary water service line.

CAP Surcharge

	Per Customer
Residential Customers:	
In excess of 45,000 gallons	$ 0.0769 per 1,000 gallons
All Non-Residential Customers except Sale for Resale Customers:	
For all usage	$ 0.0769 per 1,000 gallons

CAP Expense Recovery Surcharge

	Per Customer
For all customers	$ 1.01 per Year

High Block Usage Surcharge Treated as Contributions in Aid of Construction

	Per Customer
Residential Customers:	
All residential customers with usage in the third tier will pay a surcharge on their third tier usage.	
All usage in the third tier, in addition to normal third tier charge	$ 2.15 per 1,000 gallons
Commercial Customers:	
All commercial customers with usage in the second tier will pay a surcharge on their second tier usage.	
All usage in the second tier, in addition to normal second tier charge	$ 2.15 per 1,000 gallons

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2

Typical Bill Analysis
General Service 5/8-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	22,193	$ 24.61	$ 26.79	$ 2.18	8.86%
Median Usage	11,500	16.81	18.35	$ 1.54	9.16%
Staff Recommended					
Average Usage	22,193	$ 24.61	$ 25.46	$ 0.85	3.45%
Median Usage	11,500	16.81	17.66	$ 0.85	5.06%

Present & Proposed Rates (Without Taxes)
General Service 5/8-Inch Meter
(Includes only the High Block Surcharge)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 8.41	$ 9.26	10.11%	$ 9.26	10.11%
1,000	9.14	10.05	9.96%	9.99	9.30%
2,000	9.87	10.84	9.83%	10.72	8.61%
3,000	10.60	11.63	9.72%	11.45	8.02%
4,000	11.33	12.42	9.62%	12.18	7.50%
5,000	12.06	13.21	9.54%	12.91	7.05%
6,000	12.79	14.00	9.46%	13.64	6.65%
7,000	13.52	14.79	9.39%	14.37	6.29%
8,000	14.25	15.58	9.33%	15.10	5.96%
9,000	14.98	16.37	9.28%	15.83	5.67%
10,000	15.71	17.16	9.23%	16.56	5.41%
11,000	16.44	17.95	9.18%	17.29	5.17%
12,000	17.17	18.74	9.14%	18.02	4.95%
13,000	17.90	19.53	9.11%	18.75	4.75%
14,000	18.63	20.32	9.07%	19.48	4.56%
15,000	19.36	21.11	9.04%	20.21	4.39%
16,000	20.09	21.90	9.01%	20.94	4.23%
17,000	20.82	22.69	8.98%	21.67	4.08%
18,000	21.55	23.48	8.96%	22.40	3.94%
19,000	22.28	24.27	8.93%	23.13	3.82%
20,000	23.01	25.06	8.91%	23.86	3.69%
25,000	26.66	29.01	8.81%	27.51	3.19%
30,000	35.06	37.76	7.70%	35.96	2.57%
35,000	43.46	46.51	7.02%	44.41	2.19%
40,000	51.86	55.26	6.56%	52.86	1.93%
45,000	60.26	64.01	6.22%	61.31	1.74%
50,000	68.66	72.76	5.97%	69.76	1.60%
75,000	110.66	116.51	5.29%	112.01	1.22%
100,000	162.46	213.26	31.27%	207.46	27.70%
150,000	270.96	433.26	59.90%	424.96	56.83%
200,000	379.46	653.26	72.16%	642.46	69.31%
250,000	487.96	873.26	78.96%	859.96	76.24%
300,000	596.46	1,093.26	83.29%	1,077.46	80.64%
350,000	704.96	1,313.26	86.29%	1,294.96	83.69%
400,000	813.46	1,533.26	88.49%	1,512.46	85.93%

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER - Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC. FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE AT ITS PARADISE VALLEY WATER DISTRICT.	)	DOCKET NO. W-01303A-05-0405

SURREBUTTAL

TESTIMONY

OF

DARRON W. CARLSON

PUBLIC UTILITIES ANALYST MANAGER

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

MARCH 6, 2006

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EXHIBIT
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admitted

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EXECUTIVE SUMMARY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405

The surrebuttal testimony of Staff witness Darron W. Carlson addresses the following issues:

Income Statement

1. Allocated Corporate Miscellaneous Expense Account:

   Staff continues to recommend the disallowance of the entire account in the amount of $145,648.

2. Rate Case Expense Account:

   Staff continues to recommend the Staff's recommended level of expense of $208,700.

3. Purchased Power Expense Account:

   Staff continues to recommend the removal of the accrual item included in the account in the amount of $15,381.

Rate Design

1. Public Safety Surcharge:

   Staff continues to recommend denial of the surcharge.

2. Paradise Valley Country Club:

   Staff continues to recommend its rate design but agrees to the Company's proposed commodity rate second tier at 25,000,000 gallons of usage per month with no change in rate.

INTRODUCTION

Q. Please state your name and business address.

A. My name is Darron W. Carlson. My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. By whom are you employed and in what capacity?

A. I am employed by the Utilities Division ("Staff") of the Arizona Corporation Commission ("Commission") as a Public Utilities Analyst Manager.

Q. Are you the same Darron W. Carlson who previously filed direct testimony in this case?

A. Yes, I am. I filed my direct testimony on January 16, 2006.

PURPOSE OF TESTIMONY

Q. What is the purpose of your surrebuttal testimony in this proceeding?

A. The purpose of my surrebuttal testimony in this proceeding is to present Staff's response to the rebuttal testimony filed by Arizona-American Water Company, Inc. – Paradise Valley Water District's ("Company") witnesses in regards to issues addressed by Staff witness Mr. Igwe and myself in direct testimony. The specific areas/issues are income statement items and adjustments, arsenic cost recovery mechanism, and rate design.

Q. How is Staff's surrebuttal testimony organized?

A. Staff's surrebuttal testimony is organized in the same order as the Company's rebuttal testimony. That is, Staff will respond to each Company witness and the pertinent issue(s) in the same order as presented in the Company's rebuttal testimony.

Q. Does Staff accept the Company's position on any specific issues not addressed in this surrebuttal testimony?

A. No. Staff's lack of response to any issue in this proceeding should not be construed as agreement with the Company's direct and/or rebuttal testimonies; rather, where there is no response, Staff relies on its original direct testimony.

COMPANY WITNESS – JOEL M. REIKER

Income Statement

Q. After review of the Company's rebuttal testimony, what is Staff's understanding of the Company's position regarding Staff's adjustments to the Company's application income statement contained in Staff's direct testimony and schedules?

A. The Company's position, as stated by Mr. Reiker, is that it accepts Staff's income statement adjustment numbers one, three, four, seven, eight, and nine. Conversely it does not accept Staff's adjustment numbers two, five, and six.

Q. Does Staff agree with the Company that the Commission should not recognize Staff's income statement adjustment numbers two, five, and six?

A. No, Staff does not. Mr. Reiker references Mr. David Weber's rebuttal testimony regarding the reason why the Company does not accept Staff's adjustment number two. Staff will address this issue directly in its response to Mr. Weber's rebuttal testimony later in this surrebuttal testimony.

Mr. Reiker references Mr. Thomas Broderick's rebuttal testimony regarding the reason why the Company does not accept Staff's adjustment number five. Staff will address this issue directly in its response to Mr. Broderick's rebuttal testimony later in this surrebuttal testimony.

Mr. Reiker directly addresses the reason why the Company does not accept Staff's adjustment number six. Staff adjustment number six is the disallowance/elimination of the Company's allocated corporate miscellaneous expense account in the amount of $145,648. Staff had reviewed supporting documentation regarding this account provided by the Company in response to a Residential Utility Consumer Office's ("RUCO") data request. Staff found that many of the invoices provided should have been directly allocated rather than applied to the general allocation account. The Company contends that this account properly reflects only allocated corporate miscellaneous expenses and does not reflect miscellaneous expenses that could be directly allocated to particular operating districts. The Company's rebuttal position is that many/all of the cited invoices were actually directly allocated and were not provided as documentation of the general allocation account. They were provided only because they were on the same invoices/credit card statements as a few items that these invoices were meant to document. While this may be correct, it is difficult for Staff to verify it at this late date. Further, Staff is still very concerned that the Company's application contained very few of the necessary or required adjustments to this account. This necessitated a lot of time and effort on RUCO's and Staff's part to review the underlying account documentation and make required adjustments.

The Company (<u>especially</u> the Paradise Valley Water District) should have known in advance the disposition of many of the unadjusted expenses that were contained in this account. The Commission has routinely removed all lobbying portions of annual dues for any and all organizations the Company chooses to join and/or pays dues to. In fact, most of these organizations routinely include summaries in their publications of the portion of dues that go to lobbying, as most regulatory agencies do not allow them. This Commission has also routinely removed expenses for various types of parties, image

advertising, artwork, boats, and many other items that may be found in miscellaneous accounts. The Company should have reviewed the accounts and made necessary adjustments prior to the filing of its rate case so that Staff, RUCO, and others are not burdened with trying to dig such items out of an overly complex accounting system.

Staff believes that, while there are certainly legitimate expenses in the allocated corporate miscellaneous expense account, the Company has not provided sufficient information to justify this level of expense and has overall failed to meet its burden of proof. By disallowing the amount contained in this account, the Commission will be sending a signal to the Company that it bears the burden of justifying that its test year expenses are reasonable and appropriate, which includes consideration of the Commission's prior treatment of certain expenses and other accounting issues. Staff continues to believe that the disallowance of this entire account is appropriate and recommends that the Commission disallow the $145,648 contained in the Company's allocated corporate miscellaneous expense account, since Staff has not been able to verify the Company's position based upon the information provided by the Company to date and as presented in its rebuttal testimony filed on February 13, 2006. In addition, the Company has the burden of demonstrating that any cost overhead allocations and direct charges are reasonable. It has failed to do this.

In one last effort to ferret out specific amounts subject to disallowance or adjustment, Staff has sent one final data request (STF 7.1) to the Company. To the extent the Company again provides unusable data to the Staff, the Staff will stand by its recommendation. To the extent the Company is able to justify any part of the account; Staff will consider amending its recommendation of total disallowance.

COMPANY WITNESS – PAUL G. TOWNSLEY

Fire-Flow Improvement Program – Public Safety Surcharge

Q. After review of the Company's rebuttal testimony, what is Staff's understanding of the Company's position regarding Staff's treatment of the Company's requested public safety surcharge to fund the fire-flow improvement program?

A. The Company's position, as stated by Mr. Townsley, is that it does not accept Staff's recommendation that no public safety surcharge be authorized. Due to Staff's inclusion of certain post-test year fire-flow improvement plant additions in its recommended rate base, the Company has now altered its public safety surcharge request. It reduced its five-step surcharge proposal to two-steps, with the first step becoming effective September 2007 or later and the second step becoming effective September 2008 or later.

Q. Does Staff agree with the Company that the Commission should approve the Company's alternative public safety surcharge?

A. No, Staff does not. On November 14, 2005, this Commission issued Decision No. 68303, in which the Company was authorized to defer depreciation expense related to fire-flow improvement plant expenditures. Additionally, the Company was authorized to include in its plant costs, post-in-service Allowance for Funds Used During Construction ("AFUDC") until the related plant is placed in rate base and rates are established on that rate base. The Company has failed to demonstrate a need for the proposed public safety surcharge. The Company will be compensated for the time value of its investment through post-in-service AFUDC until the plant is placed in rate base and reflected in rates.

Mr. Townsley states that the Company does not wish to invest any of its own capital in this project and is only willing to invest the contributions it will receive from the high-block usage surcharge and from any public safety surcharge authorized in this proceeding.

Staff believes that the post-in-service AFUDC already authorized will fairly compensate the Company for the investment of its own funds. If the Company continues to refuse to invest its own funds in this project, and this Commission authorizes a public safety surcharge is this proceeding, Staff strongly recommends that the Commission, simultaneously alter Decision No. 68303 to revoke or rescind the post-in-service AFUDC authorized in that Decision.

The Company already has two Central Arizona Project ("CAP") surcharges and is proposing a new high-block usage surcharge as well. Staff believes that the myriad of surcharges being proposed by the Company would also be extremely confusing for the typical consumer. Yet another surcharge, where the Commission has already authorized post-in-service AFUDC in this case, is not justified or appropriate.

COMPANY WITNESS – THOMAS M. BRODERICK

Rate Case Expense

Q. After review of the Company's rebuttal testimony, what is Staff's understanding of the Company's position regarding Staff's adjustment to the Company's rate case expense?

A. The Company's position, as stated by Mr. Broderick, is that it does not accept Staff's adjustment to rate case expense. In fact, Mr. Broderick modifies Company witness, Ms. Stacey A. Fulter's direct testimony in which the Company proposed splitting the outside cost of capital witness expenditures 50/50 between investors and ratepayers, as both benefit from the expenditure. Mr. Broderick contends that he cannot support this 50/50 split and further contends that the opposite is true, in that only ratepayers benefit from the cost of capital witness expenditures and investors derive no benefit from these expenditures. Mr. Broderick points out that in a subsequent rate case filing, Docket No.

WS-01303A-06-0014, the Company, again, contends that only ratepayers benefit from the cost of capital witness expenditures and that investors derive no benefit from these expenditures. Mr. Broderick offers some adjustments to the Company's original request of $282,841 in rate case expenses. Its revised request is $301,832.

Q. Does Staff agree with the Company that the Commission should not recognize Staff's income statement adjustment to rate case expense and should, instead, recognize the Company's revised request of $301,832?

A. No, Staff does not. Staff has already reviewed, in its direct testimony, the proposed adjustment to rate case expenses resulting in a total request of $301,832. Staff determined that the proper level of rate case expense should be $208,700. Staff continues to support that level of expense.

Staff's position recognizes that both investors and ratepayers benefit from these expenses, since they are used in a determination of the appropriate revenue requirement. In recent years, Staff has discussed requiring utilities to split the cost of capital expenditures of rate cases 50/50 between investors and ratepayers, as the cost of capital and the resultant rate of return are a benefit to investors as well as ratepayers. While the Company's witness disputes this in his rebuttal testimony, Staff strongly believes that the benefits of the cost of capital portion of rate case expenses flow to both investors and ratepayers. Consequently Staff continues to recommend that the expenses associated with the cost of capital portion of rate case expense be split 50/50 between investors and ratepayers, as reflected in Staff's recommended level of rate case expense.

Paradise Valley Country Club Contract

Q. After review of the Company's rebuttal testimony, what is Staff's understanding of the Company's position regarding the rate design issue raised in Mr. Broderick's rebuttal testimony?

A. The Company's position, as stated by Mr. Broderick, is that it accepts Staff's recommended rate design but wishes to add a second (high-block) tier so that a portion of the Paradise Valley Country Club's ("PVCC") monthly usage may be subject to the high-block usage charge. The proposed second tier is set at 25,000,000 gallons per month and, at that level, may only affect PVCC. The Company proposes no change in the commodity rate so it will not create any more revenue but could create some contributions-in-aid-of-construction that would go to fund fire-flow improvements.

Q. Does Staff agree with the Company that the Commission should include the second tier in the Company's turf rates as described above?

A. Yes, Staff agrees with the Company and supports the inclusion of the second tier in turf rates.

COMPANY WITNESS – DAVID L. WEBER

Purchased Power Expense

Q. After review of the Company's rebuttal testimony, what is Staff's understanding of the Company's position regarding Staff's adjustment to purchased power expense?

A. The Company's position, as stated by Mr. Weber, is that it does not accept Staff's adjustment to purchased power expense. Mr. Weber attempts to explain why the Company should be allowed the expense as calculated by the Company. Mr. Weber complains that Staff removed an accrual item representing future cost from the Company's calculation of purchased power expense, thereby creating a shortage of actual

expense in the account. Mr. Weber believes it would be unusual for a typical expense account ledger to reflect anything other than eleven months of activity and one month of accrual.

Q. Does Staff agree with the Company that the Commission should not recognize Staff's income statement adjustment to purchased power expense?

A. No, Staff does not. In typical audit fashion, Staff requested a "true-up" in this particular account, which would require removal of the accrual item and its replacement with an actual expense item. Apparently the Company believes that the removal of accrual items and the true-up of accounts are unnecessary. Staff does not agree. Staff also believes that it is disingenuous for the Company to describe its methodology as being typical of virtually all organizations. Staff believes that actual numbers wherever possible are desirable and minimizes, or avoids the use of estimates to the extent possible. This Commission's utilization of historical test years is, in part, so that actual numbers can be utilized and estimates can be minimized and/or avoided.

Accordingly, Staff continues to support its adjustment.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

EXHIBIT No._____

ALTERNATIVE FIRE FLOW SURCHARGE
DOCKET NO. W-01303A-05-0405

In its direct testimony, Staff proposed a "High-Block" surcharge of $2.15 to be applied to all gallons in the top tier of each rate schedule to be implemented coincident with the new rates in Arizona-American Water Company's ("Company") application. Amounts collected are to be treated as Contributions in Aid of Construction ("CIAC"). In its surrebuttal testimony Staff recommended that the "High Block" surcharge collections be used to offset the fire flow projects.

The Company had proposed a two step "Public Safety" fire flow surcharge. However, in discussing Staff's proposal, the Company's rebuttal testimony indicated that it would defer the timing of the fire flow projects since the High Block surcharge would not produce adequate cash flow. Mr. Townsley's testimony indicates that "the Company has slowed the pace of these projects until the Commission's wishes are more clearly stated".

The Company has asked Staff to explore possible acceleration of the fire flow surcharge collections to assist in completing the project on a more timely basis. As an alternative, in the event the Commission believes a surcharge is appropriate, Staff suggests a second phase, which would also be used specifically for fire flow surcharges, that would take effect on October 1, 2007. The second phase would increase the High Block surcharge from $2.15 to $3.15 per 1,000 gallons. A new "Public Safety" surcharge for the 2nd Tier residential rate of $1.00 per 1,000 gallons and for the 1st Tier of commercial rate of $1.00 per 1,000 gallons would also begin October 1, 2007.

Staff estimates that the High Block surcharge of $2.15 would generate approximately $1.7 million annually. Implementation of the October 1, 2007 increases would generate an additional $1.8 million annually for a total of $3.5 million annually. See Attached Schedule DWC.

The potential benefits from a phase-in fire flow surcharge include the following:

- Encourage conservation in a water district with historically high usage.
- Increase contributions in aid of construction which will reduce future rate increases.
- Permit more timely implementation of fire safety related infrastructure.

The surcharges will have no effect on the median (11,500 gallons) or average (22,193 gallons) residential bills since the surcharge for the 2nd Tier residential starts at 25,000 gallons. Thus, the median and average residential users will not be impacted.

Not withstanding this alternative, Staff continues to recommend a $2.15 "High Block" surcharge be implemented when new rates take effect and for the monies collected by this surcharge to be used to offset the cost of the fire flow project.

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If the Commission adopts this alternative, Staff recommends that that the Public Safety surcharge be terminated and the High Block surcharge be reduced back to $2.15 once the Company has fully recovered its fire flow project costs.

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405

Schedule DWC

APPROXIMATE CASH FLOW
FIRE FLOW SURCHARGE

Assumes implementation of a top tier $2.15 surcharge in August, 2006
Implementation of the following revised surcharge in October, 2007:

Top Tier-all Rate Schedules	$3.15
2nd Tier-Residential Rates	$1.00
1st Tier-Commercial Rates	$1.00

ESTIMATED MONTHLY CASH FLOW

	Top Tier at $2.15	Top Tier at $3.15	2nd Tier Res at $1.00	1st Tier Com. at $1.00	Cummulative
September 2006	170,000				170,000
October 2006	113,333				283,333
November 2006	113,333				396,666
December 2006	113,333				509,999
January 2007	113,333				623,332
February 2007	113,333				736,665
March 2007	113,333				849,998
April 2007	170,000				1,019,998
May 2007	170,000				1,189,998
June 2007	170,000				1,359,998
July 2007	170,000				1,529,998
August 2007	170,000				1,699,998
September 2007	170,000				1,869,998
October 2007	113,333				1,983,331
November 2007		166,666	52,800	12,000	2,214,797
December 2007		166,666	52,800	12,000	2,446,263
January 2008		166,666	52,800	12,000	2,677,729
February 2008		166,666	52,800	12,000	2,909,195
March 2008		166,666	52,800	12,000	3,140,661
April 2008		250,000	79,200	18,000	3,487,861
May 2008		250,000	79,200	18,000	3,835,061
June 2008		250,000	79,200	18,000	4,182,261
July 2008		250,000	79,200	18,000	4,529,461
August 2008		250,000	79,200	18,000	4,876,661
September 2008		250,000	79,200	18,000	5,223,861
October 2008		166,666	52,800	12,000	5,455,327
	1,983,331	2,499,996	792,000	180,000	
			3,471,000		

EXHIBIT NO. _____

DOCKET NO. W-01303A-05-0405

Staff recommends modification of the authorized allowance for funds used in construction ("AFUDC") methodology granted in Decision No. 68303 related to the fire flow project. Staff recommends a modification to the authorized AFUDC calculation to take into account amounts collected by the surcharge. The surcharge collections should be a deduction for purposes of calculating the balance to which the AFUDC fire flow rate is applied. The modification is necessary to allow the Company to recover its capital costs only on its net investment in fire flow projects.

Staff recommends a modification of the AFUDC calculation for the accounting order in Decision No. 68303 related to the fire flow project as described herein.

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Remitted

Town Code*

The Paradise Valley Town Code is available in pdf format both by chapter and as a complete document. Please report broken links or other problems to the webmaster.

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*This code contains all of the ordinances of the Town of Paradise Valley of a general and permanent nature adopted through **February 16, 2006** and still in effect on that date.

DISCLAIMER: Every effort has been made to ensure that the information contained herein is current and accurate. The Town of Paradise Valley makes no warranty or guarantee concerning the accuracy or reliability of the content on this page or at other sites to which this site links. Assessing the accuracy of the information is the responsibility of the user. The Town shall not be liable for errors contained herein or for any damages in connection with the use of the information contained herein.

Last modified 02/15/2006 16:18

CHAPTER 13 FIRE DEPARTMENT

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CHAPTER 13 FIRE DEPARTMENT

Article 13-1 FIRE DEPARTMENT

13-1-1	Created; Composition
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13-1-5	Entry Upon Adjacent Property
13-1-6	Equipment
13-1-7	Providing Fire Protection Outside the Town
13-1-8	Obligations of Town Residents and Other Persons [526 556]
13-1-9	Fire Alarms
13-1-10	Adoption of International Fire Code; Permit Fees; Violation [95 356 509 563]
13-1-11	Amendments to the 2003 International Fire Code [509 563]
13-1-12	Hydrant Spacing [563]
13-1-13	Fire Flows [563]
13-1-14	Fire Department Access [563]
13-1-15	Fire Extinguishment Placement [563]

Section 13-1-1 Created; Composition

There is hereby created a Fire Department for the Town, provided, however, that said Department shall not be activated until such time as the Council deems it advisable. This Department shall consist of a Chief, Assistant Chief, and as many firefighters as may be deemed necessary by the Council. In the event the Town enters into a contract with a fire fighting company, the Fire Department shall consist of said company and its employees. Such Fire Department shall be subject to all of the provisions of Chapter 13 of the Code of the Town of Paradise Valley, Arizona, except where the contract specifically provides otherwise.

Section 13-1-2 Department Rules and Regulations

The Fire Chief shall create and maintain rules and regulations for the operation and management of the department necessary to provide professional fire protection services, including fire prevention, firefighter safety training and other matters.

Section 13-1-3 Appointment, Powers and Duties of Chief

The Chief of the Fire Department shall be appointed by the Manager. It shall be the duty of the Chief to:

Section H123

Liability for Damage

Section H123.1 liability for damage. The expenses of fighting fires, which result from a violation of Appendix H, shall be a charge against the person whose violation of Appendix H caused the fire. Damages caused by such fires shall constitute a debt of such person and are collectable by the Chief in the same manner as in the case of an obligation under a contract, expressed or implied.

Division 2: new construction design criteria in fully sprinklered developments

13-1-12 Hydrant spacing

A. Commercial and Multifamily (R-1 and R-2) development hydrant spacing will be a maximum of 700 feet (213,360 mm) on center.

B. Non-Hillside. One and two family dwellings (R-3) development hydrant spacing will be a maximum of 1,200 feet (365,760 mm) on center.

13-1-13 Fire flows

A. The minimum fire flow from all hydrants in the Town will be 1,500 gallons per minute (5,678.1 liters per minute).

B. The Chief may increase or decrease minimum hydrant flows based on review of hazard and water distribution system.

13-1-14 Fire Department access

A. Two means of access to single family residential (R-3) projects are not required.

B. 360-degree access may not be required to commercial and multifamily (R-1 and R-2) structures (except as may be required for a specific occupancy by other sections of the Code).

13-1-15 Fire extinguishment placement

A. In commercial occupancies fire extinguishers shall be installed at a maximum of 150 feet (45,720 mm) apart, on center, in accordance with I.F.C. standards.

B. Fire extinguishers are not required in sprinklered open parking garages.

F. Licensee shall be solely responsible for all premiums due and payable with respect to the insurance coverage required.

G. All deductible amounts applicable to liability insurance coverage must be approved by the Town.

H. Licensee may self-insure the above-described policy coverage if Licensee or its parent is of sufficient financial standing to reasonably provide such insurance. A Licensee that elects to self-insure shall file with the Town a Certificate of Insurance as specified by the Town.

Section 13-2-35. Indemnification by Licensee

Indemnification shall be provided for in each license agreement according to the terms approved by the council. Each Licensee shall, at its sole expense, fully indemnify, defend, and hold harmless the Town, and in their respective capacities, the officers, agents, and employees of the Town.

Section 13-2-36. Penalty for Violation [556]

A. Any violation of the provisions of this Code or amendments thereto shall constitute a civil offense, and any person who is served with a citation charging such violation and who admits, or is found responsible for such offense shall be liable to pay to the Town a civil sanction Pursuant to Section 1-9-3 of this Code.

FOOTNOTES

95 Ordinance #199 - 01/27/83
356 Ordinance #356 - 06/24/93
407 Ordinance #407 - 09/07/95
466 Ordinance #466 - 08/27/98 Repealing Section 13-2-25
495 Ordinance # 495 - 02/10/00
509 Ordinance # 509 - 11/16/00
526 Ordinance # 526 – 3/26/03
556 Ordinance # 556 – 04/14/2005
563 Ordinance # 563 – 06/23/2005

State	Effective Date of Order	Requested ROE	Granted ROE	Granted Less Than Requested
PV	8/1/1999	11.00%	11.00%	0.00%
Arizona American	6/30/2004	11.50%	9.00%	-2.50%
Calif. Monterey	2/23/2003	10.68%	10.26%	-0.42%
Calif. Sacramento	4/16/2004	11.00%	9.79%	-1.21%
Calif. Coronado/Village	1/1/2005	10.50%	10.10%	-0.40%
Calif. LA Division	9/23/2004	10.70%	10.04%	-0.66%
Etown Water Co.	2/18/2004	11.25%	9.75%	-1.50%
Hawaii Water Co.	4/19/2004	10.90%	10.60%	-0.30%
Illinois Water Company	8/12/2003	11.02%	10.27%	-0.75%
Indiana Water Co.	11/18/2004	11.00%	9.25%	-1.75%
Iowa Water Co.	2/21/2002	11.33%	10.45%	-0.88%
Kentucky Water Co.	12/1/2004	11.20%	10.00%	-1.20%
Maryland Water Co.	7/27/2000	10.52%	10.52%	0.00%
Missouri Water Co.	4/16/2004	11.00%	10.00%	-1.00%
New Jersey Water Co.	2/18/2004	11.25%	9.75%	-1.50%
New Mexico Water Co.	12/12/2003	11.15%	10.08%	-1.07%
New York (Long Island)	3/30/2005	11.00%	10.10%	-0.90%
Ohio Water Co.	2/25/2005	11.00%	9.88%	-1.12%
Pennsylvania Water Co.	1/16/2004	12.00%	10.60%	-1.40%
St. Louis County Water Co.	5/18/2001	12.00%	10.75%	-1.25%
Tennessee Water Co.	3/9/2005	10.70%	10.70%	0.00%
Virginia Water Co.	9/17/2004	11.00%	10.10%	-0.90%
West Virginia Water Co.	1/7/2005	10.60%	9.85%	-0.75%
		2.5430	2.3284	-0.2146
		11.06%	10.12%	-0.93%

SORTED BY EFFECTIVE DATE OF ORDER

State	Effective Date of Order	Requested ROE	Granted ROE	Granted Less Than Requested
PV	8/1/1999	11.00%	11.00%	0.00%
Maryland Water Co.	7/27/2000	10.52%	10.52%	0.00%
St. Louis County Water Co.	5/18/2001	12.00%	10.75%	-1.25%
Iowa Water Co.	2/21/2002	11.33%	10.45%	-0.88%
Calif. Monterey	2/23/2003	10.68%	10.26%	-0.42%
Illinois Water Company	8/12/2003	11.02%	10.27%	-0.75%
New Mexico Water Co.	12/12/2003	11.15%	10.08%	-1.07%
Pennsylvania Water Co.	1/16/2004	12.00%	10.60%	-1.40%
Etown Water Co.	2/18/2004	11.25%	9.75%	-1.50%
New Jersey Water Co.	2/18/2004	11.25%	9.75%	-1.50%
Calif. Sacramento	4/16/2004	11.00%	9.79%	-1.21%
Missouri Water Co.	4/16/2004	11.00%	10.00%	-1.00%
Hawaii Water Co.	4/19/2004	10.90%	10.60%	-0.30%
Arizona American	6/30/2004	11.50%	9.00%	-2.50%
Virginia Water Co.	9/17/2004	11.00%	10.10%	-0.90%
Calif. LA Division	9/23/2004	10.70%	10.04%	-0.66%
Indiana Water Co.	11/18/2004	11.00%	9.25%	-1.75%
Kentucky Water Co.	12/1/2004	11.20%	10.00%	-1.20%
Calif. Coronado/Village	1/1/2005	10.50%	10.10%	-0.40%
West Virginia Water Co.	1/7/2005	10.60%	9.85%	-0.75%
Ohio Water Co.	2/25/2005	11.00%	9.88%	-1.12%
Tennessee Water Co.	3/9/2005	10.70%	10.70%	0.00%
New York (Long Island)	3/30/2005	11.00%	10.10%	-0.90%
		REQUESTED	AUTHORIZED	DIFFERENCE
SUM		2.5430	2.3284	-0.2146
AVERAGE		11.06%	10.12%	-0.93%

SORTED BY EFFECTIVE DATE OF ORDER

State	Effective Date of Order	Requested ROE	Granted ROE	Granted Less Than Requested
PV	8/1/1999	11.00%	11.00%	0.00%
Maryland Water Co.	7/27/2000	10.52%	10.52%	0.00%
St. Louis County Water Co.	5/18/2001	12.00%	10.75%	-1.25%
Iowa Water Co.	2/21/2002	11.33%	10.45%	-0.88%
Calif. Monterey	2/23/2003	10.68%	10.26%	-0.42%
Illinois Water Company	8/12/2003	11.02%	10.27%	-0.75%
New Mexico Water Co.	12/12/2003	11.15%	10.08%	-1.07%
SUM		32.85%	30.61%	-2.24%

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EXHIBIT

S-12

admitted

AVERAGE		10.95%	10.20%	-0.75%
Pennsylvania Water Co.	1/16/2004	12.00%	10.60%	-1.40%
Etown Water Co.	2/18/2004	11.25%	9.75%	-1.50%
New Jersey Water Co.	2/18/2004	11.25%	9.75%	-1.50%
Calif. Sacramento	4/16/2004	11.00%	9.79%	-1.21%
Missouri Water Co.	4/16/2004	11.00%	10.00%	-1.00%
Hawaii Water Co.	4/19/2004	10.90%	10.60%	-0.30%
Arizona American	6/30/2004	11.50%	9.00%	-2.50%
Virginia Water Co.	9/17/2004	11.00%	10.10%	-0.90%
Calif. LA Division	9/23/2004	10.70%	10.04%	-0.66%
Indiana Water Co.	11/18/2004	11.00%	9.25%	-1.75%
Kentucky Water Co.	12/1/2004	11.20%	10.00%	-1.20%
SUM		122.80%	108.88%	-13.92%
AVERAGE		11.16%	9.90%	-1.27%
Calif. Coronado/Village	1/1/2005	10.50%	10.10%	-0.40%
West Virginia Water Co.	1/7/2005	10.60%	9.85%	-0.75%
Ohio Water Co.	2/25/2005	11.00%	9.88%	-1.12%
Tennessee Water Co.	3/9/2005	10.70%	10.70%	0.00%
New York (Long Island)	3/30/2005	11.00%	10.10%	-0.90%
SUM		53.80%	50.63%	-3.17%
AVERAGE		10.76%	10.13%	-0.63%

State	Effective Date of Order	Requested ROE	Granted ROE	Granted Less Than Requested	
Arizona American	6/30/2004	11.50%	9.00%	-2.50%	1
Indiana Water Co.	11/18/2004	11.00%	9.25%	-1.75%	2
Etown Water Co.	2/18/2004	11.25%	9.75%	-1.50%	3
New Jersey Water Co.	2/18/2004	11.25%	9.75%	-1.50%	4
Calif. Sacramento	4/16/2004	11.00%	9.79%	-1.21%	5
West Virginia Water Co.	1/7/2005	10.60%	9.85%	-0.75%	6
Ohio Water Co.	2/25/2005	11.00%	9.88%	-1.12%	7
Kentucky Water Co.	12/1/2004	11.20%	10.00%	-1.20%	8
Missouri Water Co.	4/16/2004	11.00%	10.00%	-1.00%	9
Calif. LA Division	9/23/2004	10.70%	10.04%	-0.66%	10
New Mexico Water Co.	12/12/2003	11.15%	10.08%	-1.07%	11
Calif. Coronado/Village	1/1/2005	10.50%	10.10%	-0.40%	12
New York (Long Island)	3/30/2005	11.00%	10.10%	-0.90%	13
Virginia Water Co.	9/17/2004	11.00%	10.10%	-0.90%	14
Calif. Monterey	2/23/2003	10.68%	10.26%	-0.42%	15
Illinois Water Company	8/12/2003	11.02%	10.27%	-0.75%	16
Iowa Water Co.	2/21/2002	11.33%	10.45%	-0.88%	17
Maryland Water Co.	7/27/2000	10.52%	10.52%	0.00%	18
Hawaii Water Co.	4/19/2004	10.90%	10.60%	-0.30%	19
Pennsylvania Water Co.	1/16/2004	12.00%	10.60%	-1.40%	20
Tennessee Water Co.	3/9/2005	10.70%	10.70%	0.00%	21
St. Louis County Water Co.	5/18/2001	12.00%	10.75%	-1.25%	22
PV	8/1/1999	11.00%	11.00%	0.00%	23
		2.5430	2.3284	-0.2146	
		11.06%	10.12%	-0.93%	
			Median		
			10.09%		

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2

Staff Recommended

Typical Bill Analysis
General Service 5/8-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	22,193	$ 24.61	$ 26.79	$ 2.18	8.86%
Median Usage	11,500	16.81	18.35	$ 1.54	9.16%
Staff Recommended					
Average Usage	22,193	$ 24.61	$ 25.46	$ 0.85	3.45%
Median Usage	11,500	16.81	17.66	$ 0.85	5.06%

Present & Proposed Rates (Without Taxes)
General Service 5/8-Inch Meter
(No Surcharges)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 8.41	$ 9.26	10.11%	$ 9.26	10.11%
1,000	9.14	10.05	9.96%	9.99	9.30%
2,000	9.87	10.84	9.83%	10.72	8.61%
3,000	10.60	11.63	9.72%	11.45	8.02%
4,000	11.33	12.42	9.62%	12.18	7.50%
5,000	12.06	13.21	9.54%	12.91	7.05%
6,000	12.79	14.00	9.46%	13.64	6.65%
7,000	13.52	14.79	9.39%	14.37	6.29%
8,000	14.25	15.58	9.33%	15.10	5.96%
9,000	14.98	16.37	9.28%	15.83	5.67%
10,000	15.71	17.16	9.23%	16.56	5.41%
11,000	16.44	17.95	9.18%	17.29	5.17%
12,000	17.17	18.74	9.14%	18.02	4.95%
13,000	17.90	19.53	9.11%	18.75	4.75%
14,000	18.63	20.32	9.07%	19.48	4.56%
15,000	19.36	21.11	9.04%	20.21	4.39%
16,000	20.09	21.90	9.01%	20.94	4.23%
17,000	20.82	22.69	8.98%	21.67	4.08%
18,000	21.55	23.48	8.96%	22.40	3.94%
19,000	22.28	24.27	8.93%	23.13	3.82%
20,000	23.01	25.06	8.91%	23.86	3.69%
25,000	26.66	29.01	8.81%	27.51	3.19%
30,000	35.06	37.76	7.70%	35.96	2.57%
35,000	43.46	46.51	7.02%	44.41	2.19%
40,000	51.86	55.26	6.56%	52.86	1.93%
45,000	60.26	64.01	6.22%	61.31	1.74%
50,000	68.66	72.76	5.97%	69.76	1.60%
75,000	110.66	116.51	5.29%	112.01	1.22%
100,000	162.46	170.26	4.80%	164.46	1.23%
150,000	270.96	282.76	4.35%	274.46	1.29%
200,000	379.46	395.26	4.16%	384.46	1.32%
250,000	487.96	507.76	4.06%	494.46	1.33%
300,000	596.46	620.26	3.99%	604.46	1.34%
350,000	704.96	732.76	3.94%	714.46	1.35%
400,000	813.46	845.26	3.91%	824.46	1.35%

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EXHIBIT
S-13
admitted

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2

Staff Recommended

Typical Bill Analysis
General Service 5/8-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	22,193	$ 24.61	$ 26.79	$ 2.18	8.86%
Median Usage	11,500	16.81	18.35	$ 1.54	9.16%
Staff Recommended					
Average Usage	22,193	$ 24.61	$ 25.46	$ 0.85	3.45%
Median Usage	11,500	16.81	17.66	$ 0.85	5.06%

Present & Proposed Rates (Without Taxes)
General Service 5/8-Inch Meter
(Includes only the High Block Surcharge)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 8.41	$ 9.26	10.11%	$ 9.26	10.11%
1,000	9.14	10.05	9.96%	9.99	9.30%
2,000	9.87	10.84	9.83%	10.72	8.61%
3,000	10.60	11.63	9.72%	11.45	8.02%
4,000	11.33	12.42	9.62%	12.18	7.50%
5,000	12.06	13.21	9.54%	12.91	7.05%
6,000	12.79	14.00	9.46%	13.64	6.65%
7,000	13.52	14.79	9.39%	14.37	6.29%
8,000	14.25	15.58	9.33%	15.10	5.96%
9,000	14.98	16.37	9.28%	15.83	5.67%
10,000	15.71	17.16	9.23%	16.56	5.41%
11,000	16.44	17.95	9.18%	17.29	5.17%
12,000	17.17	18.74	9.14%	18.02	4.95%
13,000	17.90	19.53	9.11%	18.75	4.75%
14,000	18.63	20.32	9.07%	19.48	4.56%
15,000	19.36	21.11	9.04%	20.21	4.39%
16,000	20.09	21.90	9.01%	20.94	4.23%
17,000	20.82	22.69	8.98%	21.67	4.08%
18,000	21.55	23.48	8.96%	22.40	3.94%
19,000	22.28	24.27	8.93%	23.13	3.82%
20,000	23.01	25.06	8.91%	23.86	3.69%
25,000	26.66	29.01	8.81%	27.51	3.19%
30,000	35.06	37.76	7.70%	35.96	2.57%
35,000	43.46	46.51	7.02%	44.41	2.19%
40,000	51.86	55.26	6.56%	52.86	1.93%
45,000	60.26	64.01	6.22%	61.31	1.74%
50,000	68.66	72.76	5.97%	69.76	1.60%
75,000	110.66	116.51	5.29%	112.01	1.22%
100,000	162.46	213.26	31.27%	207.46	27.70%
150,000	270.96	433.26	59.90%	424.96	56.83%
200,000	379.46	653.26	72.16%	642.46	69.31%
250,000	487.96	873.26	78.96%	859.96	76.24%
300,000	596.46	1,093.26	83.29%	1,077.46	80.64%
350,000	704.96	1,313.26	86.29%	1,294.96	83.69%
400,000	813.46	1,533.26	88.49%	1,512.46	85.93%

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2

Commissioner Alternative

Typical Bill Analysis
General Service 5/8-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	22,193	$ 24.61	$ 26.79	$ 2.18	8.86%
Median Usage	11,500	16.81	18.35	$ 1.54	9.16%
Staff Recommended					
Average Usage	22,193	$ 24.61	$ 25.46	$ 0.85	3.45%
Median Usage	11,500	16.81	17.66	$ 0.85	5.06%

Present & Proposed Rates (Without Taxes)
General Service 5/8-Inch Meter
(Includes High Block Surcharge of $2.15 & Fire Flow Surcharge of $1.00 on 2nd & 3rd Tier)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 8.41	$ 9.26	10.11%	$ 9.26	10.11%
1,000	9.14	10.05	9.96%	9.99	9.30%
2,000	9.87	10.84	9.83%	10.72	8.61%
3,000	10.60	11.63	9.72%	11.45	8.02%
4,000	11.33	12.42	9.62%	12.18	7.50%
5,000	12.06	13.21	9.54%	12.91	7.05%
6,000	12.79	14.00	9.46%	13.64	6.65%
7,000	13.52	14.79	9.39%	14.37	6.29%
8,000	14.25	15.58	9.33%	15.10	5.96%
9,000	14.98	16.37	9.28%	15.83	5.67%
10,000	15.71	17.16	9.23%	16.56	5.41%
11,000	16.44	17.95	9.18%	17.29	5.17%
12,000	17.17	18.74	9.14%	18.02	4.95%
13,000	17.90	19.53	9.11%	18.75	4.75%
14,000	18.63	20.32	9.07%	19.48	4.56%
15,000	19.36	21.11	9.04%	20.21	4.39%
16,000	20.09	21.90	9.01%	20.94	4.23%
17,000	20.82	22.69	8.98%	21.67	4.08%
18,000	21.55	23.48	8.96%	22.40	3.94%
19,000	22.28	24.27	8.93%	23.13	3.82%
20,000	23.01	25.06	8.91%	23.86	3.69%
25,000	26.66	29.01	8.81%	27.51	3.19%
30,000	35.06	42.76	21.96%	40.96	16.83%
35,000	43.46	56.51	30.03%	54.41	25.20%
40,000	51.86	70.26	35.48%	67.86	30.85%
45,000	60.26	84.01	39.41%	81.31	34.93%
50,000	68.66	97.76	42.38%	94.76	38.01%
75,000	110.66	166.51	50.47%	162.01	46.40%
100,000	162.46	288.26	77.43%	282.46	73.86%
150,000	270.96	558.26	106.03%	549.96	102.97%
200,000	379.46	828.26	118.27%	817.46	115.43%
250,000	487.96	1,098.26	125.07%	1,084.96	122.35%
300,000	596.46	1,368.26	129.40%	1,352.46	126.75%
350,000	704.96	1,638.26	132.39%	1,619.96	129.79%
400,000	813.46	1,908.26	134.59%	1,887.46	132.03%

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2
Staff Recommended

Typical Bill Analysis
General Service 1-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	59,845	$ 90.80	$ 96.15	$ 5.35	5.89%
Median Usage	40,501	58.30	62.30	$ 4.00	6.85%
Staff Recommended					
Average Usage	59,845	$ 90.80	$ 92.56	$ 1.76	1.94%
Median Usage	40,501	58.30	59.87	$ 1.57	2.68%

Present & Proposed Rates (Without Taxes)
General Service 1-Inch Meter
(No Surcharges)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 14.01	$ 15.42	10.06%	$ 15.42	10.06%
1,000	14.74	16.21	9.97%	16.15	9.57%
2,000	15.47	17.00	9.89%	16.88	9.11%
3,000	16.20	17.79	9.81%	17.61	8.70%
4,000	16.93	18.58	9.75%	18.34	8.33%
5,000	17.66	19.37	9.68%	19.07	7.98%
6,000	18.39	20.16	9.62%	19.80	7.67%
7,000	19.12	20.95	9.57%	20.53	7.37%
8,000	19.85	21.74	9.52%	21.26	7.10%
9,000	20.58	22.53	9.48%	21.99	6.85%
10,000	21.31	23.32	9.43%	22.72	6.62%
11,000	22.04	24.11	9.39%	23.45	6.40%
12,000	22.77	24.90	9.35%	24.18	6.19%
13,000	23.50	25.69	9.32%	24.91	6.00%
14,000	24.23	26.48	9.29%	25.64	5.82%
15,000	24.96	27.27	9.25%	26.37	5.65%
16,000	25.69	28.06	9.23%	27.10	5.49%
17,000	26.42	28.85	9.20%	27.83	5.34%
18,000	27.15	29.64	9.17%	28.56	5.19%
19,000	27.88	30.43	9.15%	29.29	5.06%
20,000	28.61	31.22	9.12%	30.02	4.93%
25,000	32.26	35.17	9.02%	33.67	4.37%
30,000	40.66	43.92	8.02%	42.12	3.59%
35,000	49.06	52.67	7.36%	50.57	3.08%
40,000	57.46	61.42	6.89%	59.02	2.71%
45,000	65.86	70.17	6.54%	67.47	2.44%
50,000	74.26	78.92	6.28%	75.92	2.24%
75,000	116.26	122.67	5.51%	118.17	1.64%
100,000	168.06	176.42	4.97%	170.62	1.52%
150,000	276.56	288.92	4.47%	280.62	1.47%
200,000	385.06	401.42	4.25%	390.62	1.44%
250,000	493.56	513.92	4.13%	500.62	1.43%
300,000	602.06	626.42	4.05%	610.62	1.42%
350,000	710.56	738.92	3.99%	720.62	1.42%
400,000	819.06	851.42	3.95%	830.62	1.41%

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2
Staff Recommended

Typical Bill Analysis
General Service 1-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	59,845	$ 90.80	$ 96.15	$ 5.35	5.89%
Median Usage	40,501	58.30	62.30	$ 4.00	6.85%
Staff Recommended					
Average Usage	59,845	$ 90.80	$ 92.56	$ 1.76	1.94%
Median Usage	40,501	58.30	59.87	$ 1.57	2.68%

Present & Proposed Rates (Without Taxes)
General Service 1-Inch Meter
(Includes only the High Block Surcharge)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 14.01	$ 15.42	10.06%	$ 15.42	10.06%
1,000	14.74	16.21	9.97%	16.15	9.57%
2,000	15.47	17.00	9.89%	16.88	9.11%
3,000	16.20	17.79	9.81%	17.61	8.70%
4,000	16.93	18.58	9.75%	18.34	8.33%
5,000	17.66	19.37	9.68%	19.07	7.98%
6,000	18.39	20.16	9.62%	19.80	7.67%
7,000	19.12	20.95	9.57%	20.53	7.37%
8,000	19.85	21.74	9.52%	21.26	7.10%
9,000	20.58	22.53	9.48%	21.99	6.85%
10,000	21.31	23.32	9.43%	22.72	6.62%
11,000	22.04	24.11	9.39%	23.45	6.40%
12,000	22.77	24.90	9.35%	24.18	6.19%
13,000	23.50	25.69	9.32%	24.91	6.00%
14,000	24.23	26.48	9.29%	25.64	5.82%
15,000	24.96	27.27	9.25%	26.37	5.65%
16,000	25.69	28.06	9.23%	27.10	5.49%
17,000	26.42	28.85	9.20%	27.83	5.34%
18,000	27.15	29.64	9.17%	28.56	5.19%
19,000	27.88	30.43	9.15%	29.29	5.06%
20,000	28.61	31.22	9.12%	30.02	4.93%
25,000	32.26	35.17	9.02%	33.67	4.37%
30,000	40.66	43.92	8.02%	42.12	3.59%
35,000	49.06	52.67	7.36%	50.57	3.08%
40,000	57.46	61.42	6.89%	59.02	2.71%
45,000	65.86	70.17	6.54%	67.47	2.44%
50,000	74.26	78.92	6.28%	75.92	2.24%
75,000	116.26	122.67	5.51%	118.17	1.64%
100,000	168.06	219.42	30.56%	213.62	27.11%
150,000	276.56	439.42	58.89%	431.12	55.89%
200,000	385.06	659.42	71.25%	648.62	68.45%
250,000	493.56	879.42	78.18%	866.12	75.48%
300,000	602.06	1,099.42	82.61%	1,083.62	79.99%
350,000	710.56	1,319.42	85.69%	1,301.12	83.11%
400,000	819.06	1,539.42	87.95%	1,518.62	85.41%

Arizona-American Water Company/Paradise Valley Water District
Docket No. W-01303A-05-0405
Test Year Ended December 31, 2004

Schedule DWC-2
Commissioner Alternative

Typical Bill Analysis
General Service 1-Inch Meter

Company Proposed	Gallons	Present Rates	Proposed Rates	Dollar Increase	Percent Increase
Average Usage	59,845	$ 90.80	$ 130.99	$ 40.19	44.27%
Median Usage	40,501	58.30	77.80	$ 19.50	33.44%
Staff Recommended					
Average Usage	59,845	$ 90.80	$ 127.40	$ 36.60	40.31%
Median Usage	40,501	58.30	75.37	$ 17.07	29.27%

Present & Proposed Rates (Without Taxes)
General Service 1-Inch Meter
(Includes High Block Surcharge of $2.15 & Fire Flow Surcharge of $1.00 on 2nd & 3rd Tier)

Gallons Consumption	Present Rates	Company Proposed Rates	% Increase	Staff Recommended Rates	% Increase
-	$ 14.01	$ 15.42	10.06%	$ 15.42	10.06%
1,000	14.74	16.21	9.97%	16.15	9.57%
2,000	15.47	17.00	9.89%	16.88	9.11%
3,000	16.20	17.79	9.81%	17.61	8.70%
4,000	16.93	18.58	9.75%	18.34	8.33%
5,000	17.66	19.37	9.68%	19.07	7.98%
6,000	18.39	20.16	9.62%	19.80	7.67%
7,000	19.12	20.95	9.57%	20.53	7.37%
8,000	19.85	21.74	9.52%	21.26	7.10%
9,000	20.58	22.53	9.48%	21.99	6.85%
10,000	21.31	23.32	9.43%	22.72	6.62%
11,000	22.04	24.11	9.39%	23.45	6.40%
12,000	22.77	24.90	9.35%	24.18	6.19%
13,000	23.50	25.69	9.32%	24.91	6.00%
14,000	24.23	26.48	9.29%	25.64	5.82%
15,000	24.96	27.27	9.25%	26.37	5.65%
16,000	25.69	28.06	9.23%	27.10	5.49%
17,000	26.42	28.85	9.20%	27.83	5.34%
18,000	27.15	29.64	9.17%	28.56	5.19%
19,000	27.88	30.43	9.15%	29.29	5.06%
20,000	28.61	31.22	9.12%	30.02	4.93%
25,000	32.26	35.17	9.02%	33.67	4.37%
30,000	40.66	48.92	20.31%	47.12	15.89%
35,000	49.06	62.67	27.74%	60.57	23.46%
40,000	57.46	76.42	33.00%	74.02	28.82%
45,000	65.86	90.17	36.91%	87.47	32.81%
50,000	74.26	103.92	39.94%	100.92	35.90%
75,000	116.26	172.67	48.52%	168.17	44.65%
100,000	168.06	294.42	75.19%	288.62	71.74%
150,000	276.56	564.42	104.09%	556.12	101.08%
200,000	385.06	834.42	116.70%	823.62	113.89%
250,000	493.56	1,104.42	123.77%	1,091.12	121.07%
300,000	602.06	1,374.42	128.29%	1,358.62	125.66%
350,000	710.56	1,644.42	131.43%	1,626.12	128.85%
400,000	819.06	1,914.42	133.73%	1,893.62	131.19%

Dawn

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

EXHIBIT
S-14
admitted

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY WATER DISTRICT	DOCKET NO. W-01303A-05-0405
IN THE MATTER OF THE APPLICATION OF OF ARIZONA-AMERICAN WATER COMPANY, INC., AN ARIZONA CORPORATION, FOR APPROVAL OF AN AGREEMENT WITH THE PARADISE VALLEY COUNTRY CLUB	DOCKET NO. W-01303A-05-0910

NOTICE OF FILING TESTIMONY SUMMARY

The Staff of the Arizona Corporation Commission ("Arizona Commission") hereby provides Notice of Filing the Testimony summaries of Staff Witnesses Steve Olea, James J. Dorf, Darron W. Carlson and Dennis Rogers.

RESPECTFULLY SUBMITTED this 24th day of March, 2006.

Maureen A. Scott, Senior Staff Counsel
Keith A. Layton, Attorney
Arizona Corporation Commission
Legal Division
1200 West Washington Street
Phoenix, Arizona 85007
(602) 542-3402

Original and fifteen (15) copies of the foregoing were filed this 24th day of March, 2006 with:

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copies of the foregoing mailed this 24th day of March, 2006 to:

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Tom Broderick
Arizona-American Water Company
101 Corporate Center
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Suite 220
Phoenix, Arizona 85007

Scott S. Wakefield
RUCO
1110 West Washington Street
Suite 220
Phoenix, Arizona 85007

Karyn Christine

SUMMARY OF DIRECT TESTIMONY
OF JOHN A. CHELUS
ARIZONA-AMERICAN WATER COMPANY, INC.
PARADISE VALLEY DISTRICT
DOCKET NO. W-01303A-05-0405

The testimony summary of staff witness Steve Olea addresses the following issues:

1. Mr. Steven Olea adopts Mr. Chelus' Direct Testimony and schedules. Mr. Chelus is no longer employed by the Utilities Division of the Arizona Corporation Commission.

Engineering's Findings:

2. The Paradise Valley Water District has a non-account water loss of 9.89 percent. This level is acceptable in this rate proceeding. (See Section C, Page 6 of Schedule JAC-1)

3. The most recent lab analysis for the Paradise Valley Water District indicates that six of the seven wells have Arsenic levels at or above 10 ppb. The Company is currently constructing arsenic removal equipment to achieve the new arsenic level of 10 parts per billon. (See Section E, Page 7 of Schedule JAC-1)

4. The Paradise Valley Water District is located within the Phoenix Active Management Area ("AMA") and is in compliance with the AMA's reporting and conservation requirements.

5. The Paradise Valley Water District has no outstanding Arizona Corporation Commission compliance issues.

6. The Paradise Valley Water District has a Curtailment Tariff on File with the Utilities Division.

7. Based on data submitted by the Maricopa County Environmental Services Department (MCESD), MCESD has determined that the Paradise Valley Water District is currently delivering water that meets the water quality standards required by Arizona Administrative Code, Title 18, Chapter 4.

Engineering and Plant Issues:

1. It is recommended that the Paradise Valley Water District continue to use depreciation rates as delineated in Exhibit 4 of Schedule JAC-1.

2. The findings of the field audit support the use, without adjustment, of the total post test year plant of $3,018,867 as delineated in the table in Section J.3, Page 7. However, this "used and useful" determination does not imply a specific treatment for rate base or rate

making purposes. The direct testimony of Mr. Darron Carlson will discuss the post test year rate base and rate making treatment in this case.

3. Staff recommends the use of the Company's Cost of Service Study in this proceeding.

Fire Flow and Public Safety Surcharge Issues:

1. Mr. Olea is also responsible for any policy questions pertaining to Paradise Valley's Fire Flow Proposal.

SUMMARY OF TESTIMONYY
ARIZONA-AMERICAN WATER COMPANY, INC
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405
STAFF WITNESS - JAMES J. DORF

The testimony summary of Staff witness James J. Dorf addresses the following issues:

Rate Base

1. Plant Held for Future Use – Staff has reconsidered its position based on information provided by Arizona-American Water Company, Inc. ("Company") and will not recommend an adjustment to decrease test year Plant In-Service by $138,682 for plant held for future use. The plant is used and useful.

2. Plant for Public Fire Safety – The Company agrees with Staff's recommendation to increase Plant In-Service by $3,018,867 to provide rate base treatment for the Company's plant expenditures related to its fire safety program that was treated as Construction in Work in Process by the Company. Staff does not agree with the Company's proposed additional increase to the fire safety plant of $105,164 (revised upward to $154,532 in rejoinder) for the Jackrabbit/Invergordon and McDonald mains project or the $420,755 for Nauni Valley Drive. Staff did not receive supporting documentation for the $105,164 until the Company filed rebuttal testimony. The Company further revised its amount in rejoinder to include depreciation adjustments and AFUDC through July, 2006. Staff would need additional time to evaluate these changes.

3. Accumulated Depreciation – The Company agrees with Staff's recommended adjustment to increase the Company's test year Accumulated Depreciation by $107,315 for errors in applying the half-year convention depreciation methodology.

4. Working Capital - Deferred Maintenance – Staff has reconsidered its recommended adjustment and now agrees with the Company to include the deferred tank painting costs in rate base.

5. Working Capital – Cash Working Capital Allowance – Staff continues to recommend its adjustment to eliminate the Company's revised calculation of a positive Cash Working Capital Allowance of $94,745. Although the Company has accepted Staff's lag days for property taxes, it has failed to meet the burden of proof demonstrating that it should have a positive cash working capital allowance. Additionally, RUCO is supporting a negative allowance.

Gain on Sale of Land

Staff recommends a shorter amortization period for a surcredit proposed by the Company related to the sharing of a gain of $481,680.84 on the sale of land. The Company has indicated it accepts Staff's recommendation for the shorter time period.

SUMMARY OF TESTIMONY
ARIZONA-AMERICAN WATER COMPANY, INC.
PARADISE VALLEY WATER DISTRICT
DOCKET NO. W-01303A-05-0405
STAFF WITNESS - DARRON W. CARLSON

The testimony summary of Staff witness Darron W. Carlson addresses the following issues:

Revenue Requirement

1. Mr. Carlson adopts Mr. Alexander Ibhade Igwe's direct testimony and schedules on behalf of Staff as his own. Mr. Igwe is no longer employed by the Utilities Division of the Arizona Corporation Commission ("Commission").

2. Staff recommends a $199,020 or a 3.92 percent increase in revenue that allows Arizona-American Water Company, Inc. - Paradise Valley Water District ("Company") annual revenues of $5,269,700 or a 7.24 percent rate of return on an original cost rate base ("OCRB") of $14,165,666.

3. In recognition of the Company's efforts to substantiate its allocated corporate miscellaneous account, Staff is ready to alter its recommendation regarding this account in its direct and surrebuttal testimonies. Staff had recommended disallowance of the entire account. Staff now recommends that the account be recognized, subject to the adjustments recommended by RUCO and the adjustments offered by Company witness, Mr. Joel Reiker in the amount of $2,153 in his supplemental response to Staff data request 7.1. This recommendation is not reflected in Staff's other summary figures.

Arsenic Cost Recovery Mechanism

4. Staff recommends approval of an arsenic cost recovery mechanism ("ACRM") as described by Staff in its direct testimony.

Rate Design

5. Staff generally concurs with the Company's rate design. Staff made adjustments to certain commodity charges to reflect Staff's lower recommended revenue requirement. Staff's recommended rates would increase the bill for a typical residential customer using the median of 11,500 gallons per month from $16.81 to $17.66 for an increase of $0.85 or 5.06 percent.

6. Staff concurs with the Company in recommending a new "high-block" usage surcharge. Staff recommends approval of its more definitive description of the surcharge at $2.15 per 1,000 gallons of usage in the top tier of each meter size and customer class.

7. Staff further recommends that all the funds collected from the "high-block" usage surcharge be treated as contributions-in-aid-of-construction ("CIAC") rather than revenue.

8. Staff further recommends that the CIAC funds collected from the "high-block" usage surcharge be used to offset the Company's public fire safety ("PFS") investments and reduce by a corresponding amount any allowance for funds used during construction ("AFUDC") accruals.

9. In its rebuttal testimony, the Company requested a second tier be added to its commodity charge, at no change in rate, for the Paradise Valley Country Club ("PVCC"). This would make PVCC subject to the "high-block" usage surcharge. Staff concurs.

(Continued on next page)

Public Fire Safety Surcharge

10. The Company requested a PFS surcharge in five phases in its direct testimony and revised its request to two phases in its rebuttal testimony. Staff recommended denial of the PFS surcharge in its direct and surrebuttal testimonies and continues to support the denial recommendation. However, Staff has developed an alternative recommendation for consideration by the Commission, should it choose to adopt some form of a PFS surcharge mechanism. Staff has recently filed this alternative recommendation with Docket Control.

Allowance for Funds Used During Construction

11. Staff also filed with Docket Control, a recommendation to alter the methodology of calculating AFUDC that was previously authorized for PFS investments in Decision No. 68303. Staff recommends that the Company be required to fully account for CIAC funding towards PFS investments prior to any calculation of AFUDC.

ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY WATER DISTRICT
Docket No. W-01303A-05-0405
Staff Witness – Dennis Rogers

The pre-filed testimony of Staff witness Dennis Rogers addresses the following issues:

Capital Structure – Staff recommends that the Commission adopt a capital structure for Paradise Valley ("Applicant") for this proceeding consisting of 63.3 percent debt and 36.7 percent equity.

Cost of Debt – Staff recommends that the Commission adopt a 5.42 percent cost of long-term debt.

Cost of Equity – Staff recommends that the Commission adopt a 10.4 percent return on equity ("ROE") for Paradise Valley. Staff's estimated ROE for the Applicant is based on Staff's direct testimony cost of equity estimates for the sample companies ranging from 9.6 percent for the discounted cash flow method ("DCF") to 10.0 percent for the capital asset pricing model ("CAPM"). Staff's ROE recommendation includes a 0.6 percent upward adjustment attributable to the Applicant's greater leverage than the sample companies.[1] Staff advises the Applicant not to expect Staff to recommend similar upward ROE adjustments due to financial risk in subsequent rate cases. Instead, the Applicant is advised to maintain greater equity in its capital structure.

Overall Rate of Return – Staff recommends that the Commission adopt an overall rate of return ("ROR") of 7.2 percent.

Staff recommends requiring Paradise Valley to attain, and thereafter maintain, a capital structure (equity, long-term debt and short-term debt) with equity representing 40 to 60 percent of total capital prior to its next rate filing.

Dr. Kolbe's Testimony - The Commission should reject the Company proposed 12.0 percent ROE because the empirical capital asset pricing model ("ECAPM") used to derive it is inappropriately based on a market value capital structure instead of book value capital structure.

The present value concept is fundamental to modern financial theory for pricing all capital investments. Dr. Kolbe's rejection of the present value concept for pricing stocks

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[1] Staff's surrebuttal testimony presents updated cost of equity estimates that are not significantly different from its direct testimony: DCF , 9.6 percent; CAPM, 9.4 percent; and a financial risk adjustment of 70 basis for an overall cost of equity estimate of 10.2 percent (Surrebuttal Schedule DRR-2). The updated overall rate of return is 7.1 percent (Surrebuttal Schedule DRR-1).

contradicts his use of the discounted cash flow method as one of the determinants in his cost of equity estimate.

Dr. Kolbe's use of market-value capital structures to determine the cost of equity is not widely recognized for utility rate-making. Further, Staff is not aware of any instance where the Arizona Corporation Commission has adopted this method and it is inappropriately dependent upon embedded debt cost.

Dr. Kolbe correctly recognized that Staff's financial risk adjustment is based on book values instead of market values as contemplated by the Hamada procedure. Staff prefers to use the book values because they are readily available, do not require making questionable assumptions regarding the market value of debt and their use is consistent with Staff's use of a book value capital structure. Staff recalculated the financial risk adjustment using Dr. Kolbe's market values. The financial risk adjustment calculated using market values is 20 basis points, 40 basis points less than Staff's recommended upward adjustment of 60 basis points.

ARIZONA-AMERICAN 1 through 35

EXHIBIT
A-1
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-____

DIRECT TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

DIRECT TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Paul G. Townsley. My business address is 303 H Street, Suite 205, Chula Vista, California 91910. My telephone number is (619) 409-7700.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I have been employed since 2002 by American Water Works Service Company ("American Water") as President of its entire Western Region. As part of my responsibilities, I also serve as the President of Arizona-American Water Company ("Arizona-American" or the "Company"). I also serve as the President of the four other regulated American Water subsidiaries in the Western Region: California-American Water, Hawaii-American Water, New Mexico-American Water, and Texas-American Water.

Q. WHAT ARE YOUR RESPONSIBILITIES AS PRESIDENT OF AMERICAN WATER'S WESTERN REGION?

A. As President, I am responsible, among other things, for maintaining the five-state water and wastewater utilities' financial health; enhancing the operating efficiency and reliability of the business; and for assuring that all functions (e.g. planning, engineering, construction, production, distribution, customer service, accounting, regulatory and human resources) are carried out in compliance with all local, state, and federal laws and

regulations, and standards of good business practice. I am also ultimately responsible for assuring that we meet our customers' needs. I am also responsible for American Water's unregulated operations in the Western Region.

Q. BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science degree in Mechanical Engineering from the United States Merchant Marine Academy in 1980. I am a registered Professional Engineer in the states of Arizona and Hawaii. Before serving as American Water's President, Western Region, I was employed by Citizens Utilities Company in a variety of positions spanning twenty years. My more recent roles with Citizens Utilities included Vice President, Citizens Water Resources; Vice President, Arizona Energy; Vice President, Arizona Electric; and Vice President, Mohave Sector.

Q. HAVE YOU TESTIFIED BEFORE ANY STATE UTILITY REGULATORY AGENCIES?

A. Yes, however, it is not typical for me now in my current position. I am testifying in this case because it is especially important to Arizona-American's future, as this rate case is but the first of a number of upcoming rate cases for our water and waste water districts in Arizona.

Q. PLEASE DESCRIBE ARIZONA-AMERICAN AND ITS PARADISE VALLEY WATER DISTRICT?

A. Arizona-American is a Class-A regulated water and wastewater utility, serving approximately 131,000 Arizona residential, commercial, irrigation, and industrial customers. Our Paradise Valley Water District serves approximately 5000 customers in portions of Paradise Valley, Scottsdale, and unincorporated Maricopa County.

II. IMPORTANCE OF THIS CASE

Q. WHY IS THIS CASE SO IMPORTANT?

A. In my testimony, I summarize the Company's request and provide senior management's perspective on the major components of the request. This case is the Company's first filed base-rate case since the Commission established a three-year rate case filing moratorium as a condition of the acquisition of American Water by RWE. The Paradise Valley rate case is the first of many water and wastewater rate cases the Company must file in Arizona over the next several years. It is also the first case we have filed in Arizona since the Commission authorized only a nine percent return on equity in our last general rate case. It is my top priority in this first case to clearly justify and successfully explain our request and to be sure that we conduct this case in a most professional manner.

Q. THE RATE MORATORIUM DOESN'T EXPIRE UNTIL JANUARY 2006; HOW IS THE COMPANY ABLE TO FILE THIS CASE NOW?

A. I have the Commission to thank for our ability to file this case in 2005. We determined that we needed to substantially improve our working relationship with the Commission, Staff, and the Residential Utility Consumer Office ("RUCO"). We had a number of very

candid discussions with the Commissioners, Staff, and RUCO. From these discussions, we learned several valuable lessons:

1. Arizona-American needed to view the Commission and RUCO not as adversaries, but as partners in the enterprise of providing safe, reliable, and affordable water and wastewater service to our customers, who are also the Commission's and RUCO's customers.
2. Arizona-American needed to be more closely involved with its communities. We needed to listen better to community leaders and our customers and then mutually craft solutions to specific community issues.
3. Arizona-American needed to develop and rely on a professional, Arizona-based, in-house rate/regulatory staff. A goal was to reduce regulatory expense without sacrificing quality, while improving regulatory relations.

Q. HAVE YOU BEEN ABLE TO PARTNER WITH THE COMMISSION AND RUCO?

A. Yes. As an example, we are able to file this case now because the Company, the Commission, and RUCO all recognized the challenge Arizona water companies faced because of the new federal arsenic standards, which, by January 2006, reduce the allowable concentration in drinking water of arsenic (a known carcinogen) from 50 to not more than 10 parts per billion. To achieve these reductions, Arizona investor-owned and municipal water suppliers need to invest hundreds of millions of dollars in new arsenic-remediation facilities. To encourage these needed investments by the utilities under its

jurisdiction, the Commission developed an innovative arsenic cost recovery mechanism ("ACRM"). However, the Company's pending appeals of earlier Commission decisions were a barrier to implementing ACRMs for three of its Districts, and the Commission's rate-filing moratorium would have precluded implementing an ACRM for our Paradise Valley Water District. Following discussions with Staff and RUCO, Arizona-American offered to dismiss all pending appeals of Commission orders if the Commission would waive its filing moratorium to the extent necessary to allow the Company to seek ACRMs for its arsenic-remediation investments. The Commission accepted this offer and granted the Company the opportunity to request timely rate recovery of our extraordinary costs to comply with the new standard for arsenic. We are currently seeking ACRM approval for our Agua Fria, Sun City West, and Havasu Water Districts in Docket Nos. W-1303A-05-0280 *et. al.* The Paradise Valley Water docket now provides us the opportunity, among other things, to recover the cost of our arsenic-remediation investment in this District.

Q. HAVE YOU BEEN ABLE TO PARTNER WITH YOUR COMMUNITY LEADERS AND CUSTOMERS?

A. Yes. In this case we will present the results of one very successful partnership: the Paradise Valley Fire-Flow Improvement Program. A particular fire-flow capability has not historically been required for Arizona's regulated utilities. Nevertheless, as more thoroughly discussed in Mr. Biesemeyer's testimony, we worked for several years with Town leaders and residents to develop a capital-investment program to improve hydrant pressures and flows. We are quite proud of the program we have developed, but now we

need to partner in turn with our regulators to develop a mechanism to encourage this discretionary investment.

We have just completed a similar process in our Sun City Water district, where we have worked with community leaders, residents of Sun City and Youngtown , and the Commissioners to develop a fire-flow improvement plan, which we filed with the Commission in May.

Q. WHAT HAVE YOU DONE TO DEVELOP A PROFESSIONAL, ARIZONA BASED, RATE/REGULATORY STAFF?

A. I am very proud of the team we have assembled. Arizona-American now employs an outstanding staff, with the necessary legal, regulatory, and governmental-relations expertise to lead these efforts in Arizona. We also recently added a community-affairs specialist, who is also an elected municipal representative, which significantly upgrades our ability to partner with community leaders throughout our service territories.

III. NEED FOR RATE CASE

Q. WHY IS THIS RATE CASE NECESSARY?

Even though there has not been a rate case filed in Paradise Valley since 1998 and there is some inflation every year, this case is first and foremost about improving the public health and safety for our customers in Paradise Valley. We will improve public health as a result

of removing more arsenic from drinking water and we will improve public safety as a result of improved water pressures and flows for fire-fighting.

Q. PLEASE SUMMARIZE THE COMPANY'S RATE REQUEST.

A. Effective upon a final order in this case, the Company requests an immediate increase in annual base rates of $0.278 million or 5.48%, plus authority to implement a five-step Public-Safety ("PS") surcharge to fund water-flow improvements for fire protection in Paradise Valley. We are asking that the Step-One PS surcharge become effective upon a final order in this case. We estimate that the Step-One PS surcharge will increase rates by $0.582 million or approximately 11%,

Additionally, the Company requests approval of a two-step ACRM surcharge, based on earlier Commission precedent. The estimate for the first year's eligible revenue requirement for the new arsenic removal facility is $3.477 million, to be recovered through an ACRM surcharge. The exact amounts of the Step-One increases for the PS and ACRM surcharges will be known when the Company has completed specific fire-flow projects and the arsenic removal project and they are operating as intended and the Company files for specific Step-One PS Surcharge and Step-One ACRM increases based on actual costs. The ACRM is intended to become effective on customer bills 45 to 90 days following a specific step increase request.

Given that there is uncertainty associated with both the length of this rate case and the construction schedule for the arsenic removal and fire flow projects in Paradise Valley, the Company also requests accounting orders to defer depreciation and gross return as described more fully in the testimony of David P. Stephenson.

Q. WHEN DOES THE COMPANY PLAN TO REQUEST STEP ONE OF THE ACRM SURCHARGE?

A. Timing of the Step-One ACRM surcharge will depend on the arsenic facility's completion schedule. It is possible that the Company may be in a position to file the specific ACRM Step-One request sometime during the conduct of the case. We would ask that the Step-One ACRM surcharge occur as quickly as possible after the final order. We will facilitate that result by providing the specific ACRM Step-One schedules as soon as they are available.

Q. WHY IS THE COMPANY REQUESTING THAT STEP-ONE OF THE PS SURCHARGE BECOME EFFECTIVE UPON A FINAL ORDER IN THIS CASE?

A. We are asking for a specific Step-One PS surcharge at the time of the final order in this case because, as Mr. Joseph E. Gross explains, several discrete fire protection projects are already complete and were placed in service in March 2005. Also, several additional discrete fire protection projects are appropriate to include in the Step-One PS surcharge, because they are already in design or under construction and will be complete and placed in service before this case is completed. This request includes the recovery of deferred

depreciation and gross return for completed fire flow projects from the effective date of an accounting order until the effective date of a final order in this case. Details of the already completed projects are contained in Mr. Gross' testimony. He will provide additional specific details of the additional projects upon their completion and at the appropriate time in this case.

We estimate the following cumulative percentage rate increases for Steps One through Five of the PS surcharge are:

Step 1	11%
Step 2	21%
Step 3	25%
Step 4	31%
Step 5	39%

The rate calculations and other details for the PS surcharge are provided in the testimony of Mr. David P. Stephenson.

As with the ACRM, the Company requests that an accounting order be approved for the PS surcharge for the deferral of depreciation and gross return on facilities already in service from the date an accounting order is approved until the Step-One PS surcharge is effective. Likewise, the Company requests that the accounting order permit inclusion of PS projects now underway once they are placed in service. The Company requests that

the PS accounting order be approved immediately, because we are already depreciating PS-eligible projects.

Q. WHEN DOES THE COMPANY PROPOSE TO PLACE THE ACRM AND PS SURCHARGES INTO BASE RATES?

A. The Company plans to file its next Paradise Valley base rate case by May 2010 or about four years following an anticipated final order in this case. We expect that the ACRM surcharge, and probably the PS surcharge, would end after a final order in this case, which would include the project costs in base rates.

IV. NEED TO ATTRACT INVESTMENT

Q. WHAT RETURN ON EQUITY IS THE COMPANY REQUESTING?

A. The Company's requested revenues are based on a 12% authorized return on equity. The return on equity currently approved in Paradise Valley is 11%. However, in the most recent series of rate cases involving a large number of the Company's other water and waste water districts, the Commission approved a disappointingly low 9% return on equity. As of the date of this filing, 9% continues to be the *lowest* authorized return on equity level in effect for *any* of American Water's 27 state affiliates. Arizona's growing economy and needed high levels of investment in infrastructure should make Arizona an attractive investment opportunity. However, the message my parent company received was that other states are much more receptive to investment capital.

Q. AS THE WESTERN REGION'S MOST SENIOR OFFICER, WHAT IS YOUR INITIAL PERSPECTIVE ON THE REQUESTED AND PREVIOUSLY AUTHORIZED RETURNS?

A. My perspective is shaped primarily by the significant need and desire to attract capital for worthwhile water and wastewater projects in Arizona. This need is compounded because the Company must refinance $165.6 million of outstanding debt in 2006. While Arizona-American is required by an unfunded federal mandate to build the Paradise Valley arsenic removal facility, it is not, on the other hand, required to fund fire-flow improvement projects.

Unfortunately, I find myself now at a competitive disadvantage when seeking to obtain corporate capital to fund discretionary projects that benefit Arizona customers. Reducing regulatory lag and increasing our authorized return on equity will enable the Company to continue to invest the amounts of capital necessary to meet not only current and future mandated needs, but also non-mandated projects requested by our customers. Until I am able to both reduce regulatory lag (via the proposed PS surcharge) and obtain a fair authorized rate of return, I do not anticipate obtaining approval to continue funding the Paradise Valley public-safety projects.

Q. TURNING MORE GENERALLY TO ARIZONA, WHAT OTHER CONCERNS DOES SENIOR MANAGEMENT HAVE?

A. While my parent company's concerns are many, they include the timely and full recovery of invested capital at a fair rate of return. This is a particular concern in Arizona. Over the period, 2005-2009, American Water may invest up to $1,625 million in its 27 state affiliates. In Arizona, my team identified mandated, necessary, and desirable projects which can absorb net investment of $230 million of the above nation-wide total over the same period. In other words, Arizona could absorb 14% of American Water's entire capital budget, yet it has only 4% of the current American Water customer base of 3.5 million customers.

Q. HOW CAN ARIZONA REQUIRE SO MUCH OF AMERICAN WATER'S CAPITAL?

A. Approximately $40 million of the $230 million total is for arsenic remediation. Roughly $20 million is for improved fire flows in Paradise Valley and Sun City / Youngtown. A significant amount is for moving surface water over greater distances to our communities to save ground-water supplies and for new wastewater treatment plants. And several of Arizona-American's communities, built largely in the 1960's and 1970's, now need new wells and infrastructure repaired and replaced.

Q. ISN'T CUSTOMER GROWTH THE PRIMARY REASON FOR SPENDING 14% OF AMERICAN WATER'S CAPITAL IN ARIZONA?

A. No. Over 2005-2009, developers expanding in our communities are anticipated to contribute or advance $164 million for water infrastructure. In other words, our potential

net investment of $230 million in Arizona is already reduced by $164 million for meeting growth.

Q. YOU HAVE DISCUSSED EQUITY RETURNS, ARE THERE ANY ISSUES CONCERNING THE COMPANY'S REQUESTED COST OF DEBT?

A. Yes. The Company is able to obtain new debt from American Water at better interest rates than what the Company could get on its own. The Company has reflected current known and measurable borrowing costs in its revenue requirements for that portion of the cost of debt it will refinance in November 2006. Mr. Stephenson further discusses this issue in his testimony.

V. OTHER MATTERS

Q. DOES THE COMPANY'S REQUEST ENCOURAGE WATER CONSERVATION?

A. Yes. This rate case is another opportunity to evaluate existing rate designs and consider incentives and programs for conservation. It is my understanding that per-capita water consumption in Paradise Valley is much higher than virtually anywhere else in Arizona and far above the presently non-binding per-capita target set by the Arizona Department of Water Resources. Because of the affluence of large portions of our Paradise Valley customer base, establishing pricing signals to actually reduce water usage is a significant challenge.

The median household income in Paradise Valley, as reported in the 2000 US Census, was $150,228 as compared to $40,558 for Arizona as a whole. The 2000 Census also reported the median value of owner-occupied housing in Paradise Valley was $722,700, compared to $121,300 for Arizona as a whole. The average household size in Paradise Valley was 2.71 persons in 2000, which is nearly the same as the Arizona 2.64 person average. Over 38% of Paradise Valley households had annual income in excess of $200,000 in the 2000 Census. Statistics such as these will be useful in attempting to create pricing signals that actually reduce water use. Mr. Stephenson's testimony includes a conservation proposal for the parties to consider. Mr. Bourassa will provide more details about this proposal.

Q. WAS THE CAP SURCHARGE IN PARADISE VALLEY REDUCED IN 2005?

A. Yes, it was reduced from $0.19 per 1000 gallons in 2004 to $0.07 per 1000 gallons in 2005 as per normal operation of this existing surcharge. From the perspective of our customers in Paradise Valley, this was a rate decrease.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does.

EXHIBIT
A-2
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-0405

REBUTTAL TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
FEBRUARY 13, 2006

REBUTTAL TESTIMONY
OF
PAUL G. TOWNSLEY
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ARIZONA AMERICAN WATER COMPANY
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EXECUTIVE SUMMARY

Paul Townsley testifies that the high-block usage surcharge should be used as a contribution to directly offset the fire-flow improvement infrastructure investments, and that the public safety surcharge should be used to recover the additional revenue requirement, after applying the contribution, necessary to comply with the fire-flow improvement infrastructure installation timetable desired by the Town of Paradise Valley.

Paul Townsley further testifies that American Water's Annual Incentive Plan benefits customers both in the short-term and long-term by aligning employees' efforts around making the Company a more effective and customer-focused utility that has the capability to attract and retain high quality employees, to obtain capital for utility plant investments, and to mitigate cost increases through increased efficiencies.

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Paul G. Townsley. My business address is 303 H Street, Suite 205, Chula Vista, California 91910. My telephone number is (619) 409-7700.

Q. ARE YOU THE SAME PAUL G. TOWNSLEY WHO PROVIDED DIRECT TESTIMONY IN THIS CASE ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY?

A. Yes I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. On behalf of Arizona-American Water Company ("Arizona-American" or the "Company"), I address certain positions taken by RUCO and Commission Staff regarding the Paradise Valley Fire-flow Improvement Program. I also further explain the benefit to customers of the Company's Annual Incentive Plan.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I have included an Executive Summary at the beginning of my testimony.

II. PARADISE VALLEY FIRE-FLOW IMPROVEMENT PROGRAM

Q. WHY HAS THE COMPANY EMBARKED ON A FIRE-FLOW IMPROVEMENT PROGRAM IN ITS PARADISE VALLEY DISTRICT?

A. As described in my direct testimony and as further discussed by Company witness Brian Biesemeyer in his direct testimony, improving the capability to fight fires in the community is critically important to the Town leaders and residents of Paradise Valley

They have sought the assistance of the three water utilities that serve the Town (Arizona-American, Berneil Water Company, and the City of Phoenix) to make this happen. The Company works very hard to meet the needs of its customers and prides itself on being a customer responsive organization. Accordingly, the Company and the Town have been working together to improve the capability to fight fires in this community.

Q. WHY IS ARIZONA-AMERICAN SEEKING A SURCHARGE TO FUND THE PARADISE VALLEY FIRE-FLOW IMPROVEMENT PROGRAM?

A. The Company's investment in a fire-flow improvement program is discretionary, not required under current Commission rules and regulations. The Company cannot invest in a long-term fire-flow improvement program unless the Commission agrees to reduce the regulatory lag and regulatory risk associated with these investments. The Town understands and accepts that this project will only continue to the extent that the Company can promptly recover the costs associated with the discretionary investments. To this end, after consultation with the Town, the Company proposed a surcharge on its customers' bills to enable it to finance and operate this project.

Q. DOES RUCO AGREE WITH THIS APPROACH?

A. No. RUCO witness Marylee Diaz Cortez discusses the Public Safety surcharge in her testimony on pages 2-11. She also opposes the high block usage surcharge. She also takes no position on rate base treatment of this project's expenses to-date of over $3 million in fire-flow improvements completed in 2005 and already dedicated to public service. To fund the fire-flow investments, she would have the Town of Paradise Valley contribute the funds in advance for the fire-flow improvement projects; even though the Town Attorney has stated that the transfer of funds from the Town of Paradise Valley to Arizona-American would not be legal.

Q. MS. DIAZ CORTEZ ASSERTS ON PAGE 9 OF HER TESTIMONY THAT APPROVING RATE RECOGNITION OF FIRE-FLOW PROJECTS WOULD SEND THE MESSAGE TO OTHER ARIZONA WATER COMPANIES THAT THEY CAN DOUBLE THE SIZE OF THE RATE BASES. DO YOU AGREE?

A. I do not really understand what RUCO witness Marylee Diaz Cortez is asserting here especially since her testimony documents how successful the fire-flow improvement project in Paradise Valley has been to-date. The Company is responding to requests from its Paradise Valley customers to make investments in infrastructure to provide the community with improved capability to fight fires. What this means to other communities and other Arizona water companies is not relevant to this case.

Ms. Diaz Cortez's musings are misplaced that this is simply an opportunity to maximize earnings at ratepayer expense to "create rate shock in Arizona's water industry as a whole" because, absent a specific request from the community of Paradise Valley, the Company would not be pursuing this investment. As other communities served by Arizona-American request fire-flow infrastructure investments and are willing to pay the extra cost attributed to it, the Company will respond to their requests. For example, a recently completed study of fire-flow improvements in Youngtown / Sun City recommended up to $4 million in capital expenses ultimately causing a 6% rate increase there – far less than a doubling of rate base. This is not about maximizing earnings, this is about being responsive to the communities we serve.

Q. WHAT WOULD BE THE RESULT IF THE COMMISSION WERE TO ADOPT THE MS. DIAZ CORTEZ' POSITION?

A. Arizona-American would be forced to terminate its Paradise Valley fire-flow improvement program. The Town would not be able to achieve its goals of improving its capability to fight fires throughout its Town boundaries through increased water flow. This would be a terrible disservice to community members, Town leadership, and Company representatives who have worked so hard over the past two years to develop and execute a plan clearly desired by customers.

Q. HOW DO YOU RESPOND TO COMMISSION STAFF WITNESS JAMES DORF'S TESTIMONY CONCERNING FIRE-FLOW INVESTMENT?

A. I agree with Mr. Dorf's recommendation on page 4 of his testimony, that $3,018,867 of fire-flow improvement infrastructure placed in service in 2005 should be included in rate base as a post test-year addition. Further, in early January 2006, we placed another fire-flow project known as "Nauni Valley Drive" in service, at a total cost of $420,755. Consistent with Mr. Dorf's testimony, this also should be included in rate base. The technical aspects of this new project are supported by Company engineering witness Joe Gross and the financial details are supported by Company witness Joel Reiker.

Q. COMMISSION STAFF WITNESS DARRON CARLSON PROPOSES, AS AN ALTERNATIVE TO THE PUBLIC SAFETY SURCHARGE, TO APPLY ALL HIGH-BLOCK SURCHARGE REVENUES AS A CONTRIBUTION TO OFFSET FIRE-FLOW INVESTMENT. HOW DO YOU RESPOND?

A. Arizona-American can accept this portion of Mr. Carlson's recommendation. However, since he recommends denial of the Public Safety Surcharge, the Company would have to reduce its capital investment in fire-flow improvement infrastructure in Paradise Valley

so that the annual amount of investment would not exceed the annual amount of high-block usage surcharge revenue; in other words, a "pay as you go" project. This would push back completion of the project until 2015 or later. The Company is prepared to spend approximately $3 million annually over five years, but the high-block usage surcharge would fund recovery of less than half that annual amount. Therefore, the Public Safety Surcharge is necessary to timely complete the project.

Q. DO YOU HAVE AN ALTERNATIVE TO MR. CARLSON'S PROPOSAL?

A. Yes. I agree with Mr. Carlson that the high-block usage surcharge can be best used as a contribution to directly offset the fire-flow improvement infrastructure investments. The Company appreciates that Commission Staff has embraced its proposal for a high-block usage surcharge in this case because appropriate pricing signals are the most direct and effective way to encourage conservation among high-use customers. Commission Staff improved our proposal by recommending that the revenue generated be used to offset our fire-flow investments, since the surcharge is likely to create a significant revenue stream. However, the additional high-block revenue will not be enough to timely fund the required investments.

Q. WOULD THE HIGH-BLOCK USAGE SURCHARGE GENERATE ENOUGH REVENUE TO FUND PLANNED FIRE-FLOW IMPROVEMENTS?

A. No. Commission Staff estimates that the high-block usage surcharge would generate approximately $1.7 million per year in additional revenue, although the elasticity of demand once this surcharge is put in place is unknown at this point. While the Company's Paradise Valley Water District customer demand has tended to be inelastic to increasing demand, high usage customers have not experienced surcharges of this order

of magnitude before. Consequently, the amount of revenue available for fire-flow improvement programs in Paradise Valley could be significantly less than Commission Staff projects and the Company could also lose base revenue on reduced sales volume. Given that continuing investments of over $3 million annually will be required to complete the fire-flow projects on the schedule desired by the Town, reduced Public Safety Surcharges will still be needed to recover this investment.

Q. HOW DO YOU SEE THIS WORKING?

A. I see it being administered exactly as the Commission has designed the combined ACRM and arsenic impact fee in the Company's Havasu district. Thus, once fire-flow plant has been placed in service the associated investment will be first reduced by actual contribution from the high-block surcharge. The remaining plant, if any, will be recovered via the Public Safety Surcharge, based on its associated revenue requirement. As further described in the testimony of Company witness Mr. Broderick, the Company could file the same schedules Commission Staff requires to process an ACRM step increase, but in this case it would be for fire-flow improvements in Paradise Valley.

Q. CAN THE COMPANY ACCEPT SOME ADDITIONAL RESTRICTIONS ON THE PUBLIC SAFETY SURCHARGE?

A. Yes. Given Commission Staff's recommended inclusion of over $3 million in post-test-year fire-flow plant in rate base and its proposed high-block surcharge applied as a contribution, we could accept just two step increases in the Public Safety surcharge rather than the five steps initially proposed. The first step increase would be effective September 2007 or later and the second step increase would be effective September 2008 or later. Also, we accept Commission Staff's requirement to file our next rate case by September 30, 2008, or nearly two years earlier than our original proposal. Additionally,

the Company is willing to periodically brief Commission Staff on its updated spending plans for fire-flow in Paradise Valley including updated priorities from the Town, expenses to-date and actual amounts of high-block surcharge contributions. Clearly, if I learn the Commission is reluctant to support a particular phase of the fire-flow project, I will slow down and revert to the "pay as you go" approach. When we look back at this in a few years, I think all parties will be glad that this flexibility was built in to the process. These rate cases are expensive and time-consuming.

Q. THE COMMISSION RECENTLY APPROVED AN ACCOUNTING DEFERRAL ORDER FOR THE COMPANY'S FIRE-FLOW INVESTMENTS IN EXCESS OF CONTRIBUTIONS PLACED IN SERVICE UNTIL ITS NEXT RATE CASE. WHY ISN'T THAT ADEQUATE TO ALLOW THE COMPANY TO CONTINUE SPENDING ON A 5-YEAR SCHEDULE?

A. The terms of this deferral order do not defer all legitimate costs and its application is not consistent. For example, the AFUDC rate approved for use in this deferral order is not our authorized cost of capital, but rather our lower average cost of long-term debt. Also, Commission Staff's recommendations in this case set aside this order in regards to the more than $3 million in post test year fire-flow improvement infrastructure additions. These additions were completed in 2005, the deferral order was approved in October 2005, and we anticipate permanent rates in this case on August, 1, 2006. However, Commission Staff's recommendation does not include recovery of costs deferred from October 2005 until August 2006. Company witness Joel Reiker, in his rebuttal testimony, has included the recovery of this deferral in accordance with the Commission's order. This must be approved in rates for the Company to associate any real value to this deferral order going forward.

Unfortunately, the Company's present financial situation does not permit the undertaking of discretionary projects with deferred rate recovery. Deferred rate recovery creates only non-cash earnings, whereas the construction of these facilities requires cash payments. As the Commission knows from other recent proceedings, the Company is unable to attain and maintain a 40% equity ratio and was recently required to submit an equity plan by December 31, 2005. The plan submitted contained eleven tangible and realistic steps that require both Company and Commission actions. The Company is committed to this plan. One step includes seeking approval for an infusion of up to $35 million in equity from our parent, American Water, in 2006. Unfortunately, although that request is pending approval later this month by the American Water Board, we just recently suffered an impairment of $23 million of the Company's capital structure under FAS 142, thereby offsetting much of the equity ratio improvement of the upcoming potential infusion.

The years 2006 through 2008 will be absolutely crucial for Arizona-American. The Company's 3-year rate request moratorium recently expired and we will be filing a series of rate cases in many districts seeking recovery of approximately $125 million that has been excluded from rate base since January 2002 under the Commission's Order approving the acquisition of former Citizens Utilities' properties in Arizona by the Company. (Decision No 64002, dated August 30, 2001). Additionally, the Company expects to have very significant refunds due in Anthem in 2006 and 2007, while we continue to carry nearly $50 million in CWIP for its arsenic projects that it will soon be seeking recovery via the recently approved ACRM. And these are but the big projects in 2006 and 2007 as we have many millions in other smaller capital projects. Therefore, additional deferrals at this time are unacceptable to the Company.

Q. DOES THE COMPANY SEE OTHER BENEFITS FROM THE APPROVAL OF THE PUBLIC SAFETY SURCHARGE?

A. Yes. More customers will see the linkage between the Public Safety surcharge and fire-flow investments in their community; the Company will be better able to make annual investments at a pace consistent with what the Town of Paradise Valley has requested; and surcharges from high-block usage customers would be used to reduce the overall impact on customer bills. Based on our discussions with the Town of Paradise Valley, it is clear they would prefer to accelerate the fire-flow improvement program rather than slow it down. My modified proposal will allow the Company to be responsive to the Town's and its customers' on-going and emerging needs and preferences.

III. ANNUAL INCENTIVE PLANS

Q. RUCO WITNESS MOORE STARTING ON PAGE 26 RECOMMENDS REMOVAL OF INCENTIVE PLAN PAYMENTS. DO YOU AGREE?

A. No. Some kind of incentive pay is an important part of any compensation plan. Incentive pay creates a sense of ownership in improving the business that straight salary dollars, no matter how large, don't convey. A well-designed incentive-pay plan can also help pull people together, align them with the direction the Company wants them to go, and help Arizona-American better compete in today's competitive environment.

Q. WHEN ARIZONA-AMERICAN COMPARES ITS EMPLOYEE COMPENSATION LEVELS TO THE LABOR MARKET IT COMPETES IN, IS THE ANNUAL INCENTIVE PLAN INCLUDED?

A. Yes. The Company's compensation philosophy is to design, implement, and manage total compensation programs that support the attraction and retention of talent and reinforce a performance culture. As part of this philosophy, the Company defines Total

Compensation as the sum of all elements of an employees' compensation including base salary, incentive plan, and benefits. When the Company compares its competitiveness for labor against competitors, it uses Total Compensation, which includes its annual incentive plan. Even though the annual incentive plan is at risk for payment in any year, depending upon achievement of targets that year, it is still included in Total Compensation when being used to compare against competitors. Eliminating the possibility for an annual incentive plan would make it more difficult for the Company to attract labor in this market.

Q. DO THE CUSTOMERS BENEFIT FROM A WELL-DESIGNED INCENTIVE PAY PLAN?

A. Absolutely. First of all, the ability to attract and retain qualified employees is certainly in the best interest of customers. Even more importantly, however, the Annual Incentive Plan (AIP) is designed to encourage and reward exactly the results and employee behaviors that matter to customers. I will provide some examples below.

Q. PLEASE DESCRIBE ARIZONA-AMERICAN'S ANNUAL INCENTIVE PLAN?

A. Arizona-American's AIP is the same plan that is offered throughout American Water. All full-time management, professional and technical employees (exempt from overtime) are eligible to participate in the AIP. The AIP is designed to award participants for the performance results they attain during the plan year. There are three performance components to the plan: *financial*, *operational*, and *individual*.

Q. YOU STATED THAT THERE ARE THREE PERFORMANCE COMPONENTS: FINANCIAL, OCCUPATIONAL, AND INDIVIDUAL - WHAT ARE THE FINANCIAL MEASURES?

A. We have selected two measures (Value Added and Free Cash Flow) as the AIP financial measures. We believe that these measures are the most critical gauges of our business success and are consistent with other affiliated business units. Value Added is an established measure, sometimes referred to as economic value added, which reflects the economic contribution made by a business unit. It is calculated using operating results and operating assets. Free Cash Flow is an important operating figure that is also linked to net debt performance. It is defined as the cash flow from operating activities (after interest and tax) minus capital expenditures. It does not include the impact of financial restructuring or any impact of acquisitions or disposals.

Q. HOW DOES THE FINANCIAL COMPONENT BENEFIT CUSTOMERS?

A. There are a number of ways that the financial component benefits customers. First of all, a financially sound company benefits customers. A financially sound company has a reduced cost of debt, which reduces the cost of capital to customers. A financially sound company is also better able to raise capital to make investments that benefits customers, such as investments that improve the reliability, safety, and quality of the water they drink. A financially sound company is better able to compete for employees and retain employees in an ever demanding marketplace for talent. Arizona-American is seeking to improve its financial soundness so that it can continue to provide high-quality service to customers for the long run.

Second, the water industry is an increasing-cost business. Investment requirements due to aging infrastructure and new water quality regulations are going up every year. Operational costs related to these new investments are also increasing, as are the costs of energy, chemicals, labor, and other components of the business. These increasing costs can be seen perhaps most clearly in this case in the new arsenic treatment plants and the operating cost increases attributable to these plants. In an increasing-cost environment the Company and its employees must work diligently to better utilize every dollar received from customers and to stretch those dollars so that future cost increases are less. The AIP financial component aligns all eligible employees' efforts to gather behind this task by managing operating costs efficiently and maximizing the effectiveness of investment dollars. The Company spends considerable time and effort in the development of its annual budgets and business plans to find more efficient, more cost-effective, and new ways to provide service to our customers. The AIP financial component aligns all eligible employees behind this critical effort which benefits customers short term and long term.

Q. WHAT ARE THE OPERATIONAL COMPONENTS INCLUDED IN THE AIP?

A. The operational components of the AIP include performance measures tied to American Water's Balanced Scorecard through which customer satisfaction, environmental targets, and health and safety measures are the key performance indicators. This year the targets are (i) customer service quality rating, (ii) customer satisfaction rating, (iii) environmental Notices of Violation, and (iv) Injury Frequency Rate.

Q. PLEASE DESCRIBE EACH PART OF THE OPERATIONAL COMPONENT AND HOW THESE BENEFIT CUSTOMERS.

A. Under the Customer Service measure, we are striving to improve on an annual basis in two key areas. The first is "Customer Satisfaction Rating," which is the percent of customer responses to question #23 in our annual customer satisfaction survey for which a rating of "satisfied" or "very satisfied" is received. Question #23 states, "Overall, how satisfied are you with the services offered by your water company?" In December 2004, Arizona-American achieved a score of 95%, and a year later in December 2005 Arizona-American achieved a score of 94%.

The second is "Customer Service Quality Rating" which is the percent of all customer service quality survey responses to question #29 for which a rating of "very good" or "excellent" is received. Question #29 states, "Overall how satisfied with the outcome of your service contact?" During the 2nd quarter of 2005, Arizona-American achieved a score of 90%; during the 3rd quarter of 2005 the score was 72%, and during the 4th quarter of 2005 the score was 80%. Our current target for this rating is equal to or greater than 75%.

These two measures benefit customers because they ensure a diligent focus and continuous improvement by employees on the quality of customer service we provide to our customers every day.

For the Environmental measure, our annual target is to have no more than four violations throughout the Western Region of drinking water regulations that require public notification or customer advisory. These violations could range from a temporary exceedance of water quality parameters above state or federal rules, an error in analytical

laboratory results or recordkeeping, or the oversight of collecting a particular water quality sample within a sampling window. During the last three years, Arizona-American has had only one violation and this violation did not affect its Paradise Valley water system. The Company works very hard to provide high quality water and wastewater service to its customers in Arizona and needs the focused effort of each one of its employees to maintain that quality consistently throughout the year. This component benefits customers by ensuring that the water quality we provide, the testing that we do and the record-keeping that we perform, are all of the highest standards.

For the Health and Safety measure, our annual goal is to reduce our Injury Frequency Rate (IFR), which is the number of lost time injuries per million hours worked, to a level at or below 6.5. Since we have included this as a part of our operational goals we have been able to reduce our IFR in Arizona from 16.8 in 2003, to 7.8 in 2004, and to 3.1 in 2005. This component benefits customers by improving the safety of the workplace including workplaces in the community through reduced cost for workers compensation insurance, improving morale of employees, and by reducing the hours employees are not able to work because of injury.

Q. WHAT IS THE INDIVIDUAL COMPONENT?

A. The Individual component is based on an employee's accomplishment of his or her individual goals as agreed between the employee and his or her supervisor.

Q. HOW ARE THESE INDIVIDUAL GOALS SET AND MEASURED?

A. At the beginning of each year, every exempt employee develops individual goals aligned with broader goals established for the Western Region of American Water. These broad Western Region goals encompass four areas: improving the customer experience,

improving the employee experience, achieving financial results, and improving business processes. Each employee identifies individual goals, which are tied to these broader goals to focus on during the year. The employee's supervisor must also agree that these goals are appropriate for the job, are measurable, are stretching yet achievable, and are specific enough to be measured. The goals, typically four or five in number, vary from individual to individual and may align either with each of the four Western Region goals or may instead focus on one or two of those goals. At the end of the year, the supervisor and employee meet to measure progress against the employee's goals and determine whether or not they have been achieved. The achievement of these goals is the basis for the individual component of the AIP.

Q. HOW DO THE INDIVIDUAL COMPONENT OF THE AIP BENEFIT CUSTOMERS?

A. Many of the individual employee goals are directly related to improving customer service and responsiveness to customer issues. Others relate to improving the safety or reliability of our production and distribution facilities, or the quality of the water we serve. Still others relate to improving employee skills such as team-working and problem solving. Overall, the goals support Arizona-American's overall performance as a high-quality water and wastewater service provider, which circles back to the customer benefits that I just discussed.

Q. HOW ARE THE THREE AIP COMPONENTS (FINANCIAL, OPERATIONAL, AND INDIVIDUAL) WEIGHTED IN DETERMINING AN EMPLOYEE'S AWARD?

A. One of our key incentive principles is that participants should be measured on performance they can directly influence. Therefore, different employee classes have

different component weightings. In our current AIP, front-line managers will have 70% percent of their goals tied to operational and individual components and the balance to the financial component. Mid-level managers will also have 70% percent of their goals tied to operational individual components and the balance to the financial component. Senior executives will have 60% percent of their goals tied to operational and individual components, and the balance to the financial component.

Q. RUCO WITNESS RODNEY MOORE STATES ON PAGE 27 OF HIS TESTIMONY THAT INCENTIVE PAYMENTS ARE NOT MADE UNLESS THE COMPANY MEETS ITS FINANCIAL PERFORMANCE TARGET. DO YOU AGREE?

A. No. As I stated previously, the Annual Incentive Plan has three components: financial, operational, and individual. Employees are eligible for a portion of their incentive plan for each of those three components in which targets are achieved, so payments can be made irrespective of whether the Company meets its financial targets.

Q. MR. MOORE GOES ON TO SAY ON PAGE 27 THAT STOCKHOLDERS ARE THE PRIMARY BENEFICIARIES OF THE ACHIEVEMENT OF THESE PERFORMANCE TARGETS. DO YOU AGREE?

A. No, I do not. As I have stated above, achievement of targets in the annual incentive program benefits customers. While there are also benefits to employees and to stockholders, I have shown in my previous testimony that achievement of targets will benefit customers in both the short run and the long run, regardless of whether they are financial targets, operational targets, or individual targets. Arizona-American realizes that as a regulated utility, its customers do not have a choice from whom they receive their water service, and for this reason the Company works very hard to ensure that all

employees are focused on providing the highest quality water and customer service they can. RUCO witness Rodney Moore points out on page 29 of his testimony that in 2004 the Company made incentive awards despite the fact that it could not achieve its financial goals. This further demonstrates that the focus of the incentive program is not solely a financial focus but is a short-term and long-term focus on improving and maintaining high levels of customer service and efficiency of the Company in meeting its utility obligations. Earlier in my testimony, I discussed the very significant financial issues this Company faces—I need highly motivated employees to work through these and other issues.

Q. RUCO WITNESS MOORE ON PAGE 28 OF HIS TESTIMONY CLAIMS THAT INCENTIVE PAY IS NOT A KNOWN AND MEASURABLE EXPENSE. DO YOU AGREE?

A. Not in the sense that he states in his testimony. Because Arizona uses historic Test Years (in our case Test Year 2004), the amount of incentive pay that was paid that year is clearly known and measurable. While no one can predict the exact amount of the AIP payout in future years, neither can one predict with any precision the amount of many other costs occurring in the future (outside of a Test Year) whether they are fuel, power, chemicals, maintenance, or other expenses normally incurred by utilities. So, witness Moore's allegation that incentive pay is not known or measurable is incorrect.

Mr. Moore goes on to state at the bottom of page 28 that, presumably, there should be inherent efficiencies realized in the future, implying that these efficiencies somehow would negate the need for including AIP costs in rates. As I've stated in my previous testimony, water is a rising-cost utility due to a number of reasons, not the least of which is the need to comply with ever increasing federal and state standards related to the Safe

Drinking Water Act and the Clean Water Act. In addition, as water becomes more scarce in the arid Southwest, new sources of water become more costly than historic sources of water to develop, and as infrastructure which supplies water and wastewater service to customers ages and the cost of replacement of this infrastructure increases, our costs as a Arizona utility will increase. Simultaneous with rising costs, per-capita consumption is decreasing. Since 1985, the Arizona Department of Water Resources has published a series of management plans for the Phoenix Active Management Area that include annual gallons-per-capita-per-day water use target for each water provider. Targets for each successive management period have become increasingly stringent since 1985. Since 1990, these efforts have reduced average per-capita water use by providers within the Phoenix Active Management Area by approximately 10 percent, and there is every reason to believe per-capita use will continue to decline in the future.

Q. CAN YOU SUMMARIZE YOUR COMMENTS ON THE ANNUAL INCENTIVE PLAN?

A. Yes. The Annual Incentive Plan is designed to align all eligible employees' efforts around the mission of making Arizona-American a more effective and customer focused utility that has the capability to attract and retain high quality employees and capital for utility plant investments. In addition, the ability to mitigate the rate of cost increases through increased efficiencies in a rising cost utility business is also a customer benefit. Through a focus on customers, operations and financial targets, the Annual Incentive Plan clearly benefits customers both in the short-term and long-term.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does.

EXHIBIT
A3
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-0405

REJOINDER TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
MARCH 16, 2006

REJOINDER TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
MARCH 16, 2006

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EXECUTIVE SUMMARY

Paul Townsley testifies that, because Commission Staff's surrebuttal testimony continues to recommend denial of the Public Safety Surcharge, Arizona-American has unfortunately had to postpone this summer's planned construction of fire-flow improvement projects on Lincoln Drive and Tatum Boulevards in Paradise Valley until at least summer 2007. If the Commission follows the Staff's recommendation to fund fire-flow solely from revenues from the high block surcharge these projects will likely be delayed until summer 2008.

Mr. Townsley testifies that the testimony of RUCO's witness, Ms. Diaz Cortez, is inconsistent with how the fire-flow projects in Paradise Valley and Sun City/Youngtown actually began and mischaracterizes Arizona-American's motivations and intentions. It was actually the Commission that ordered the Company to investigate fire-flow projects in Sun City/Youngtown and the Commission has openly supported the Paradise Valley fire-flow project.

Finally, Mr. Townsley testifies, in response to RUCO's witness Mr. Moore, that the Company's Annual Incentive Plan allows it to compete for employees in a tight Arizona labor market. If this plan were eliminated the Company would need to raise base salaries to be competitive in the market.

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Paul G. Townsley. My business address is 303 H Street, Suite 205, Chula Vista, California 91910. My telephone number is (619) 409-7700.

Q. ARE YOU THE SAME PAUL G. TOWNSLEY WHO PROVIDED DIRECT AND REBUTTAL TESTIMONY IN THIS CASE ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY?

A. On behalf of Arizona-American Water Company ("Arizona-American" or the "Company"), I explain the immediate consequence of Commission Staff continuing to recommend denial of the Company's request for a Public Safety Surcharge to fund the Paradise Valley Fire-flow Improvement Program. I also correct some of the inaccuracies and mischaracterizations of this Program contained in the testimony of RUCO witness Marylee Diaz Cortez. Finally, I discuss, in response to RUCO witness Rodney Moore, why the Company's Annual Incentive Program is necessary to attract and retain qualified employees in the tight Phoenix-area labor market.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I have included an Executive Summary at the beginning of my testimony.

II. PARADISE VALLEY FIRE-FLOW IMPROVEMENT PROGRAM

A. Response to Staff

Q. COMMISSION STAFF WITNESS CARLSON RECOMMENDS DENIAL OF THE COMPANY'S REVISED REQUEST FOR A TWO-STEP PUBLIC SAFETY

SURCHARGE TO FUND FIRE-FLOW PROJECTS IN PARADISE VALLEY. HAVE THERE BEEN ANY CONSEQUENCES AS A RESULT OF THIS RECOMMENDATION?

A. Unfortunately, yes. The Company was preparing to commence and complete two major fire-flow projects on Lincoln Drive and Tatum Boulevard. Please see Rejoinder Exhibit PGT-1 for a brief project description. These projects are critical to completing any remaining fire-flow projects in the Town, because they will provide the backbone pressure and capacity trunk mains for the smaller projects to follow.

The Town of Paradise Valley requires that we schedule all construction on these two major roads during the summer months to reduce traffic disruption, so work must be completed by October 2006. Consequently, the Company needed to immediately send bid requests to contractors to meet this schedule. However, Staff's recommendation to fund fire-flow projects solely from high-block surcharge revenue meant that funds would likely not be timely available for these projects. Therefore, we have postponed the Lincoln and Tatum fire-flow projects until at least 2007, which will in turn push back all other projects for at least another year. We have informed the Town of this outcome.

Q. WHAT HAPPENS IF THE COMMISSION APPROVES THE PUBLIC SAFETY SURCHARGE?

A. If the Commission does decide to approve the Public Safety Surcharge, we will be able to undertake the Lincoln and Tatum projects in 2007. Without the surcharge, the earliest we will have funds available for these projects will be 2008. Later this year, as part of its annual capital planning process, the Company will recast its overall multi-year plans and schedules for fire-flow improvements in Paradise Valley based on the Commission's decision whether to allow the Company to collect a Public Safety Surcharge or to fund fire-flow projects only from high-block-surcharge revenues.

B. Response to RUCO

Q. AMONG OTHER THINGS MS. DIAZ CORTEZ CLAIMED THAT ARIZONA-AMERICAN IS PROMOTING FIRE-FLOW PROJECTS THROUGHOUT ITS TERRITORY FOR BUSINESS GAIN. IS THIS TRUE?

A. Hardly; we only reluctantly undertake fire-flow improvement projects. Our position is that we will undertake these projects only if there is strong community support and the Commission approves a mechanism so that we can timely recover our investments in these discretionary projects. The fire-flow improvement effort in Paradise Valley is underway because of a grass-roots campaign to improve fire-flows Town-wide. And, as I testified in my rebuttal testimony, the Town is asking its other water providers, Berneil Water and the City of Phoenix, to make exactly the same type of investments. If funds will only be available from the high-block surcharge, then the Company will re-cast its plans to align with available revenue. These funds will be treated as contributions; thus, the Company will not earn any return at all on future fire-flow projects.

Q. WHAT ABOUT FIRE-FLOW PROJECTS FOR SUN CITY/YOUNGTOWN AND BULLHEAD CITY?

A. The Sun City/Youngtown fire-flow task force was created in response to Commission Decision No. 67093. During the task-force process, we learned that when a house fire occurs in Sun City/Youngtown, fatalities are four times more likely than the national average, most likely due to the extra difficulty an elderly person may have to escape a burning structure. As with Paradise Valley, Arizona-American is willing to undertake discretionary fire-flow/public-safety projects, but not without Commission assurance that we will promptly be compensated for our investment.

Unfortunately, while there is strong support for this project among key local leaders, Sun City/Youngtown lacks a single governance structure that can speak with authority and

clarity for its residents. Therefore, the Company removed this nearly $4 million project, which would have required a 6% rate increase, from last year's capital plan. It is not even being considered as part of this year's plan. This task force process cost the Company $193,000, which has not yet been recovered from customers. Finally, as required by the Commission, the Company undertook, completed, and filed its fire-flow task-force report in the summer of 2005.

Concerning Bullhead City's new request, we have just received it and have made no commitments, not even to undertake a study. We have just filed a new rate case for Mohave Water district and it does not contain any request for pre-approval or funding of fire-flow projects in that community.

Q. DOES THE COMMISSION SUPPORT FIRE-FLOW INVESTMENTS IN PARADISE VALLEY?

A. I think so, but, of course, only the Commission can definitively say so. Certainly, in June 2004, the Commission discussed and ordered the Sun City/Youngtown task force. More recently, the Commission approved the Company's accounting order concerning the Paradise Valley fire flow project. Based on those actions and statements, the Company continued to undertake fire-flow improvement projects in Paradise Valley. However, for now, the Company has slowed the pace of these projects until the Commission's wishes are more clearly stated.

Q. MS. DIAZ CORTEZ MAINTAINS THERE IS NO LOGICAL RELATIONSHIP BETWEEN FIRE FLOW PROJECTS AND HIGH BLOCK SURCHARGES. WHAT IS THE RELATIONSHIP?

A. Fire-flow improvement protects life and property. Those residents with the highest property values to protect are often those with the highest water usage. Hence, the high

block water surcharge will link those who benefit the most from fire-flow related property protection to paying relatively more. Clearly, all residents of Paradise Valley benefit from these projects and all customers will pay a portion of the costs in permanent rates as well.

III. ANNUAL INCENTIVE PLAN

Q. RUCO WITNESS MOORE RECOMMENDS DENIAL OF A PORTION OF THE COMPANY'S ANNUAL INCENTIVE PLAN COSTS. DO YOU AGREE WITH HIS RECOMMENDATION?

A. No. As I clearly stated in my rebuttal testimony, the Company's Annual Incentive Plan benefits customers, both short term and long term. Rather than re-arguing all of these reasons once again, let me simply say that the Company's Annual Incentive Plan is a component of its overall employee compensation, which allows it to compete for employees in a tight Arizona labor market. If this plan were eliminated the Company would need to raise base salaries in order to be competitive in the market. Basically, RUCO witness Moore argues that he would rather include these costs in rates as base salaries instead of using the same dollars to provide additional benefits to customers by clearly focusing employees on goals that improve the utility's ability to deliver high quality customer service. This makes no sense to me, nor should it to this Commission. I strongly urge the Commission to include the Annual Incentive Plan costs in our rates.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes it does.

PV Fire Flow Improvement Program – 2006 Projects

The proposed capital expenditure plan for 2006 involves the construction of two projects in the Paradise Valley Water District for a total of $3 million. These projects, described as follows, were originally identified in the fire flow assessment completed in March 2004:

- Approximately 4,500 linear feet of water main, 16-inch in diameter, in Lincoln Drive from east of Tatum Boulevard to west of 43rd Place.
- Approximately 1,800 linear feet of water main, 8-inch in diameter, in Tatum Boulevard, from the intersection at Lincoln Drive to Joshua Tree Lane.

Based on numerous discussions with Town officials and residents, these projects were given the highest priority. The reason for the high priority is that these projects will provide the backbone pressure and capacity trunk mains for the smaller projects to follow. That is, the overall program cannot proceed without these critical projects in place. Current fire flow capacity, in both of the above sections, is less than 500 gallons per minute. The new ductile iron water mains will be connected to existing service lines and a total of six new fire hydrants will be installed. The intended outcome, upon completion of these initial projects, is 1500 gallons per minute in fire flow capacity. Less expensive, follow-on projects can then be constructed in future years.

Both of these projects have completed designs and are currently awaiting bidding for construction. Because the intersection of Tatum Boulevard and Lincoln Drive is the major intersection in the Town, there is a limited window of opportunity for construction. Due to increased traffic flows during the winter months, the Town will not allow construction activity of any sort on these major arterials from November to May.

EXHIBIT
A-4
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-____

DIRECT TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

DIRECT TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. Brian K. Biesemeyer, 15626 N. Del Webb Blvd, Sun City, AZ, 623-815-3125.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Arizona-American Water Company ("Arizona-American" or the "Company") and I am the Network General Manager

Q. WHAT ARE YOUR RESPONSIBILITIES AS THE NETWORK GENERAL MANAGER?

A. I am responsible for customer service, water distribution, and wastewater collection operations statewide serving over 131,000 customers.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Masters of Science in Civil Engineering, a Masters of Science in Mineral Economics and a Bachelor in Science in Geological Engineering all from the University of Arizona in 1994, 1984, and 1982 respectively.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I am a Registered Professional Engineer with a Proficiency in Environmental Engineering. I am also a Grade IV Arizona Department of Environmental Quality

(ADEQ) Certified Operator in Water Treatment, Water Distribution, Wastewater Treatment, and Wastewater Collection. I have worked in the water industry for over twelve years in research, government, and the private sector. Prior to my current job, I was the Operations Manager for Arizona-American's Central Operations which included all operations in Maricopa and Santa Cruz County

Q. HAVE YOU HAD ANY OTHER RELEVANT PROFESSIONAL EXPERIENCES?

A. I am a member of ADEQ's Operator Certification with the responsibility of identifying operator compliance issues and requirements impacting operators, and to develop and recommend solutions, which will support ADEQ's operator certification program

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE UTILITY REGULATORY COMMISSIONS?

A. No.

II. PURPOSE OF TESTIMONY, SUMMARY AND CONCLUSIONS

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I will discuss:

1. The community and planning process for the Paradise Valley Fire Flow Improvement Program.
2. The value of separating Meter and Service-Line charges.

3. Staffing changes since the end of the Test Year.

III. PARADISE VALLEY FIRE FLOW IMPROVEMENT PROGRAM

Q. WHY IS ARIZONA-AMERICAN UNDERTAKING THE PARADISE VALLEY FIRE FLOW IMPROVEMENT PROGRAM?

A. The Town of Paradise Valley ("Town") is asking us to undertake this project. The Town became concerned about the fire-flow capabilities of the water systems servicing the Town in 2002 after a lightning strike ignited a blaze, destroying a large home. News investigation into the fire raised concerns about the adequacy of fire flow during fire fighting operations.

Q. PLEASE DESCRIBE THE INITIAL COMMUNITY AND PLANNING STEPS.

A. In April 2003, Arizona-American spoke to the Town Council Water Committee about the capacity of Arizona-American's system. Arizona-American discussed how Commission regulations only require a minimum pressure at the meter, with no specific standards for fire flow. To address the gap between reality and what was desired by the Town, Arizona-American proposed forming a working group of its customers to address the issue with the community.

Q. PLEASE DESCRIBE THE WORKING GROUP PROCESS AND RESULTS.

A. In July 2003, Arizona-American, working with the Town, formed the Paradise Valley Water Users Group (Users Group), with representation from throughout the community

and Arizona-American's customer base, including representatives from areas in Scottsdale and unincorporated Maricopa County.

The Users Group met on four occasions from July through October 2003. Arizona-American hired Dr. Marty Rozelle, President of the Rozelle Group, Ltd., as facilitator, and Brown & Caldwell Engineering Company as engineering and water-modeling experts for the Users Group. The Users Group reviewed water modeling results for the Paradise Valley Water District, listened to the community's concerns, set priorities for making improvements, and then reviewed and endorsed a Fire Flow Improvement Plan (FFIP) proposed by Arizona-American. The Users Group determined that Arizona-American should observe the following priorities in making improvements:

1. Make improvements in those areas with the smallest amount of existing fire flow (less than 500 gallons per minute (gpm) first, 500-1000 gpm second, and 1000-1500 gpm third); and
2. Make improvements in order of cost effectiveness as measured by a ratio of cost per customer impacted. The lower the cost per individual impacted, the higher the priority. The thought was that by doing the most cost effective projects first, a larger number of people would be impacted per dollar spent and the higher cost projects that impacted only a few individuals would be scheduled later in the FFIP. It was assumed that these later projects might benefit as technology develops, thereby reducing the ultimate cost of the improvement.

Based on the Users Group's priorities, Arizona American developed a six-year, $15.5 million, FFIP that incorporated all the Users Group's priorities, along with a cost-effective means of staging and grouping projects. Totaling the FFIP with arsenic treatment facility investments (estimated at that time at over $15 million), plus $7.5 million in other estimated system improvements, Arizona-American estimated the total rate impact by 2010, after all investments are complete, to be 89%.

Arizona-American briefed the Town Council Water Committee on November 4, 2003, and the full Paradise Valley Town Council on December 18, 2003, on the User Group's findings and the FFIP. A copy of the Town Council minutes is attached to my testimony as Exhibit A. These briefings included the Company's estimated 89% rate impact. Both the Committee and the Town Council were impressed with the findings and the FFIP.

Q. HOW WOULD YOU CHARACTERIZE THE TOWN'S PRESENT AWARENESS AND SUPPORT FOR THE FIRE FLOW PROJECTS?

A. I regularly attend the Town's Water Committee meetings and explain our progress to-date and upcoming plans. The Town wants the Company to continue to make progress towards completing the projects and expects that they will be completed. The Town would prefer that we complete projects even faster than our plans indicated. The Town understands there are upcoming rate increases associated with both the fire flow improvement and arsenic removal facility. Town officials requested that I send all our

Paradise Valley water customers a letter explaining our rate request shortly after it is filed and I intend to do that.

Q. ARE ANY OF THE OTHER WATER UTILITIES IN PARADISE VALLEY IMPROVING FIRE FLOWS?

A. Yes. Both the City of Phoenix and Berneil Water Company have also begun projects to improve fire flows within the Town at the Town's request.

IV. SERVICE LINE AND METER-INSTALLATION CHARGES.

Q. WHY DOES ARIZONA-AMERICAN WATER PROPOSE SEPARATING THE METER INSTALLATION AND SERVICE LINE CHARGES?

A. This proposed change gives our customers a more flexible rate schedule when changing meter size or upgrading a service line. For example, we have some Paradise Valley customers with one-inch service lines and ¾-inch meters. If a customer desires to upgrade to a one-inch meter (perhaps to support a residential fire-sprinkler system), we would not have to alter the service line size, but the customer would still have to pay the same charge as someone who is having both the service line and meter replaced. In the proposed rate structure, this customer would only pay for a meter replacement.

Q. ARE THESE CHARGES SEPARATE IN YOUR OTHER WATER DISTRICTS IN ARIZONA?

A. Yes, it matches the rate structure already existing in many of our other districts.

V. STAFFING CHANGES

Q. WHAT STAFFING CHANGES HAVE OCCURRED IN PARADISE VALLY SINCE THE TEST YEAR?

A. In late 2004, we added a Senior System Service Worker position to enhance the capabilities of the field operations crew and provide a better structure for advancement within the Paradise Valley workforce. The Senior System Service Worker position is a team lead position under the Field Foreman. Unfortunately, due to a tight market for certified water distribution operators, we were not able to fill this position in 2004.

Q. HAVE ANY ADDITIONAL NEW POSITIONS BEEN ADDED SINCE 2004?

A. Yes. In 2005, we will add a line locator position and an arsenic treatment plant operator to our Paradise Valley Staff. The line locator position will allow someone to work full time providing line locating services, which will improve our line locating service, allow us to free up other workers on our field operations staff to be more responsive to customers, and enable the staff to be more proactive in maintenance programs. A dedicated line locator position is in place in our other districts with excellent success. We will begin advertising for this position this summer.

We will also be adding a senior operator position to operate the arsenic treatment facility currently under construction. While the facility will not be completely operational until 2006, it is critical to have the operator on board early to assist with the construction management and participate in start-up operations and testing of the plant. We will begin advertising for this position this summer.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

DOCKET NO. WS-01303A-05-____
Arizona-American Water Company
Direct Testimony of Brian K. Biesemeyer
Exhibit A

TOWN OF PARADISE VALLEY
MINUTES
TOWN COUNCIL SPECIAL MEETING
DECEMBER 18, 2003

CALL TO ORDER

Mayor Lowry called the special meeting of the Town Council of the Town of Paradise Valley, Arizona, to order at 4:34 p.m. on Thursday, December 18, 2003, in the Town Hall, 6401 East Lincoln Drive, Paradise Valley, Arizona, 85253.

COUNCIL MEMBERS PRESENT

Mayor Edward Lowry
Vice-Mayor Schweiker
Council Member Stephen Benson
Council Member Ron Clarke
Council Member Rick Coffman
Council Member Virginia "Jini" Simpson
Council Member Ed Winkler

STAFF MEMBERS PRESENT

Town Manager Thomas M. Martinsen
Town Attorney Andrew Miller
Management Services Director Lenore Lancaster
Police Chief John D. Wintersteen
Public Works Director Andrew Cooper
Community Development Director Hamid Arshadi
Town Engineer William Mead
Senior Planner Eva Cutro
Capital Projects Administrator Robert Ciccarelli

WORK STUDY SESSION ITEMS

Discussion of Arizona American Water Company System Improvement Program

Mr. Martinsen introduced Brian Biesemeyer and Jim Campbell from Arizona American Water Company and Marty Rozelle, The Rozelle Group.

Councilmember Winkler said Arizona American Water Company gave a presentation to the Water Committee and the Committee felt it would be beneficial for the Council to see the presentation.

Mr. Biesemeyer said the challenge is the Town wants the fire flow service throughout the Town to be improved and yet has no direct regulatory authority over the three water providers servicing the Town. Arizona American is committed to serving the Town. They convened a customer advisory group. They used the group's input, engineering requirements and available assets to develop a 5 to 6 year capital improvement plan. The group consists of residential customers, Paradise Valley Country Club, Water Committee members, Council, Town Staff and Rural Metro. The mission of the group is to build a consensus among the representatives of all stakeholders served by Arizona American. There are 16 members who met from July through October. They had to develop a common understanding of the challenge. The Arizona American President came to a meeting and committed the resources for improving the system. The residents guided the solution. They established criteria to prioritize the projects to address areas with lowest fire flow, greatest number of people affected, and least cost per customer. They prioritized 21 projects throughout the service area. The advisory group endorsed the 6-year plan.

Mr. Biesemeyer reviewed the capital improvement program, which included an increase in size of water lines along main arteries as well as along some smaller streets, additional fire hydrants, booster pump stations, and water tanks. He said certain projects must be done first. He showed a map, indicating that the red area was where the fire flow is less than 500 gallons per minute. The tan area was 500 to 1000 gallons per minute, the blue area was 1000 to 1500 gallons per minute, and the white area was over 1500 gallons per minute. The water sources are along Scottsdale Road and the SRP canal. The backbone of the system is along Lincoln Drive, Tatum Boulevard, Invergordon Road and Jackrabbit Road, where larger water lines will be installed in 2004 and 2005. Even with the improvements by 2007 there will be some areas not meeting the 1500 gallons per minute. The total water line improvements include 18,000 linear feet of 16-inch lines, 15,000 linear feet of 12-inch lines, 36,000 linear feet of 8 inch lines and 80,000 linear feet of 6 inch lines. This represents 25% of the total existing lines. The plan includes the installation of 220 fire hydrants and installation or improvement of 6 booster stations. The estimated cost is approximately $38 million investment, of which $15.5 million is for fire flow, $15.2 million is for arsenic treatment to meet the new federal standards, and $7.5 million is planned system improvements. This is an 89% increase in rates over the next 8 years. The Arizona Corporation Commission regulates rates. Arizona American has to put the investment in first before requesting a rate increase. They have made a commitment to the Town that they will complete this plan, be flexible and cost efficient, respect the best interest of the customers, work closely with the Town, and keep the customers informed.

Discussion of Tatum Blvd / McDonald Drive Intersection Improvement Project

Mr. Martinsen said there have been three issues that have been discussed with the Camelhead Estates homeowners.

Mr. Mead said the three issues were the super-elevation noise modeling, the subdivision wall 2-foot extension, and the active speed monitoring signs. For the super elevation Staff went back to Higgins & Associates and asked about the noise modeling. The report accurately reflects future conditions with the proposed elevated roadway. The noise levels were modeled for both directions of traffic at 100-foot intervals. With regard to the subdivision wall, the Town asked

two companies who specialize in building walls to give costs to reinforce the wall and also to remove the existing wall and build a new one. Arizona Best gave an estimate of $98,000 to reinforce the wall, and $122,000 to remove and replace the wall. They indicated that something had to be done to the wall before two feet could be added. Mr. Mead said the last issue is the active speed monitoring signs. Federal Guidelines and the Manual on Uniform Traffic Control Devices do not recognize the use of these devices. ADOT would not allow these devices to be included in the plans. However, they said that after the project is completed, the Town could install the signs. Mr. Mead said the $35,000 was an estimate of the cost to increase the wall by 2 feet if it had been structurally sound. This included stucco and painting on both sides and it covered the entire length of the wall, even though part of the wall did not need to be raised.

Rick Wilbur, resident of Marston Drive, said with regard to the super-elevation of the curve, they had been told the elevation was approximately 11 inches. Now it is 4 feet. The 8-foot wall will now only cover a portion of the elevation. With regard to the 2-foot improvement of the interior wall, he felt the Council was committed to adding the extension. He said the homeowners association advised the Town to investigate the wall to see what other costs were necessary to improve the wall.

There was Council discussion as to the previous discussions with the homeowners regarding the addition of two feet to the wall and whether the wall was structurally sound and who should make the existing wall structurally sound.

Mr. Ciccarelli stated the elevation plan has always been just less than 4 feet. The cars on the outer lane are higher, but the cars on the inner lane are lower. And the modeling done by Higgins and Associates took the elevation into consideration.

Council asked Staff to address the residents' recollection of 11 inches versus 4 feet elevation and how much of a vehicle on the far outer lane will be seen given a 6-foot sound wall on a two-foot berm. Council also asked for more information on the condition of the inner wall.

Discussion of Preserve at Lincoln Preliminary Plat and SUP for a Private Road and Guard Gate

Mr. Martinsen read a letter just handed out to withdraw the special use permit for the guard gate.

There was Council discussion that the applicant could bring back a request for a guard gate in the future. Mr. Miller said his past research has indicated that an applicant can withdraw a request for a special use permit before the start of the public hearing. Mr. Miller said there are two separate special use permits, one for a private road and one for a guard gate.

Ms. Cutro said there were three applications, one for a preliminary plat, one for a special use permit for a private road, and one for a special use permit for a guard gate. The special use permit for the guard gate has now been withdrawn. Ms. Cutro said this project was discussed at the October 23rd work session. This project is at the corner of 32nd Street and Lincoln. There will be 11 one-acre lots. The cul-de-sac is longer than 500 feet, but both the Town Engineer and the Fire Marshal prefer this configuration to other possible configurations where there would be

access off Lincoln Drive or 32nd Street. She reviewed the preliminary landscape concepts. This would remain the same with the elimination of the gate. She reviewed the preliminary wall elevations, and showed the changes that would occur as a result of the elimination of the gate. She reviewed the lighting layout plan. The applicant removed the east sidewall. When those two lots are built, the homeowners may wish to put in a wall. Staff is recommending a stipulation that the walls match the existing subdivision walls. The Planning Commission recommended approval of the preliminary plat and special use permits for the private road and guard gate.

In response to a question as to whether the public could drive on the private road, Mr. Miller suggested additional wording be added to the stipulations to prohibit the subdivision from restricting the public from driving on the road.

Mr. Doug Jordan, attorney for the applicant, stated that the applicant removed the wall on the east side because they understood the Council didn't want the wall. Mr. Zacher, the applicant, said the neighbor to the south was concerned about lack of vegetation in the area and that there would be a stark wall with no vegetation. Mr. Zacher has agreed to plant vegetation on his side of the wall and there would be an easement to maintain an irrigation system. Council indicated there should be a wall on the east side, partially a view wall.

Discussion of R-175 Re-Zoning for Cameldale & Jokake Camelback

Mr. Arshadi said at the November 6 work session, Council requested that the homeowners be notified of the impact of the re-zoning on their property. The result was that four homeowners opposed the re-zoning, two properties had no response, and two property owners gave conditional approval of the rezoning. The owner of 6015 Cameldale Way was in support, but only if the entire area was re-zoned. The owner of 5500 Yucca wanted the public road on the side of his property to be given to him. Mr. Arshadi said this rezoning is not a taking. He believed that the property values will go up because Paradise Valley is located close to the Phoenix metro area. This would be a desirable place for people who want to be close to the central city, but live in a less congested area. At the public hearing he would discuss the four options for Council consideration.

Discussion of Police Department Operations and Issues

This item was not discussed.

EXECUTIVE SESSION

Discussion / consultation with attorney regarding the Town's position in pending or contemplated litigation, contract negotiations and settlement discussions as authorized by A.R.S. §38-431.03.A.4.

No action was taken.

The meeting was recessed at 6:32 p.m. until after the regular Council meeting, but was not reconvened.

_____
Edward Lowry, Mayor

ATTEST:

_____
Lenore P. Lancaster, Town Clerk

CERTIFICATION

I hereby certify that the foregoing minutes are a true and correct copy of the minutes of the Special Meeting of the Town Council of Paradise Valley held on the 18th day of December 2003. I further certify that the meeting was duly called and held and that a quorum was present.

Dated this _____ day of _____, 2003.

_____
Lenore P. Lancaster, Town Clerk

EXHIBIT
A-5
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-0405

REBUTTAL TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
FEBRUARY 13, 2006

REBUTTAL TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
FEBRUARY 13, 2006

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EXECUTIVE SUMMARY

Brian K. Biesemeyer testifies that:

Arizona-American has added a new operator position in the Paradise Valley Water District.

RUCO has inappropriately proposed disallowing certain Central Division and Corporate expenses.

The Paradise Valley Water District employs a full-time meter reader.

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Brian K. Biesemeyer. My business address is, 15626 N. Del Webb Blvd, Sun City, Arizona, 85351, and my telephone number is 623-815-3125.

Q. ARE YOU THE SAME BRIAN K. BIESEMEYER WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET?

A. Yes.

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. I have included an Executive Summary at the beginning of my rebuttal testimony.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. I will first testify in support of a new position in the Paradise Valley Water District. I will then rebut certain proposed expense disallowances made by Mr. Moore on behalf of RUCO. Finally, I will discuss the full-time meter-reader position in Paradise Valley.

II. NEW OPERATOR POSITION

Q. MR. WEBER HAS ADDED AN ADDITIONAL EMPLOYEE TO THE PARADISE VALLEY OPERATING EXPENSES FOR THE ARSENIC TREATMENT PLANT OPERATOR. CAN YOU ELABORATE ON THIS POSITION?

A. Yes. An Assistant Water Treatment Plant Operator from another District was promoted to this position on October 10, 2005. He attends the weekly meetings on the progress of the Arsenic Plant in Paradise Valley. He is currently learning about the operations of the other Arsenic Treatment Plants that are coming on line in the Central Division in

preparation for the start-up phase of the Paradise Valley plant. He is working with the Network and Production employees in Paradise Valley to familiarize himself with the entire district. He will help out in running pump stations, tanks, and wells – what we refer to as the water plant. We are re-piping the system so that water will flow from the Miller Road Treatment Facility into the new Arsenic Treatment Plant and then out to the distribution system. Our new Arsenic Plant Operator will take part in the operational testing for the new arsenic plants coming on line in the Central Division, including one that comes on in May that will be similar to the Paradise Valley Plant. He will gain valuable knowledge and training for the proper operations and maintenance of the plant through this experience. We felt it was critical to his learning to hire this position as quickly as possible to get him as much experience as possible in learning this new technology. We wish to include this full time position in rates, as the position is currently filled and working, rather than delaying recovery of this cost for several years.

III. RESPONSE TO RUCO DISALLOWANCES

A. CENTRAL DIVISION ALLOCATED EXPENSES

Q. HAVE YOU REVIEWED THE TESTIMONY OF RUCO WITNESS MOORE CONCERNING CENTRAL DIVISION ALLOCATED EXPENSES?

A. Yes. Mr. Moore's Direct Testimony, on page 30, lines 4 through 9, disallowed several Central Division Allocated Expenses totaling ($1,204).

Q. DO YOU AGREE WITH THESE DISALLOWANCES?

A. No. Mr. Moore proposed disallowing three Central Division Allocated Expenses:

- Ice;
- Groundskeeping; and
- Security Services.

I will address each proposed disallowance in order.

Q. MR. MOORE PROPOSED DISALLOWING ALMOST $2,000 THAT THE CENTRAL DIVISION EXPENSED ON ICE ON SCHEDULE RLM-12, PAGE 2, LINE 19. IS THIS APPROPRIATE?

A. No. This ice is used to keep water samples at the proper temperature until it can be shipped to the laboratories for testing. The ice is also used to cool down the water in the large igloo thermoses that the utility workers put on the end of their trucks to keep the outdoor workers hydrated. Certainly, both uses of ice must be allowed as necessary operating expenses. The ice is bought in a central location and the trucks and workers are sent out from there. Paradise Valley's 8.12% share of this expense is $162 and should be included in rates.

Q. ANOTHER CENTRAL DIVISION EXPENSE THAT MR. MOORE DISALLOWED ON SCHEDULE RLM-12, PAGE 2 , LINE 27, IS THE GROUNDS KEEPING EXPENSES FOR THE CENTRAL DIVISION OFFICE WHICH IS LOCATED IN SUN CITY. IS THIS APPROPRIATE?

A. No. The payments are done on a recurring vouchering system whereby the same amount is paid each month to the vendor for doing the same work. We turned in one voucher that was paid before it went to recurring that showed the payment to the vendor for Lawn Maintenance at the Sun City office, which is the Central Division office, for $760 for a month. This office supports all the districts in the Central Division, and Paradise Valley is one of those districts, so it is proper for Paradise Valley to share in this expense. RUCO disallowed 12 months of lawn maintenance at the office for a total of $9,120. Paradise Valley's 8.12% share of this expense is $741 and should be included in rates.

Q. MR. MOORE DISALLOWED $1,261 IN SECURITY SERVICE EXPENSES ON SCHEDULE RLM-12, PAGE 2, LINE 34. WAS THIS APPROPRIATE?

A. Not exactly. The vendor is Sonitrol and the explanation says Paradise Valley Security – MRTF. However, despite what the explanation says, this service was for the Paradise Valley office, not the Miller Road Treatment Facility. (Those costs are in a separate Miller Road account.) These Paradise Valley office security costs were then charged to the Central Division to be allocated. Paradise Valley's 8.12% share of these costs is $102.

B. <u>CORPORATE ALLOCATED EXPENSES</u>

Q. HAVE YOU REVIEWED THE TESTIMONY OF RUCO WITNESS MOORE CONCERNING CORPORATE ALLOCATED EXPENSES?

A. Yes. Mr. Moore's Direct Testimony, on Page 30, Lines 11 through 16, disallowed several Corporate Allocated Expenses totaling ($18,233).

Q. DO YOU AGREE WITH THESE DISALLOWANCES?

A. No. Mr. Moore proposed disallowing four Corporate Allocated Expenses:

- Advertising expense;
- Plant maintenance;
- Security study; and
- Classified advertising.

I will address each proposed disallowance in order.

Q. ON SCHEDULE RLM-12, PAGE 3 OF 18, LINE 3, MR. MOORE DISALLOWED $5,273 IN HUMAN RESOURCES CLASSIFIED ADVERTISING TO FILL POSITIONS IN ARIZONA. WAS THIS APPROPRIATE?

A. No. Perhaps Mr. Moore disallowed these expenses because the name of the newspaper is "The Bee Advertising" and he believed that this constituted advertising expense. However this a normal, recurring, operating expense of conducting employment searches through newspaper classified ads. Paradise Valley's 8.12% share of this expense is $428.

Q. ALSO ON SCHEDULE RLM-12, PAGE 3 OF 18, LINE 3, MR. MOORE DISALLOWED MR. MOORE DISALLOWED $547 FOR MAINTENANCE OF THE INDOOR PLANTS IN THE LOBBY OF THE CORPORATE OFFICES OF ARIZONA AMERICAN. WAS THIS APPROPRIATE?

A. No. This is a normal maintenance expense such as office cleaning, and is similarly needed to make them look professional and presentable. Paradise Valley's 8.12% share of these expenses is $44 and should be included in rates.

Q. MR. MOORE DISALLOWS $1,023 ON LINE 21 OF SCHEDULE RLM-12, PAGE 3 OF 18 OF CORPORATE ALLOCATED EXPENSES. WAS THIS APPROPRIATE?

A. No. This expense was for a preliminary study for a security renovation and remodeling of the Sun City Central Division office. Since this office supports all the districts in the Central Division, and Paradise Valley is one of those districts, it is proper for Paradise

Valley to share in this expense. Paradise Valley's 8.12% share of this expense is $83 and should be included in rates.

Q. MR. MOORE DISALLOWS $7,583 ON LINE 33 OF SCHEDULE RLM-12, PAGE 3 OF 18 OF CORPORATE ALLOCATED EXPENSES. WAS THIS APPROPRIATE?

A. Of this amount, $5,353 is for human resources classified ads for employment recruitment. This is a normal, recurring, operating expense of conducting employment searches through newspaper classified ads. Paradise Valley's 8.12% share of this expense is $435 and should be included in rates.

Q. ARE THESE THE ONLY CORPORATE ALLOCATED EXPENSES THAT MR. MOORE WOULD DISALLOW WITH WHICH THE COMPANY DISAGREES?

A. No. Mr. Broderick's rebuttal testimony addresses the appropriateness of $172,362 of Corporate Allocated expense of which Paradise Valley's 8.12% share is $13,996.

C. <u>PARADISE VALLEY METER READER</u>

Q. RUCO'S STAFFING ANALYSIS DOES NOT INCLUDE A FULL-TIME METER READER. IS THIS APPROPRIATE?

A. No. Arizona American employs a full-time meter reader in Paradise Valley to ensure accurate and timely reads in a district with large lots and varied terrain. In addition to meter reading, this employee also, when meter reading is completed, performs additional customer service and system maintenance work.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

EXHIBIT
A-6
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-0405

REJOINDER TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
MARCH 16, 2006

REJOINDER TESTIMONY
OF
BRIAN K. BIESEMEYER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
MARCH 16, 2006

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II. RESPONSE TO RUCO 1

EXECUTIVE SUMMARY

Brian K. Biesemeyer testifies that:

Lawn maintenance expenses of $9,137 rejected by RUCO witness Rodney Moore are for legitimate maintenance of desert landscape at the Company's Sun City office. There is no lawn as alleged by Mr. Moore

Expenses of $1,989 for ice are legitimate and essential for field personnel. This ice is delivered to a central freezer on Company premises.

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Brian K. Biesemeyer. My business address is, 15626 N. Del Webb Blvd, Sun City, Arizona, 85351, and my telephone number is 623-815-3125.

Q. ARE YOU THE SAME BRIAN K. BIESEMEYER WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET?

A. Yes.

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. I have included an Executive Summary at the beginning of my rebuttal testimony.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. I testify about legitimate expenses for "lawn" maintenance and for ice, which were rejected by RUCO witness Rodney Moore.

II. RESPONSE TO RUCO

Q. DO YOU AGREE WITH MR. MOORE'S DISALLOWANCE OF THE LAWN MAINTENANCE EXPENSE?

A. No. Mr. Moore rejected the "lawn maintenance" expense because he believed we were wastefully watering lawn on the one hand and urging conservation by others on the other hand. This is not correct. Although the description is for "lawn" maintenance, there is no lawn or grass at the Sun City office. The Sun City Office, our state operations office, has almost two acre of desert landscaping with 150 trees and shrubs on drip irrigation on a gravel base. As vegetation matures, even low-water-use varieties, it requires more

extensive maintenance, such as trimming of shrubs and trees (including large palm trees) and the occasional replacement of a tree, scrub, or cactus after storm damage. The community in which the office resides prides itself on keeping landscape maintained. To be a responsible neighbor, Arizona-American must also keep its desert landscaping well maintained.

I have included as Rejoinder Exhibit BKB-1 several photographs of the desert landscape around the Sun City Office to demonstrate the existing large desert and low-water-use landscape. The lawn maintenance expenses for the Sun City office are legitimate expenses that would be required for any office of its size and location.

Q. WHAT ABOUT THE ICE EXPENSE?

Mr. Moore attempts to co-mingle expenses for ice with other products such as bagels, donuts, smoothies, etc. However, our ice is delivered to a central freezer and is distinct from these other unrelated products. It is unreasonable to expect field employees to work in the Arizona sun without ice to cool thermos water or to refrigerate lab samples. This is a legitimate operating expense.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes.

Sun City Office

Landscaping Photographs (Following Pages)

East Center Landscape

Northeast Landscape

Northwest Landscape

Southeast Landscape

Southwest Landscape

West Center Landscape

Customer Entrance Landscape

EXHIBIT
A-7
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-____

DIRECT TESTIMONY
OF
JOSEPH E. GROSS, P. E.
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

DIRECT TESTIMONY
OF
JOSEPH E. GROSS P.E.
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
JUNE 3, 2005

I. INTRODUCTION AND QUALIFICATIONS 1

II. PURPOSE OF TESTIMONY, SUMMARY AND CONCLUSIONS 3

III. DESCRIPTION OF COMPANY-FUNDED CONSTRUCTION AND BUDGETING PROCESS 4

IV. DESCRIPTION OF COMPANY FUNDED ADDITIONS 5

A. PARADISE VALLEY ARSENIC REMOVAL FACILITY 5

B. PARADISE VALLEY PUBLIC-SAFETY IMPROVEMENTS 6

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 19820 N. 7th Street, Suite 201, Phoenix, Arizona 85024 and my telephone number is 623-445-2401.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Arizona-American Water Company, Inc. ("Arizona-American" or the "Company") as Project Delivery Manager ("Engineering Manager") for Arizona.

Q. PLEASE BRIEFLY OUTLINE YOUR RESPONSIBILITIES AS THE ENGINEERING MANAGER.

A. I am responsible for project delivery of Arizona-American Water's capital program; first providing input to the budgeting process, then providing oversight of the design and construction contracts to ensure compliance with assigned budget and schedule.

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science degree from the United States Military Academy in civil engineering in 1962 and a Master of Science degree from the Ohio State University in Geodetic Science in 1968.

Q. DID YOU SERVE IN THE MILITARY FOLLOWING YOUR GRADUATION FROM THE UNITED STATES MILITARY ACADEMY?

A. Yes. I served as an officer in the United States Army for 28 years, including 12 months in Vietnam as a combat engineer battalion advisor; and 18 months as a battalion commander in the 101st Airborne Division. In 1979, I began a number of assignments with the US Army Corps of Engineers, where I served until retirement in 1990.

Q. HAVE YOU HAD ANY OTHER FORMAL TRAINING?

A. I attended two-week senior executive management training programs at Carnegie Mellon University in 1986 and at Arizona State University in 1994.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I joined Arizona-American in October, 2004. I was previously employed by the City of Scottsdale for fourteen years in the positions of Capital Project Management Director, Water Campus Project Director, and Water Resources Director. Before that, I had extensive field-level and executive-level experience in the US Army Corps of Engineers, including large projects located in the United States, Iran, and Saudi Arabia. Among other responsibilities, I supervised the Corps' extensive flood-control projects in the Phoenix metropolitan area from 1979 to 1982. This included the construction of the Indian Bend Wash flood-control facilities in Scottsdale, construction of Cave Buttes and Adobe Dams in north Phoenix, and design of the Arizona Canal Diversion Channel.

Q. ARE YOU A REGISTERED PROFESSIONAL ENGINEER?

A. I am a registered Professional Engineer in the states of Arizona and Pennsylvania.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE UTILITY REGULATORY COMMISSIONS?

A. I filed testimony this year with the Commission in the Company's arsenic-cost-recovery mechanism ("ACRM") case for its Agua Fria, Sun City West, and Havasu Water Districts (Docket No. W-1303A-05-0280, *et. al*). I am scheduled to testify in July 2005.

II. PURPOSE OF TESTIMONY, SUMMARY, AND CONCLUSIONS

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe plant improvements required to comply with the unfunded Federal mandate for meeting reduced arsenic levels in drinking water; and the need to upgrade the existing distribution system in Paradise Valley to provide adequate fire-flow capacity. The Company proposes to recover most arsenic-remediation costs through an ACRM surcharge and the fire-flow upgrade costs through a public-safety surcharge ("PS Surcharge"). I have attached four exhibits to my testimony:

1. Exhibit A - a site plan for the Paradise Valley Arsenic Removal Facility;
2. Exhibit B - a functional description and cost estimate of the capital improvements needed at that site to comply with the new Federal water quality regulations;
3. Exhibit C – a map of the Company's Paradise Valley District service area; and

4. Exhibit D – a summary of the capital improvements and estimated costs needed to provide adequate fire flow capacity for the Paradise Valley Water District.

III. DESCRIPTION OF COMPANY-FUNDED CONSTRUCTION AND BUDGETING PROCESS

Q. PLEASE DESCRIBE THE PROCEDURE UTILIZED TO IDENTIFY A COMPANY-FUNDED CONSTRUCTION PROJECT?

A. Arizona-American annually prepares and maintains a current five-year capital-expenditure plan that serves as an integral component of Arizona-American's overall business plan. Each year the capital-expenditure plan is reviewed by Arizona-American and Western Region management to identify and prioritize necessary capital improvement projects to ensure quality water service, resolve operational challenges, comply with regulatory requirements, and formalize and approve the annual budget.

The capital-expenditure plan is separated into two categories: "Normal Recurring Capital Expenditures," and "Investment Projects." Normal Recurring Capital Expenditures are routine capital expenditures that are incurred to ensure operation of a reliable water system. Investment Projects are major capital improvements identified for Arizona-American's various water and wastewater districts. Investment Projects are typically the result of comprehensive planning studies ("CPS") provided by American Water's Engineering Department or by an outside engineering consultant. These studies analyze the need for specific capital projects that address reliability, aging facilities, and overall

service issues that affect the source of supply, production, and distribution facilities of a specific water system.

Q. WHO DETERMINES HOW MUCH MONEY WILL BE SPENT ON COMPANY-FUNDED PROJECTS?

A. The Arizona-American Engineering group prepares an investment project memorandum for each investment project. This investment project memorandum concisely presents the need for the project, details the recommended improvements, explains the scope of the work to be performed, lists detailed cost estimates, presents a project schedule and includes a financial analysis. Thereafter, the investment project is included in the annual capital expenditure plan, where it is reviewed, critiqued and discussed in detail to ensure that the projects is a reasonable and prudent investment, after which it is typically approved by the Western Region Capital Investment Management Committee ("CIMC"). If the CIMC does not approve the request, it is either sent back to the Arizona-American Engineering group for revision, or it is rejected. If the CIMC approves the project, it is sent to American Water's Capital Investment Review Committee in New Jersey, where it is reviewed, critiqued, and typically approved.

IV. DESCRIPTION OF COMPANY FUNDED ADDITIONS

A. PARADISE VALLEY ARSENIC REMOVAL FACILITY

Q. PLEASE DESCRIBE THE PARADISE VALLEY ARSENIC-REMOVAL FACILITY.

A. The Paradise Valley arsenic-removal facility project, required by the new Federal water quality regulations, is described in detail in Exhibit B. The total project cost is approximately $20 million and includes a coagulation-filtration treatment process, new booster pump stations to move the water through the filters, a 1.5 million gallon reservoir to provide finished water storage and backwash water for the filters, a gravity thickener for dewatering the coagulant, emergency generator, process laboratory and appropriate electrical and control systems. The total cost also includes extensive landscaping and aesthetic treatment of the operations building, perimeter wall, and water storage tanks, which are required by the City of Scottsdale to obtain a building permit.

B. PARADISE VALLEY PUBLIC-SAFETY IMPROVEMENTS

Q. PLEASE DESCRIBE THE PARADISE VALLEY PUBLIC-SAFETY IMPROVEMENTS.

A. The Paradise Valley Public-Safety Improvements result from a comprehensive study that the firm of Brown & Caldwell, completed in 2004, of distribution system improvements needed to improve fire-flow capacity throughout the Paradise Valley Water District. Brown & Caldwell proposed a six-phase plan of improvements for a total cost of $15.6 million. To provide adequate water storage capability for meeting residential fire flow requirements of 1500 gallons per minute for two hours, a second 1.5 million gallon reservoir is also planned at the site of the arsenic removal facility in 2006. The cost of this reservoir is estimated at $750,000. Since the need for additional storage capacity had been identified in an internal comprehensive planning study in 1999, it was not further

addressed by the Brown & Caldwell study. Exhibit C provides a location map of the service area, which shows the location of the major facilities. Exhibit D includes a table with project descriptions, phasing plan, and cost estimates to include the reservoir.

Q. HAVE ANY OF THE PARADISE VALLEY PUBLIC-SAFETY IMPROVEMENTS BEEN COMPLETED?

A. Yes. Phase I, referred to as the Jackrabbit/Invergordon Water Main Replacement Project, consisted of replacing one-half mile of six-inch asphalt concrete pipe with 16-inch ductile iron pipe on Invergordon Road from Jackrabbit to McDonald. In addition, the project included replacing one mile of four-inch asphalt concrete pipe with 24-inch ductile-iron pipe on Jackrabbit Road from Invergordon Road to Scottsdale Road. These capital plant additions were completed and placed into service in March 2005, and are currently being utilized to serve existing customers within the Paradise Valley District. The total cost for these plant additions was $1,818,226.04.

Another project is currently under construction and will be in service in 2005. It consists of pipeline replacements in McDonald Drive, between 44th Street and Tatum Boulevard. This project appears in Exhibit D as Project 8, and was originally scheduled in 2007. The Town of Paradise Valley is currently relocating a large section of Tatum Boulevard, and asked the Company to coordinate our pipeline replacement with this project. To accommodate the Town's construction schedule, and because of repeated pipeline breaks this past winter, we decided to install this section of pipeline during 2005. The current

construction cost is estimated at $667,000. The remainder of Project 8 will be constructed in 2007.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does.

0 50 100 200
SCALE IN FEET
1"=100'

McCloskey • Peltz, Inc.
LANDSCAPE ARCHITECTS
One West Elliot Road Suite 110 Tempe, Arizona 85284
Phone: (480) 838-4777 Fax: (480) 831-1774

REVISIONS

Paradise Valley Arsenic Removal Facility
LANDSCAPE
CONTEXT SITE PLAN

ARIZONA AMERICAN WATER COMPANY
PARADISE VALLEY DISTRICT

DAMON S. WILLIAMS ASSOCIATES, LLC
2355 E. CAMELBACK ROAD, SUITE 700
PHOENIX, AZ 85016

DSWA

DRAWN BY MPI
PROJECT ENG'R DCW
APPROVED

DATE NOVEMBER 2004
PROJECT 23020203

USE DIMENSIONS ONLY
SCALE NA

USE APPROVED DRAWINGS ONLY FOR CONSTRUCTION PURPOSES

2302-0001-L01

PRELIMINARY

Exhibit B

ARIZONA AMERICAN WATER
PARADISE VALLEY DISTRICT

ARSENIC REMOVAL FACILITY
DESIGN CONCEPT

AMERICAN WATER WORKS SERVICE COMPANY, INC.
SYSTEM ENGINEERING
1025 Laurel Oak Road
Voorhees, New Jersey 08043
December 2003

PART I
PROJECT BACKGROUND

A. INTRODUCTION

Arizona American Water's (AAW) Paradise Valley District supplies potable water to approximately 4,600 customers in portions of the Town of Paradise Valley, City of Scottsdale, and unincorporated Maricopa County. The District obtains its water supplies from a total of seven groundwater wells. Arsenic is present in all of the groundwater supplies at levels approaching or exceeding the 0.010 mg/L (10 ug/L) maximum contaminant level (MCL) that was recently promulgated by the US Environmental Protection Agency (EPA). Arsenic removal facilities will need to be installed and in service by the Arsenic Rule's effective date of January 23, 2006 to comply with the pending MCL.

An evaluation of treatment alternatives was completed in October of 2003 to determine which treatment alternative is most appropriate for the Paradise Valley District. The evaluation took into consideration the seven treatment technologies identified by the US EPA as Best Available Technologies (BAT) for the removal of arsenic from drinking water supplies. Consideration was also given to the use of disposable, iron-based adsorbent media, which has been shown to be an effective alternative through numerous pilot studies, and is identified as an approved technology in the Arizona Department of Environmental Quality's (AZDEQ) Arizona Arsenic Master Plan. The US EPA has not yet designated iron-based adsorbent media as a BAT.

It was concluded through a preliminary screening of the alternatives that the ferric chloride coagulation/filtration (CF) and disposable iron-based adsorbent media processes were the most feasible alternatives for the Paradise Valley District. It was subsequently determined through a detailed analysis, that a single, centralized CF treatment facility would be more cost-effective than one or more iron-based adsorbent media treatment facility(s), both on a capital cost and annual operating cost basis. Therefore, AAW has decided to proceed with construction of a CF treatment facility to remove arsenic from water supplies in its Paradise Valley District. This document summarizes the criteria to be used in the design of the proposed Paradise Valley Arsenic Removal Facility (PVARF).

B. EXISTING SYSTEM CONFIGURATION

The Paradise Valley District's seven wells are all located in the City of Scottsdale along the eastern edge of the service area. Figure 1 is a schematic showing how the wells and associated treatment and distributive pumping facilities are currently configured. Three of the wells (Wells 11, 12, and 17) pump to the Miller Road Booster Station (MRBS), where the supplies are blended and stored for subsequent pumping into the distribution system. Well 16 pumps directly into the distribution system. The remaining three wells (Wells 14, 15, and PCX-1) are treated at the Miller Road Treatment Facility (MRTF) before being pumped into the distribution system.

Currently, chlorine is the only chemical that is added to the groundwater supplies at Well 16 and the MRBS. The MRBS is also equipped with a series of storage tanks that allow sand or other sediment to settle out of the well supplies before they are pumped

into the distribution system. In addition, the MRBS is used to blend water from Well 17 with supplies from Wells 11 and 12 prior to entry into the distribution system. By so doing, the concentration of nitrates in the Well 17 supply is reduced to below the drinking water MCL.

The MRTF was constructed in 1996 to remove trichloroethylene (TCE) that had been detected in groundwater supplies to the south of the Paradise Valley District's wells. The facility utilizes counter-current packed-tower aeration to strip TCE from the water supply. Vapor-phase granular activated carbon (GAC) is used to remove TCE from the off-gas from the air strippers. Finished water is stored in a concrete clearwell beneath the facility before being pumped into the distribution system.

Well PCX-1 contains elevated levels of TCE, and is operated on an almost continuous basis in an effort to prevent migration of TCE contamination to AAW's other wells. Nonetheless, TCE has been detected at low levels in Well 15, so both Well PCX-1 and Well 15 are currently treated by aeration. Well 14 is also routed to the MRTF, but its flow bypasses aeration since TCE contamination has not been detected in this supply to date. The effluent from the stripping towers and Well 14 blend in the clearwell at the MRTF. Well PCX-1 is actually owned by the Salt River Project (SRP), but its supply is used by AAW in exchange for a portion of AAW's allocation of surface water from the Central Arizona Project (CAP) canal system. The MRTF was designed to allow for future expansion should groundwater contamination continue to spread and impact AAW's other wells. Provisions must be included in the design of the proposed arsenic treatment facility to allow for expansion of the treatment capacity and routing of all well supplies to/from the MRTF if groundwater contamination impacts other AAW wells in the future.

C. WATER QUALITY

Table 1 presents summary information about each of the seven wells serving the Paradise Valley District. The table shows that the average concentration of arsenic in all but two of the wells exceeds the 10 ug/L MCL. Further, although arsenic levels in Wells 17 and PCX-1 have averaged less than 10 ug/L, maximum arsenic levels in both wells are at or close to the MCL. Also, since both of these wells are blended with other supplies because of other water quality concerns, the concentration of arsenic at all three points of entry into the Paradise Valley distribution system may exceed the MCL if treatment is not provided. Table 2 presents additional water quality data from each of the groundwater supply wells in the Paradise Valley District.

D. TREATMENT FACILITY SITE

As part of the evaluation of treatment alternatives, it was determined that the proposed PVARF should be located on property currently occupied by the MRBS and a number of AAW's wells. The 11.5-acre site is bounded on the west by Miller Road, the east by the Arizona Canal, and the north and south by private parcels. Booster pumping equipment and associated water storage tanks and electrical facilities are positioned near the center of the property, with Wells 11, 12, and 16 spaced out along the Arizona Canal. A 2,500-square foot storage warehouse is also present near the center of the property. The remainder of the site is currently undeveloped. The Water Company is planning to subdivide the northern half of the property to make it available for residential development. The southern half will house the proposed arsenic treatment facility. The

existing MRBS will be replaced by new finished water storage reservoirs and a larger booster pump station to be constructed as part of the proposed facility.

Table 1
Summary of Select Well Characteristics – Paradise Valley District

Well ID	Year Drilled	Depth (ft)	Motor (HP)	Capacity (gpm)	Arsenic (ug/L)[1]	
					Average	Maximum
11	1959	1,372	300	1,800	13.5	18
12	1962	1,301	300	1,800	11.1	13
14	1965	1,743	400	2,100	10.9	12
15	1969	1,430	400	2,100	10.9	14
16	1980	1,500	600	2,200	12.7	18
17	1993	1,145	600	2,500	8.8	10
PCX-1	1997	1,245	600	2,300	8.5	9
TOTAL / AVERAGE[2]				**14,800**	**10.9**	**13.2**

1. Arsenic data are based on approx. 10 samples collected between 1995 and 2002.
2. The system-wide concentration values based on the flow-weighted capacity of each well.

Table 2
Paradise Valley District – Groundwater Quality Data

Parameter[1]	Well						
	11	12	14	15	16	17	PCX-1
pH	7.9	7.8	7.8	7.8	7.9	7.6	7.7
Alkalinity (as $CaCO_3$)	N/A	N/A	144	141	N/A	N/A	113
Hardness (as $CaCO_3$)	125	149	155	140	185	268	206
Temperature (°C)	33	33	33	33	33	33	33
Nitrate (as N)	4.1	3.9	4.9	3.0	3.5	11.5	4.9
Iron	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Manganese	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoride	0.45	0.42	0.44	0.57	0.96	0.24	0.29
Silica	28	30	30	30	30	32	N/A
Sulfate	35	30	46	13	26	81	76
TDS	325	330	280	24	340	490	N/A

1. All units in mg/L except pH and temperature.

E. DISTRIBUTION SYSTEM

Currently, water supplies enter the distribution system through three distinct points of entry (POEs). After completion of the proposed treatment facility, the Well 16 POE will be eliminated and finished water will be routed to the distribution system via just two POEs. One POE will be the same as or adjacent to the existing MRBS POE, and the second will be near the existing MRTF POE. With proper sizing of the finished water transmission mains, distribution system hydraulics and pressure conditions should remain similar to the current conditions, even with the elimination of the Well 16 POE.

F. FUTURE DEMANDS AND SUPPLIES

In 1999, a Comprehensive Planning Study (CPS) was completed for the Paradise Valley District, which included projections of average and maximum daily demands through the year 2012. According to the CPS, future average and maximum day demands in the Paradise Valley District may reach 11.3 mgd and 19.3 mgd, respectively.

The combined capacity of the district's seven existing wells totals approximately 21.3 mgd (14,800 gpm), with a reliable production capacity of about 17.7 mgd (12,300 gpm) assuming the largest capacity well is out of service. Although the District has adequate reliable capacity to meet current maximum day demands, it was recommended in the CPS that AAW obtain a backup supply of water from another SRP-owned well (SRP-22.6) to ensure that adequate reliable capacity would be available in the future. Well SRP-22.6 is located on the opposite side of the Arizona Canal near Well 14. The concentration of arsenic in Well SRP-22.6 is not known at the present time. For the purpose of designing the proposed treatment facility, the concentration of arsenic in Well SRP-22.6 should be assumed to be equal to the highest concentration measured in the district's other existing well supplies. The design should include provisions to allow for the future connection of Well SRP-22.6, including the possibility that this well may or may not need to be treated at the MRTF before being treated at the PVARF.

G. PRELIMINARY CONSTRUCTION COST ESTIMATE

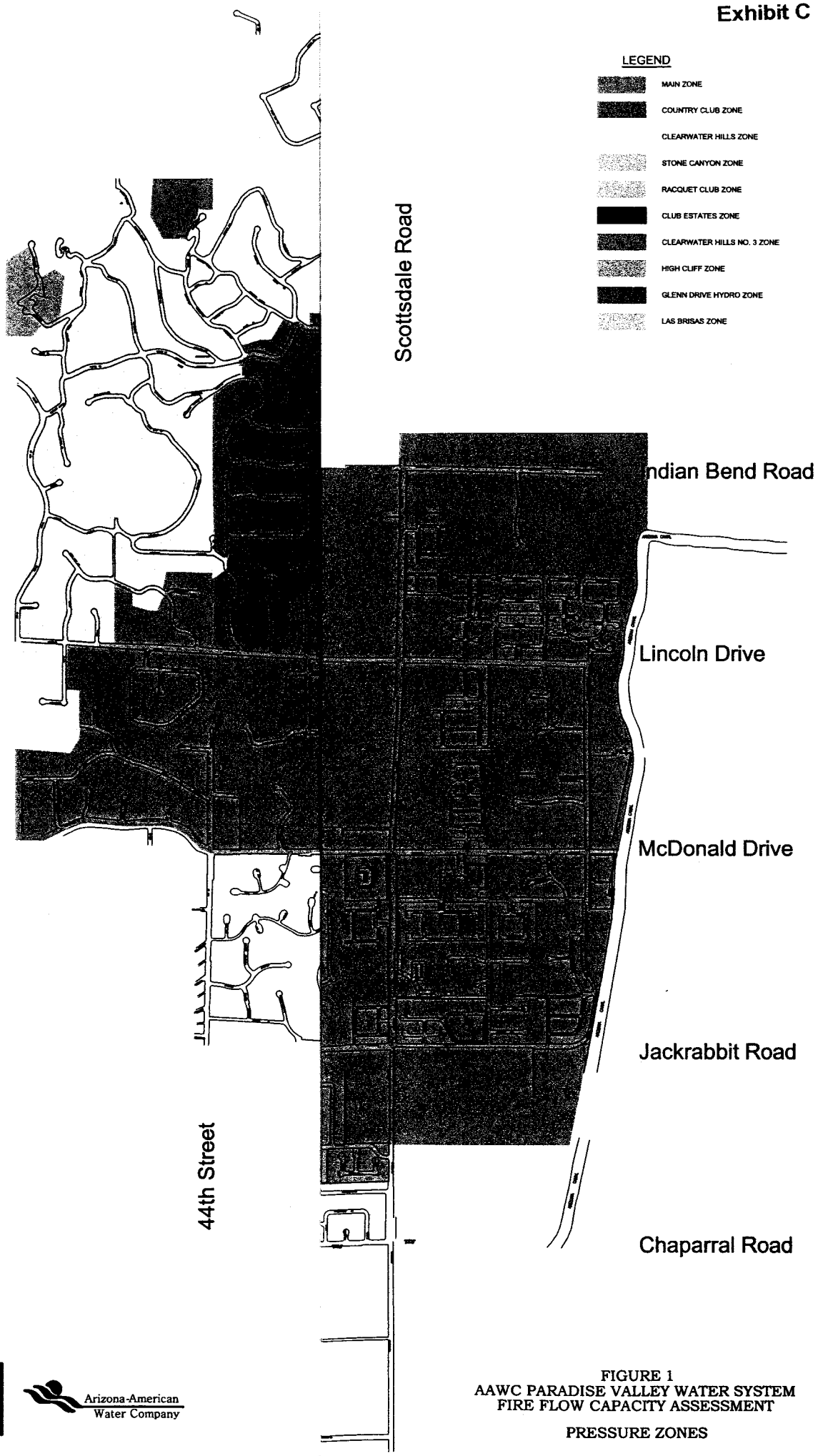
A preliminary construction cost estimate was developed as part of the evaluation of alternatives for the Paradise Valley District. The cost included the proposed CF facilities, raw and finished water transmission mains, finished water storage and pumping facilities, chemical storage and feed facilities, residuals handling and dewatering facilities, and associated electrical, instrumentation and site improvements, plus new administrative office space for district personnel. Table 3 presents a breakdown of the costs for the various construction categories. The total construction cost is estimated to be $17.44 million. This cost does not include engineering, permits, and AFUDC.

Arizona-American Water Company - Paradise Valley
Coagulation/Filtration Treatment Facility
Estimate of Probable Construction Costs

Division	Item	Total
2	Sitework	$1,855,673
	Yard Piping	$1,483,595
	Transmission Main	$1,510,896
3	Concrete	$1,530,236
4	Masonry	$267,126
5	Metals	$403,093
6	Wood/Plastics	$109,832
7	Thermal/Moisture Protection	$259,958
8	Doors/Windows	$241,372
9	Finishes	$193,395
10	Building Specialities	$199,049
13	Special Construction	
	Steel Reservoir	$657,005
15	Mechanical	$3,063,131
	Filter Vessel Mechanical	$1,735,745
16	Electrical	$3,483,350
	Instrumentation	$450,000
CONSTRUCTION SUBTOTAL		$17,443,456
	Engineering	
	DSWA Design	$1,399,058
	DSWA Construction Admin.	$291,701
	DSWA Design Changes	$118,000
	Special Inspections	$57,800
	AW Design	
	Construction Admin./Inspection	$400,000
	Engineering Total	$2,266,559
	Contingency (5% of construction)	$872,173
	AFUDC (7% of construction)	$1,221,042
PROJECT TOTAL		$21,803,230

1-Apr-05

Exhibit C



BROWN AND CALDWELL

Arizona-American Water Company

FIGURE 1
AAWC PARADISE VALLEY WATER SYSTEM
FIRE FLOW CAPACITY ASSESSMENT

PRESSURE ZONES

Exhibit D

ARIZONA-AMERICAN WATER COMPANY

PARADISE VALLEY FIRE FLOW IMPROVEMENTS

PROPOSED PHASING

2004 Improvements

Project #	Description	# Fire Hydrants (Note 1)	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
	Fire Hydrants	40	$ 200,000			$ 200,000
	Jackrabbit/Invergordon 12" Main	20	$ 100,000	10,000	$ 517,500	$ 1,425,000
Total 2004 Improvements		60		10,000		**$ 1,625,000**

2005 Improvements

Project #	Description	# Fire Hydrants	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
1	16" WM Lincoln/New CCBPS					$ 1,255,570
3	16" WM Tatum	6	$ 30,000	3,400	$ 175,950	$ 935,510
9	8" WM Tatum					$ 113,850
	Contingency (10%)					$ 230,493
2005 Total		6		3,400		**$ 2,535,423**

2006 Improvements

Project #	Description	# Fire Hydrants	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
2	BPS CWH/8" WM Highland Drive					$ 382,375
4	8" WM - S. CC zone	5	$ 25,000	1,950	$ 100,913	$ 326,731
5	Replace 4" WM/CWSHBPS	5	$ 25,000	2,450	$ 126,788	$ 638,813
6	Stone Canyon/Racquet Club					$ 577,875
10	8" WM - N. CC Zone					$ 306,763
1A	1.5MG Reservoir					$ 750,000
	Contingency (10%)					$ 298,256
2006 Total		10		4,400		**$ 3,280,812**

2007 Improvements

Project #	Description	# Fire Hydrants	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
7	8" WM Clearwater Parkway					$ 56,925
8	16" WM McDonald & 44th Street	40	$ 200,000			$ 1,378,520
10	12" WM N. CC Zone	5	$ 25,000			$ 206,125
11	Las Brisas fire Pump and 8" WM	5	$ 25,000			$ 417,438
12A	12" and 8" WM serving Tatum Canyon					$ 387,090
	Contingency (10%)					$ 244,610
2007 Total		50		-		**$ 2,690,707**

2008 Improvements

Project #	Description	# Fire Hydrants	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
	Reevaluation					$ 100,000
	4" Main Replacements	50	$ 250,000	27,000	$ 1,536,975	$ 1,786,975
16	8" WM Main Zone North					$ 480,700
	Valve Study					$ 120,000
	Contingency (10%)					$ 248,768
2008 Total		50		27,000		**$ 2,736,443**

2009 Improvements

Project #	Description	# Fire Hydrants	Fire Hydrant Cost	LF of 4" WM	4" WM replacement cost	Total
13	8"/6" cactus Wren/Sierra Vista			6,260	$ 323,955	$ 359,318
14	8" WM Invergordon			8,320	$ 430,560	$ 538,085
15	8" WM Chaparral	14	$ 70,000	4,700	$ 243,225	$ 484,000
17B	8"/6" Keim/Bethany Home area	2	$ 10,000	1,000	$ 51,750	$ 218,840
18	Club Estates/Glen Drive Fire Pump					$ 614,790
19	Stone Canyon 4" WM replacements	8	$ 40,000	3,700	$ 191,475	$ 435,456
	4" Main Replacements	20	$ 100,000	11,220	$ 638,699	$ 738,699
	Contingency (10%)					$ 338,919
2009 Total		44		35,200		**$ 3,728,106**
TOTAL ALL PHASES		**220**		**80,000**		**$ 16,596,491**

Note 1 Number of Fire Hydrants approxiamate and will be adjusted to meet Town spacing requirements

5/16/2005

EXHIBIT
A-8
admitted

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

JEFF HATCH-MILLER, Chairman
WILLIAM A. MUNDELL
MARC SPITZER
MIKE GLEASON
KRISTIN K. MAYES

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, 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 BASED THEREON FOR UTILITY SERVICE BY ITS PARADISE VALLEY DISTRICT	DOCKET NO. W-01303A-05-0405

REBUTTAL TESTIMONY
OF
JOSEPH E. GROSS, P.E.
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
FEBRUARY 13, 2006

REBUTTAL TESTIMONY
OF
JOSEPH E. GROSS, P.E.
ON BEHALF OF
ARIZONA AMERICAN WATER COMPANY
FEBRUARY 13, 2006

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EXECUTIVE SUMMARY

Mr. Gross discusses a recently completed fire-flow project along Nauni Valley Drive in Paradise Valley.

Mr. Gross discusses the arsenic concentrations in the wells providing water to the Paradise Valley Arsenic Removal Facility.

Mr. Gross provides a summary of the project's construction status and the current project cost estimate.

Mr. Gross discusses the bidding process for the Paradise Valley Arsenic Removal Facility, the criteria for selection of the successful bidder, and the evaluation of the bidders' proposals.

Mr. Gross discusses the evaluation process of the various arsenic treatment technologies and the rationale for selection of the most appropriate treatment process.

Mr. Gross next discusses the breakdown of actual costs among the three purposes of the facility.

Mr. Gross provides an analysis of the used and usefulness of the storage and pumping capacities incorporated in the project.

Mr. Gross clarifies the treatment capability of this facility.

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 19820 N. 7th Street, Suite 201, Phoenix, Arizona 85024 and my telephone number is 623-445-2401.

Q. ARE YOU THE SAME JOSEPH E. GROSS THAT PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET?

A. Yes.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I have included an Executive Summary at the beginning of my testimony.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. I first discuss a recently completed fire-flow project on Nauni Valley Drive. I then respond to two statements raised in Commission Staff's testimony. I next respond to five issues raised in RUCO's direct testimony.

II. FIRE FLOW PROJECT - NAUNI VALLEY DRIVE

Q. HAS ARIZONA-AMERICAN COMPLETED ANY ADDITIONAL FIRE-FLOW PROJECTS SINCE YOU FILED YOUR DIRECT TESTIMONY?

A. Yes. We completed a fire-flow project along Nauni Valley Drive, where we replaced approximately 2,400 feet of existing 4-inch main with 8-inch main from 56th Street to McDonald Drive. We also added three fire hydrants, where there had previously been none. The Nauni Valley Drive improvements entered service on January 3, 2006.

Q. WHAT WAS THE COST OF THE NAUNI VALLEY DRIVE PROJECT?

A. The total cost of the project will be $420,755.13. To date $384,399.75 has been paid and the remaining balance of $36,355.38 is to be paid shortly. Mr. Reiker is sponsoring an exhibit that supports these costs.

III. RESPONSE TO COMMISSION STAFF

A. ARSENIC CONCENTRATIONS BY WELL

Q. HAVE YOU REVIEWED MR. CHELUS' DISCUSSION CONCERNING THE ARSENIC MEASUREMENTS IN EXISTING WELLS?

A. Yes. Mr. Chelus discussion of arsenic levels for our Paradise Valley District wells is based on the federal standard for delivered water of 10 ppb.

Q. IS THIS THE ENTIRE STORY?

A. No. In order to comply with the 10 ppb standard, the Company's target treatment level is 8 ppb, the target used by other water providers in the metropolitan area. This treatment level provides a 20% safety factor to insure the arsenic level in delivered drinking water does not exceed the 10 ppb Federally-mandated maximum contaminant level.

Mr. Chelus notes that the PCX-1 well's arsenic level is 9 ppb, which is one ppb below the new federal arsenic standard. However, water from the PCX-1 well must be blended with other wells during treatment to remove trichloroethylene at the Miller Road Treatment Facility ("MRTF"). Because these other wells typically exceed the 10 ppb standard, the arsenic concentration in the water exiting the MRTF may also exceed the 10 ppb standard. We would have to extensively modify the MRTF to keep supplies from Well PCX-1 separate from the other wells currently being treated, including construction of a separate clearwell and distributive pumping facility, and complex process

mechanical piping changes. The cost of such modifications would exceed the incremental cost of treating the flow from Well PCX-1. In addition, arsenic levels will vary from sample to sample, so we cannot be certain that that the arsenic level in Well PCX-1 will always be below the federal standard.

B. <u>ARSENIC PROJECT STATUS AND COST</u>

Q. HAVE YOU REVIEWED MR. CHELUS' DISCUSSION CONCERNING THE ARSENIC PROJECT STATUS AND COST?

A. Yes. Mr. Chelus' testimony indicated an approximate construction cost for this project of $17.44 million.

Q. HOW DO YOU RESPOND?

A. Construction of the project began in July 2005, upon receipt of all permits from the City of Scottsdale. Construction is approximately fifty per cent complete, with the treatment facility expected to be in service in August 2006. The customer service and administrative building will be occupied by July 2006. Also, we expect to phase in the new water distribution pumps, water storage tanks, and pipelines during July 2006.

Mr. Chelus' estimation of the direct costs remains valid. However, so that the record is clear, the total cost to the Company of completing this project is currently estimated to be $25 million, which includes fees for design services, subconsultants, permits, legal and administration, company labor, and AFUDC. These costs are presented in more detail at Exhibit A.

IV. RESPONSE TO RUCO

A. ARSENIC PROJECT TENDER LIST AND BIDDING PROCESS

Q. HAVE YOU REVIEWED MR. MOORE'S DISCUSSION OF THIS SUBJECT?

A. Yes. He states the tender list and bidding process should be scrutinized, but he is not more specific than that.

Q. HOW DO YOU RESPOND?

A. The company initiated an intensive effort in early 2004 to select the appropriate procurement method and then to find the most qualified team to design and build this project. This effort concluded with the selection of the design/build team of Damon S. Williams Associates and D. L. Norton General Contracting, Inc. A detailed discussion of the bidding process and evaluation of proposals is attached as Exhibit B.

B. ARSENIC TREATMENT TECHNOLOGY EVALUATION

Q. HAVE YOU REVIEWED MR. MOORE'S DISCUSSION OF THIS SUBJECT?

A. Yes. He recommends scrutiny, but otherwise is not specific.

Q. HOW DO YOU RESPOND?

A. In October 2003, prior to initiating the bidding process, the Company concluded a detailed review of the available arsenic treatment technologies. Exhibit C contains a thorough description of the evaluation of arsenic removal alternatives, and the rationale for determining that coagulation – filtration is the most cost-effective arsenic removal technology for the Paradise Valley site.

C. ESTIMATED COSTS FOR MULTIPLE USE PROJECT

Q. HAVE YOU REVIEWED MR. MOORE'S DISCUSSION OF THIS SUBJECT?

A. Yes. Mr. Moore states the site is oversized and has multiple uses. He is not more specific than that.

Q. HOW DO YOU RESPOND?

A. Mr. Moore is correct to some extent that the project has multiple uses. Attachment A depicts the detailed estimated cost breakout for the three uses of this project. Of the total estimated project cost of $25 million, $23.2 million is for arsenic removal, $0.7 million is for consolidation of business operations staff, and $1.1 million is for providing fire flow storage for public safety. It is my understanding that ACRM only permits recovery of arsenic related costs, now estimated at $23.2 million.

Q. IS THE SITE OVERSIZED?

A. No. Process unit capacity was sized to meet demands that are likely to occur over the next several years, since the minor incremental cost of doing so now is far less than expansion of the facilities in the near future. In addition, the treatment site layout has been kept as compact as reasonably possible to minimize the cost of the facility, which would otherwise be higher if the facilities were spread further apart on the site. For example, additional lengths of buried process piping and electrical conduits would be needed, and the amount of asphalt paving and length of the site perimeter wall would have been greater. Finally, the final site layout had to comply with the City of Scottsdale's requirements.

D. <u>USED AND USEFULNESS OF STORAGE AND PUMPING FACILITIES</u>

Q. HAVE YOU REVIEWED MR. MOORE'S DISCUSSION OF THIS SUBJECT?

A. Yes. Mr. Moore questions whether the additional storage is used in the arsenic removal process.

Q. HOW DO YOU RESPOND?

A. A 1999 comprehensive planning study by the Company planning staff identified a serious shortfall of existing storage within the Paradise Valley Water District. The storage deficit in the Main Pressure Zone was estimated to be approximately 1.5 million gallons, based on a total estimated storage need of about 2.5 million gallons as of 1997. The estimated storage need included two primary components; equalization and fire flow. Equalization represents the volume of water needed to meet demands during peak consumption periods of the day when usage rates exceed the production capacity of the wells and/or treatment facilities. In the Main Pressure Zone, this represented approximately 75 percent of the total estimated storage need in 1997, with storage for fire flow representing the remainder of the need.

This storage capacity deficit would be further exacerbated because supplies from Well 16 will no longer be available to pump directly into the distribution system, and , an additional finished-water storage requirement of approximately 500,000 gallons is needed to backwash the filters which remove the arsenic. Thus, the 3-million gallons of onsite storage at the PVARF is necessary to ensure that the facility has adequate finished water supplies available to meet in-plant needs, as well as customer demands during periods when usage rates exceed the reliable treatment capacity of the facility. We selected the capacity of the distributive pump station based on meeting current and anticipated future peak hour demands in the Main Pressure Zone. This storage and pumping capacity is currently under construction.

E. <u>FACILITY WATER TREATMENT CAPABILITY</u>

Q. HAVE YOU REVIEWED MR. MOORE'S DISCUSSION OF THIS SUBJECT?

A. Yes. Mr. Moore appears to believe it may be possible to treat water in excess of just arsenic removal, but again is not more specific.

Q. HOW DO YOU RESPOND?

A. I don't really understand what he is saying. Since the well water treated for arsenic removal meets all other Federal and State water quality standards, this project provides no capability for treating water other than removal of arsenic to meet Federal standards.

Q. MR. MOORE BELIEVES MORE TIME WILL BE REQUIRED TO PROCESS THE COMPANY'S STEP ONE APPLICATION. HOW DO YOU RESPOND?

A. Mr. Moore acknowledges that the Company wishes to expedite processing of the ACRM Step 1 increase and yet he resists stating more than vague and unsupported concerns. To the extent that we can understand just what Mr. Moore is asking, we have addressed every single one of his five concerns. We have already provided a great deal of information concerning the project, and stand ready and willing to answer any <u>specific</u> questions from anyone at RUCO between now and the expected August in-service date. Mr. Chelus, the Staff's engineer has visited the site, but no one from RUCO has done so.

To comply with the new federal standard, the Company had to select its technology, order materials, hire a contractor, and begin construction. We have bent over backwards to provide Staff and RUCO extensive information about the decisions we were forced to make. I do not believe that the Commission intended that RUCO would finally begin its review of these decisions at the time of the Step 1 filing.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does.

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Arizona-American Water Company
Rebuttal Testimony of Joseph E. Gross, P.E.

Exhibit A
Page 1

PROJECT COST BY USE

Description	Total Cost	Insurance Removal	Consolidated Business Affairs	Public Safety
Sitework				
Transmission Mains	$1,329,850	$1,329,850		
Treated Water yard piping	$156,866	$115,866		$41,000
Raw Water yard piping	$245,744	$245,744		
Finished Water Distribution yard piping	$55,055	$55,055		
Finished Water supply yard piping	$375,562	$327,853		$47,709
Sludge/Decant yard piping	$113,048	$113,048		
Storage reservoir Mechanical	$80,000	$40,000		$40,000
Filter to Waste yard piping	$91,118	$91,118		
Chemical feed/ sampling yard piping	$35,886	$35,886		
Sanitary sewer	$29,654	$29,654		
Miscellaneous yard piping	$152,394	$152,394		
Structural excavation/backfill/Sitework	$517,518	$471,879	$7,500	$38,139
Demolition	$23,000	$0	$23,000	
Miscellaneous sitework	$50,500	$50,500		
Driveways/Pavement	$100,500	$79,100	$21,400	
Landscaping	$140,000	$140,000		
Storm Drainage	$62,995	$62,995		
Structural/ site concrete	$1,364,103	$1,290,103	$34,000	$40,000
Building		$0		
Hazardous Abatement	$40,000	$0	$40,000	
Building B and C construction	$1,423,121	$1,423,121		
Building A construction	$700,000	$420,000	$280,000	
Site painting	$50,000	$50,000		
Utility Storage masonry	$28,911	$17,347	$11,564	
Automatic entry gates	$24,918	$20,118	$4,800	
Site fence	$585,067	$585,067		
Clarifier Covers	$61,350	$61,350		
Equipment/Mechanical				
WWS (Backwash) PS mechanical	$232,754	$232,754		
Blower mechanical	$72,467	$72,467		
Chemical feed mechanical	$353,347	$353,347		
Clarifier mechanical	$93,049	$93,049		
Flowmeter mechanical	$69,205	$69,205		
Filter mechanical	$1,436,023	$1,436,023		
Thickened sludge pump station mechanical	$300,433	$300,433		
Sludge storage mechanical	$14,235	$14,235		
Recycle/Underflow PS Mechanical	$106,996	$106,996		
Jet mixing/bypass mechanical	$65,914	$65,914		
Stormwater Pump Station	$76,172	$76,172		
Booster Pump Station Mechanical	$675,709	$675,709		
Filter Press mechanical	$213,000	$213,000		
Misc. mechanical	$63,059	$63,059		
1.5 MG Steel Reservoirs	$1,137,000	$593,556		$543,444
Electrical/Instrumentation/SCADA	$3,269,458	$3,207,858	$50,600	$11,000
Subtotal	$16,015,981	$14,781,825	$472,864	$761,292
General Conditions	$130,520	$121,311	$3,524	$5,685
Sales Tax Allowance	$554,533	$519,233	$13,500	$21,800
Insurance	$153,414	$143,048	$3,964	$6,402
Contingency	$553,136	$510,738	$16,245	$26,153
Total	$17,407,584	$16,076,155	$510,097	$821,332

Description	Total	Assets Retired	Consultant Expenses/Other	Public Safety
Brought Forward	$17,407,584	$16,076,155	$510,097	$821,332
Supervision and General Expense	$646,377	$619,748	$10,202	$16,427
Design/Builder's Fee	$1,140,943	$1,074,371	$25,505	$41,067
Bond	$128,468	$120,147	$3,188	$5,133
Subtotal	$19,323,372	$17,890,421	$548,992	$883,959
Design Services	$1,490,056	$1,384,919	$40,231	$64,906
Design Construction Services	$291,701	$271,119	$7,876	$12,706
Total Design/Builder	$21,105,129	$19,546,459	$597,099	$961,571
Subconsultants	$226,360	$209,643	$6,404	$10,313
AW/AZ Labor	$579,496	$536,699	$16,395	$26,402
AFUDC/Legal/Contingency	$2,948,802	$2,731,025	$83,426	$134,350
MTRF Replacement Pumps	$200,000	$185,229	$5,658	$9,112
Grand Total	$25,059,787	$23,209,055	$708,983	$1,141,749

Exhibit B

American Water

Memo

To	J.J. Gallagher	From	E. J. Radwanski P. J. Keenan
Company	American Water	Company	American Water
Pages	4 attachments	Date	April 29, 2004

Arizona American Water – Paradise Valley and Sun City West Districts
Arsenic Removal Facilities Project
Proposal Evaluation

I. Summary and Recommendations

This proposal analysis describes the process used to select the recommended Design-Builder for the Arsenic Removal Facilities Project. It is recommended to use the Phoenix, Arizona based team of D. L. Norton General Contracting, Inc. and Damon S. Williams Associates. It is recommended that a Design-Build contract be issued by the Water Company to allow commencement of preliminary engineering, including the development of the Design Memorandum, to establish a target cost estimate by February 2005.

The proposed design/build approach is an effective project delivery system and will be suited to meet Arizona American Water's (AAW) budget and schedule requirements. The facilities are required by January 23, 2006, to comply with the EPA's Arsenic Rule to reduce arsenic below the maximum contaminant level of 10 ug/L. Early cost estimating, value engineering and design input by the project team will optimize the design and improve budget and schedule performance. Early investment will also support procurement of long lead equipment and commencement of sitework and structural concrete work concurrent with completion of final design details, which will be needed to meet the desired 2006 substantial completion date.

A comprehensive evaluation of all proposals indicates that the proposal submitted by the team of D. L. Norton General Contracting, Inc. and Damon S. Williams Associates is most favorable. The project team was pre-qualified and is capable of designing and managing the construction of the project. D. L. Norton General Contracting, Inc. and Damon S. Williams Associates both have a long history of successful projects with AAW. The relationship that Damon S. Williams Associates has established with the local permitting agencies, through other project work, will assist in obtaining the necessary permits for the project without delaying commencement of construction. D. L. Norton General Contracting, Inc. and Damon S. Williams Associates proposed costs for the design/build services are competitive and appropriate for a project of this size and complexity. Construction costs will be

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All of the bidders emphasized the difficulty of obtaining permits in the City of Scottsdale at the Paradise Valley District within the timeframe allotted. D. L. Norton proposes to work double shifts to shorten the construction period to meet the end date, and, if necessary, install the proposed treatment units at a temporary location on an interim basis to treat enough of the supply to meet the pending arsenic MCL by the deadline. One of the bidders noted that the location of the proposed facilities at the Paradise Valley site would require special zoning variance. This is because the southern end of the site is designated a Special Campus Historic Property. AW is considering the facilities be located at the north end of the site. D. L. Norton has been made aware of this potential change, and confirmed that the impact to the schedule and cost would be insignificant.

Based on the labor rates, design fees, management fees and other compensation provisions of the D. L. Norton General Contracting, Inc. and Damon S. Williams Associates proposal, the design/construction estimate for both projects is $22,600,000. D.L. Norton and Damon S. Williams' critique of the preliminary construction cost estimates for the facilities indicates that American Water Engineering estimates for the projects are reliable.

Sufficient funds exist in the approved budget to begin design activities for the project. The project team, working with the design/build team, will develop target construction cost estimates. Upon receipt of all permits, construction is expected to begin in February 2005, with substantial completion before January 2006.

II. Background

On February 27, 2004, four (4) pre-qualified design/builders each submitted a proposal to AAWC for the design, permitting, construction and commissioning of two arsenic removal facilities, one in the Sun City West District and the other in Paradise Valley District. One bid for the two projects allowed for an economy of savings due to the commonality of the design.

The proposed Sun City West Arsenic Removal Facility (ARF) will include a new process treatment building that will house several horizontal, dual-media pressure filters, chemical storage and feed facilities, and ancillary electrical and control systems. The ARF will also include two backwash clarifiers and a sludge thickening system. The Sun City West facilities will be constructed at Sun City West Water Plant No.1. An economic analysis that included the results of pilot testing determined that a centralized treatment facility at Plant No.1 would be the most economical solution for treatment of the waters from the five wells that serve the Sun City West District.

The proposed Paradise Valley ARF will include all of the facilities identified for the Sun City West ARF. In addition, a new finished water storage and distributive pumping facility, administrative and customer service offices, and a residuals dewatering facility will be constructed at the Paradise Valley ARF. The Paradise Valley facilities will be constructed at the Miller Road Booster Station. An economic analysis determined that a centralized treatment facility at Miller Road would be the most economical solution for treatment of the waters from the seven wells that serve the Paradise Valley District District.

An evaluation was performed which considered various aspects of the bidder's proposals including: bid prices, design and construction resources, suitability of the technical submission and adequacy of the proposed schedule.

A scoring criterion was developed for various categories of the proposals. Bidders were given scores reflecting the adequacy with which they fulfilled each of these categories.

Based on the evaluation as described above, the proposal submitted by the joint venture team of D. L. Norton General Contracting, Inc. and Damon S. Williams Associates scores most favorably.

III. Bid Assessment Categories & Weighting

The following categories were used to score each proposal. The weighting of the categories was developed using the Pairwise Comparison tool shown in the Bid Assessment Criteria Table in Appendix B.

Commercial	24%
Schedule	23%
Permitting Plan	23%
Technical Submission	17%
Resources	13%

See the Definition of Terms, Appendix C for a description of the above categories.

IV. Category Scoring Criteria

A scoring system was developed to evaluate each of the categories (or sub-categories thereof) indicated above excluding the Commercial category, which was subjected to a separate numerical analysis also described below. Scores were assigned based on each bidder's compliance with the requirements of the RFP. A total of 100 could be obtained if the bidder exceeded the RFP requirements in every

category. A total of 67 could be obtained if the bidder met every RFP requirement. The scoring format is as follows:

3 = Exceeds RFP Requirements
2 = Meets RFP Requirements
1 = Partially Meets RFP Requirements
0 = Does Not Meet RFP Requirements

V. Detailed Analysis of Scoring

The results of the scores given to each bidder are as follows:

1. D. L. Norton/ Damon S. Williams (Norton): 76.1
2. Garney/Burns & McDonnell (Garney): 74.2
3. Camp, Dresser & McKee (CDM): 66.1
4. Felix/Sundt (Felix): 63.8

For a complete compilation of the above scores, see Bidder's Score Table, Appendix D.

The following is a review of each evaluation category.

A. Commercial Category

Scores out of 24: Felix: 24, Norton: 23.2, Garney: 18.4, CDM: 4

The commercial category scores were based on the bid prices found in the Bid Summary (Appendix A). The bidder with the lowest total lump sum fee received the highest score and the remaining bidders received lower scores based on the percent difference among them. In addition, the labor rates provided by all bidders for the self-perform work were reviewed and found to be equivalent.

The Felix team's total lump sum cost for engineering, construction superintendence/supervision, contractor's fixed fee, and bond premiums was the lowest at $4,417,050. Norton's lump sum proposal was approximately 4% higher than Felix's, and Garney and CDM were 26% and 127% higher, respectively. Based on the above, the Felix and Norton lump sum prices were very comparable.

Each bidder's lump sum proposals were analyzed to determine how the percentage of fees budgeted to engineering and construction tasks

compared. Felix's engineering fees amounted to 11.9% of the estimated construction cost, whereas Norton's engineering fees amounted to 13.4%. Garney and CDM's engineering fees represented 15% and 17% of the estimated construction, respectively. These percentages are somewhat higher than the range of 9% to 11% that would have been expected based on American Water's experience. However, the database of projects that American Water uses to compare engineering costs includes mostly traditional design-bid-build projects, which may have lower engineering fees compared to design-build projects. In addition, the fairly complex permitting requirements for these projects and the current high demand for engineering services in Arizona may have caused engineering fees to be somewhat higher than average.

For the construction superintendence/supervision, contractor's fixed fee, and bond premiums, Felix's lump sum proposal amounts to 12.6% of the estimated construction cost, while Norton's proposal represents 12.1%. Both of these are competitive and are appropriate when compared to other projects completed within American Water. The supervision costs for similar previous proposals have ranged from 10.4% to 12% of the total estimated construction cost. Garney and CDM's lump sum construction superintendence/supervision and fixed fees were well above the historical range, representing 16.1% and 38.9% of the construction estimate, respectively.

B. Technical Submission

Scores out of 17: Norton: 13.1, CDM: 12.8, Garney: 11.2, Felix: 10.9

Norton's proposal defined in a fairly complete manner the detailed scope of work. The proposal exhibited a good understanding of the permitting issues and stressed the importance of getting neighbor buy-in early. Norton's projected number of drawings for the two facilities indicates their understanding of the technical aspects of the project and adequately meets expectations.

CDM and Garney also both demonstrated a fairly good understanding of the project scope, although they proposed to provide fewer drawings than would be expected for projects of this magnitude.

Felix's proposal included more process analysis and evaluation of alternatives than any of the others. The Felix team even conducted a short-term pilot test at Paradise Valley to verify the performance of the coagulation/filtration process that has been proposed. However, most of the

alternatives proposed by the Felix team would result in an unacceptable reduction in the level of redundancy or design factor of safety. Therefore, the Felix proposal received lower rankings from a technical perspective.

C. Permitting

Scores out of 23: CDM: 23, Garney: 19.2, Norton: 16.1Felix: 7.7

CDM's proposal contained the best permitting information and they have alerted the Water Company to potential zoning problems at the Paradise Valley site that AAW is currently investigating. Garney and Norton both also demonstrated an adequate understanding of the permitting process. The Norton team proposed permitting the Paradise Valley raw water main separately, since it would likely be easier to permit and could be started before the rest of the plant construction. The Felix proposal failed to identify several critical permit requirements, in particular the Special Use permit for the Paradise Valley ARF.

D. Schedule

Scores out of 23: Norton: 17, CDM: 17, Garney: 15.9, Felix: 13.9

Both Norton and CDM had good plans for delivering the project. Norton planned on constructing the Sun City West facilities slightly in advance of the more time constrained Paradise Valley project in order to increase efficiencies. CDM had good identification of critical activities and reasonable construction periods. Garney's schedule also appeared fairly reasonable, including their plans to fast track the reservoir construction. There was concern with Felix's schedule because their schedule of activities at Sun City West appeared to be too compressed.

E. Resources

Scores out of 13: Garney: 9.5, CDM: 9.3, Felix: 7.3, Norton: 6.8,

Garney's proposal included the best-qualified personnel with the most experience in construction management and water/wastewater design. CDM's proposed team also exhibited solid experience at all levels. Felix ranked low in this category because their proposed design team members have very limited experience in the design of treatment plants of this size/type. Norton also ranked low in this category because they lack experience on water projects of this size. However, AAW discussed this concern with Norton and is comfortable with the technical expertise of

Norton's proposed team and their ability to complete the requirements of the project. In particular, D.L. Norton and Damon S. Williams Associates have both worked on projects for AAW at the Anthem Water Campus and have demonstrated their ability to complete projects successfully.

VI. Company Work History

D. L. Norton General Contracting, Inc. and Damon S. Williams Associates have submitted the most favorable proposal for the construction of the two Arsenic Removal facilities projects. D. L. Norton General Contracting, Inc. and Damon S. Williams Associates have work experience together on a number of projects in the Phoenix Area and both have completed many successful projects for the Arizona American Water Company. Their experience on water projects of this size is limited. However, both have solid reputations and D. L. Norton can provide the required bonding for the project and they plan to supply the full resources of their company to perform the project.

Overall, American Water Engineering is comfortable with the technical expertise of the D. L. Norton General Contracting, Inc. and Damon S. Williams Associates proposed team and their ability to complete the requirements of the project.

E. J. Radwanski, P.E.

P. J. Keenan, P.E.

Approved: J. D. Gallagher, P.E.

Appendices

A. Bid Summary

B. Bid Assessment Criteria Table

C. Definition of Terms

D. Bidder's Scoring Table

Appendix A

ARIZONA AMERICAN WATER
ARSENIC TREATMENT D/B PROJECT
PARADISE VALLEY AND SUN CITY WEST
SUMMARY OF BIDS

Arizona American Water

Description	Felix/Sundt & NCS/B&C	DL Norton/DSWA	Garney/Burns & McDonnell	CDM/CDM
COST OF WORK				
Engineering				
Design - Preliminary Design to Design Memo				
Sun City West	$ 132,510	$ 216,133	$ 121,702	$ 280,000
Paradise Valley	192,489	504,309	174,182	475,000
Design - Final Design				
Sun City West	465,517	383,464	496,896	512,000
Paradise Valley	853,483	894,749	846,336	904,000
Design - Construction/Operation				
Sun City West	210,427	125,014	456,448	300,000
Paradise Valley	290,925	291,701	583,808	595,000
Subtotal Engineering	**$ 2,145,351**	**$ 2,415,370**	**$ 2,679,372**	**$ 3,066,000**
Engineering Subtotal as Percent of Construction	**11.9%**	**13.4%**	**14.9%**	**17.0%**
Separate Overhead Amounts				
Construction Supervision/Superintendence				
Sun City West	364,333	200,000	529,560	1,903,793
Paradise Valley	743,667	550,000	835,580	2,643,539
Bond Premiums				
Sun City West	55,005	42,250	29,115	76,645
Paradise Valley	118,694	87,250	67,937	169,567
Design/Build Fee				
Sun City West	$ 297,000	$ 400,000	$ 432,000	$ 685,466
Paradise Valley	693,000	900,000	1,008,000	1,516,681
Subtotal Supervision/Superintendence, Bonds and D/B Fee	**$ 2,271,699**	**$ 2,179,500**	**$ 2,902,192**	**$ 6,995,691**
Subtotal as Percent of Construction	**12.6%**	**12.1%**	**16.1%**	**38.9%**
TOTAL COST OF WORK & FEES	**$ 4,417,050**	**$ 4,594,870**	**$ 5,581,564**	**$ 10,061,691**
DRAWINGS				
Paradise Valley	174	258	155	152
Sun City West	137	165	102	110
SCHEDULE				
Design Memo Completion (days)	62	73	45	68
Final Design Completion (days)				
Sun City West	188	287	165	229
Paradise Valley	188	315	214	229
Substantial Completion	12/9/2005	12/9/2005	12/9/2005	12/9/2005
Final Completion	6/23/2006	6/23/2006	6/23/2006	6/23/2006
CONSTRUCTION COSTS (ESTIMATED BY AMERICAN WATER ENGINEERING - VOORHEES)				
Sun City West	$ 5,400,000	$ 5,400,000	$ 5,400,000	$ 5,400,000
Paradise Valley	12,600,000	12,600,000	12,600,000	12,600,000
Total Estimated Construction Cost	**$ 18,000,000**	**$ 18,000,000**	**$ 18,000,000**	**$ 18,000,000**
TOTAL PROJECT COST ESTIMATE	**$ 22,417,050**	**$ 22,594,870**	**$ 23,581,564**	**$ 28,061,691**

Appendix B

American Water

RWE

Arizona American Water
Arsenic Removal Facilities Proposal Evaluation
Bid Assessment Criteria Table

	Description	Commercial	Technical Submission	Schedule	Permits	Resources	Score	Calc.	Weighted Scoring (%) say
1	Commercial		4	3	3	4	14	23%	**24%**
2	Technical Submission	2		2	2	4	10	17%	**17%**
3	Schedule	3	4		3	4	14	23%	**23%**
4	Permits	3	4	3		4	14	23%	**23%**
5	Resources	2	2	2	2		8	13%	**13%**
	Total						60	100%	**100%**

Appendix C

Definition of Terms

Commercial – This encompasses the project delivery cost. The project delivery cost includes the lump sum design fees, the percentage based management fees, the target cost formula, the bonuses, the savings for acceptable alternatives and the rate schedules.

Schedule – This includes the bidder's proposed schedule which leads to their understanding of the complexity of the contract, the sequence of work, their assessment of the critical activities and whether realistic contract and permit periods where identified.

Permits – This includes the bidder's understanding of the permits required and their plan of action to secure the permits.

Technical Submission – This includes the bidder's understanding of the design requirements described in the Request for Proposal, the adequacy of the bidder's design outline, their knowledge of the permitting requirements and the originality of their suggested cost saving alternatives.

Resources – This includes the evaluation of the bidders proposed project management, design, construction and commissioning staffs as well as their proposed arrangements with subcontractors and how much work the bidder will self perform.

American Water

Appendix C

Arizona American Water
Scoring Mechanism - Arsenic Removal Facilities Bid Analysis

Item		Description	Weighting (%)
1		Commercial (Subjective 3-High to 0 Low)	24.0%
		See Sensitivity Analysis	
2		Technical Submission (Subjective 3 High to 0-Low)	17.0%
2.1		Understanding of Design Requirements	7.0%
	a.	Bidder understands AW design concept?	
	b.	Does Bidder understand the project scope of work?	
2.2		Design Outline	5.0%
	a.	Adequacy of geotechnical investigation &	
	b.	Adequacy of environmental requirements?	
	c.	Quality of technical information?	
	d.	Adequate number of design drawings?	
	e.	Adequate number of specifications?	
2.3		Alternatives	5.0%
	a.	Acceptability of offered alternatives	
3		Permitting Subjective 3 High to 0 Low)	23.0%
	a.	Knowledge of Permitting Requirements	
4		Schedule (Subjective 3-High to 0 - Low)	23.0%
	a.	Bidder understand contract mechanisms?	
	b.	Bidder understand sequence of work required?	
	c.	Were critical activities identified?	
	d.	Were adequate approval times included?	
	e.	Were milestones for potential delay identified?	
	f.	Was realistic contract period identified?	
	g.	Were realistic permit periods identified?	
	h.	Is overall project schedule adequate?	
5		Resources (Subjective 3 - High to 0 - Low)	13.0%
	a.	Are details of arrangements with partners, subcontractors,etc. ok?	
	b.	Is the bidder's staffing structure adequate?	
	c.	Is the Project Management Staff adequate?	
	d.	Is the Construction staff experience adequate?	
	e.	Is the Design staff experience adequate?	
	f.	Are the Bidder's site facilities adequate?	
	g.	Will the contractor self perform much of the work?	
	h.	Is the Commissioning staff experience adequate?	
		Is organization chart for reporting & responsibilities adequate?	
		Are the electronic communication capeblilities adequate?	
		Total	100.0%

American Water

Appendix D

Scoring criteria & mechanism are on the previous worksheets
See scoring definitions below

Arizona American Water
Arsenic Removal Facilities Proposal Evaluation
Bidders' Score Table

Felix/Sundt
NCS/B & C

Schedule	Description	Max. Possible Weighted Score (%)	Score	Weighted Score (1.0)	Comments
	COMPOSITE TOTAL	**100.0%**		**63.8**	
1	**Commercial (Subjective 3-High to 0 Low)**	**24%**	3.0	24.0	D/B L.S. Fees $4,417,050
	Evaluation & critique of costs				
2	**Technical Submission (Subjective 3 High to 0-Low)**	**17%**	1.9	10.9	
2.1	**Understanding of Design Requirements**	**7%**	0.7	4.7	
	a. Bidder understands AW design concept?		2.0		Conducted pilot work but diagree with conclusion
	b. Does Bidder understand the project scope of work?		2.0		
2.2	**Design Outline**	**5%**	0.7	3.4	
	a. Adequacy of geotechnical investigation &		2.0		
	b. Adequacy of environmental requirements?		2.0		
	c. Quality of technical information?		2.2		Credit for Pilot Testing
	d. Adequate number of design drawings?		2.0		311 drawings for both stations
	e. Adequate number of specifications?		1.9		Missing filter underdrain spec.
2.3	**Alternatives**	**5%**	0.6	2.8	
	a. Acceptability of offered alternatives		1.7		Pilot test results not adeq. To justify higher design
3	**Permitting Subjective 3 High to 0 Low)**	**23%**	0.3	7.7	
	a. Knowledge of Permitting Requirements		1.0		Failed to mention Scotsdale Cond. Use Permit
4	**Schedule (Subjective 3-High to 0 - Low)**	**23%**	0.6	13.9	
	a. Bidder understand contract mechanisms?		2.0		
	b. Bidder understand sequence of work required?		2.0		
	c. Were critical activities identified?		2.0		
	d. Were adequate approval times included?		2.0		
	e. Were milestones for potential delay identified?		1.5		Equip, piping & elec time frames too short
	f. Was realistic contract period identified?		1.7		Equip, piping & elec time frames unrealistic
	g. Were realistic permit periods identified?		1.5		Conditional Use Permit not included
5	**Resources (Subjective 3 - High to 0 - Low)**	**13%**	0.6	7.3	
	a. Are details of arrangements with partners, subcontractors,etc. ok?		1.5		Many partners make for difficult coord.
	b. Is the bidder's staffing structure adequate?		2.0		
	c. Is the Project Management Staff adequate?		1.0		A. Lopez , PM lacks large proj. exp.
	d. Is the Construction staff experience adequate?		3.0		Supts. have over 50 yrs exp.water/wastewater
	e. Is the Design staff experience adequate?		1.0		Design PM has limited water exp.
	f. Are the Bidder's site facilities adequate?		2.0		
	g. Will the contractor self perform much of the work?		2.0		Earthwork, Yardpipe, Conc, Mech, Elec & Instru.
	h. Is the Commissioning staff experience adequate?		1.0		None listed

Score Definitions
3 = above expectation
2 = as expected
1 = below expectation
0 = so far below expectation as to give concern

American Water

Appendix D

Scoring criteria & mechanism are on the previous worksheets
See scoring definitions below

Arizona American Water
Arsenic Removal Facilities Proposal Evaluation
Bidders' Score Table

D. L. Norton
DSWA

Schedule	Description	Max. Possible Weighted Score (%)	Score	Weighted Score	Comments
			2.0		
	COMPOSITE TOTAL	**100.0%**		**76.1**	
1	**Commercial (Subjective 3-High to 0 Low)**	**24%**	2.9	23.2	D/B L.S. Fees $4,594,870
	Evaluation & critique of costs				
2	**Technical Submission (Subjective 3 High to 0-Low)**	**17%**	2.3	13.1	
2.1	**Understanding of Design Requirements**	**7%**	0.8	5.3	
	a. Bidder understands AW design concept?		2.0		
	b. Does Bidder understand the project scope of work?		2.5		Proposal defines in detail scope both proj.
2.2	**Design Outline**	**5%**	0.7	3.7	
	a. Adequacy of geotechnical investigation &		3.0		Included soil borings for pipeline work
	b. Adequacy of environmental requirements?		2.0		
	c. Quality of technical information?		2.0		
	d. Adequate number of design drawings?		2.0		424 drgs between both sites
	e. Adequate number of specifications?		2.0		Large number of specifications
2.3	**Alternatives**	**5%**	0.8	4.2	
	a. Acceptability of offered alternatives		2.5		
3	**Permitting Subjective 3 High to 0 Low)**	**23%**	0.7	16.1	
	a. Knowledge of Permitting Requirements		2.1		Slightly more detail than Felix
4	**Schedule (Subjective 3-High to 0 - Low)**	**23%**	0.7	17.0	
	a. Bidder understand contract mechanisms?		2.0		
	b. Bidder understand sequence of work required?		2.5		Plan to use SCW to work out details for PV
	c. Were critical activities identified?		2.5		Activities identified in detail
	d. Were adequate approval times included?		2.5		Plan to use SCW to work out details for PV
	e. Were milestones for potential delay identified?		2.0		
	f. Was realistic contract period identified?		2.0		
	g. Were realistic permit periods identified?		2.0		
5	**Resources (Subjective 3 - High to 0 - Low)**	**13%**	0.5	6.8	
	a. Are details of arrangements with partners, subcontractors,etc. ok?		2.5		More experience working together
	b. Is the bidder's staffing structure adequate?		2.0		
	c. Is the Project Management Staff adequate?		1.0		C. Norton, PM lacks large project exp.
	d. Is the Construction staff experience adequate?		1.0		Supts. Lack significant water/wastewater
	e. Is the Design staff experience adequate?		1.0		PM and Proj Engr exp. Is limited
	f. Are the Bidder's site facilities adequate?		2.0		
	g. Will the contractor self perform much of the work?		2.0		Excavation, pipe & conc.
	h. Is the Commissioning staff experience adequate?		1.0		None listed

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American Water

Appendix D

Scoring criteria & mechanism are on the previous worksheets
See scoring definitions below

Arizona American Water
Arsenic Removal Facilities Proposal Evaluation
Bidders' Score Table

Garney
Burns & Mc Donnell

Schedule	Description	Max. Possible Weighted Score (%)	Score	Weighted Score	Comments
				3.0	
	COMPOSITE TOTAL	**100.0%**		**74.2**	
1	**Commercial (Subjective 3-High to 0 Low)**	**24%**	2.3	18.4	D/B L.S. Fees $5,581, 564
	Evaluation & critique of costs				
2	**Technical Submission (Subjective 3 High to 0-Low)**	**17%**	2.0	11.2	
2.1	**Understanding of Design Requirements**	**7%**	0.7	4.7	
	a. Bidder understands AW design concept?		2.0		
	b. Does Bidder understand the project scope of work?		2.0		
2.2	**Design Outline**	**5%**	0.6	3.2	
	a. Adequacy of geotechnical investigation &		2.0		
	b. Adequacy of environmental requirements?		2.0		
	c. Quality of technical information?		2.0		
	d. Adequate number of design drawings?		1.7		243 for both sites - too few drgs
	e. Adequate number of specifications?		2.0		
2.3	**Alternatives**	**5%**	0.7	3.3	
	a. Acceptability of offered alternatives		2.0		
3	**Permitting Subjective 3 High to 0 Low)**	**23%**	2.5	19.2	
	a. Knowledge of Permitting Requirements		2.5		Slightly better then Norton
4	**Schedule (Subjective 3-High to 0 - Low)**	**23%**	0.7	15.9	
	a. Bidder understand contract mechanisms?		2.0		
	b. Bidder understand sequence of work required?		2.0		
	c. Were critical activities identified?		2.5		PV shown finishing 1.5 mo. Late but Alt. Plan
	d. Were adequate approval times included?		2.0		
	e. Were milestones for potential delay identified?		2.0		
	f. Was realistic contract period identified?		2.0		
	g. Were realistic permit periods identified?		2.0		
5	**Resources (Subjective 3 - High to 0 - Low)**	**13%**	0.7	9.5	
	a. Are details of arrangements with partners, subcontractors,etc. ok?		2.0		
	b. Is the bidder's staffing structure adequate?		2.0		
	c. Is the Project Management Staff adequate?		2.5		PM: Auay-Fuay, 15-yrs plants to 20MGD
	d. Is the Construction staff experience adequate?		2.5		Hoopes -15yrs, Mike Moe-31 yrs
	e. Is the Design staff experience adequate?		2.5		PM's: Masche-10yrs, Taylor-16 yrs
	f. Are the Bidder's site facilities adequate?		2.0		
	g. Will the contractor self perform much of the work?		2.0		
	h. Is the Commissioning staff experience adequate?		2.0		

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American Water

Appendix D

Scoring criteria & mechanism are on the previous worksheets
See scoring definitions below

Arizona American Water
Arsenic Removal Facilities Proposal Evaluation
Bidders' Score Table

Schedule	Description	Max. Possible Weighted Score (%)	CDM Score	CDM Weighted Score (4.0)	Comments
	COMPOSITE TOTAL	100.0%		66.1	
1	Commercial (Subjective 3-High to 0 Low)	24%	0.5	4.0	D/B L.S. Fees $10,061,691
	Evaluation & critique of costs				
2	Technical Submission (Subjective 3 High to 0-Low)	17%	2.2	12.8	
2.1	Understanding of Design Requirements	7%	0.8	5.8	
a.	Bidder understands AW design concept?		2.5		
b.	Does Bidder understand the project scope of work?		2.5		
2.2	Design Outline	5%	0.7	3.6	
a.	Adequacy of geotechnical investigation &		2.0		
b.	Adequacy of environmental requirements?		2.0		
c.	Quality of technical information?		3.0		
d.	Adequate number of design drawings?		1.8		260 drgs for both sites, too few drgs
e.	Adequate number of specifications?		2.0		
2.3	Alternatives	5%	0.7	3.3	
a.	Acceptability of offered alternatives		2.0		
3	Permitting Subjective 3 High to 0 Low)	23%	1.0	23.0	
a.	Knowledge of Permitting Requirements		3.0		Excellent review of permit req'ts.
4	Schedule (Subjective 3-High to 0 - Low)	23%	0.7	17.0	
a.	Bidder understand contract mechanisms?		2.0		
b.	Bidder understand sequence of work required?		2.0		
c.	Were critical activities identified?		3.0		Good identification of critical activities
d.	Were adequate approval times included?		2.0		
e.	Were milestones for potential delay identified?		2.0		
f.	Was realistic contract period identified?		2.0		
g.	Were realistic permit periods identified?		2.5		good time periods shown
5	Resources (Subjective 3 - High to 0 - Low)	13%	0.7	9.3	
a.	Are details of arrangements with partners, subcontractors,etc. ok?		2.0		
b.	Is the bidder's staffing structure adequate?		2.0		
c.	Is the Project Management Staff adequate?		2.2		13+ yrs exp.most smaller projects
d.	Is the Construction staff experience adequate?		3.0		25+ yrs exp on large water projects
e.	Is the Design staff experience adequate?		2.0		
f.	Are the Bidder's site facilities adequate?		2.0		
g.	Will the contractor self perform much of the work?		2.0		
h.	Is the Commissioning staff experience adequate?		2.0		

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Exhibit C

ARIZONA AMERICAN WATER
PARADISE VALLEY DISTRICT

EVALUATION OF ARSENIC REMOVAL ALTERNATIVES

AMERICAN WATER WORKS SERVICE COMPANY, INC.
SYSTEM ENGINEERING
1025 Laurel Oak Road
Voorhees, New Jersey 08043
October 2003

INTRODUCTION

Arizona-American Water's (AAW) Paradise Valley District supplies potable water to approximately 4,600 customers in portions of the Town of Paradise Valley, City of Scottsdale, and unincorporated Maricopa County. The District obtains its water supplies from a total of seven wells situated in the City of Scottsdale along the eastern edge of the service area. Arsenic is present in all of the groundwater supplies at levels approaching or exceeding the 10 microgram per liter (ug/L) maximum contaminant level (MCL) that was recently promulgated by the US Environmental Protection Agency (EPA). Arsenic removal facilities will need to be installed and in service by the Arsenic Rule's effective date of January 23, 2006 to comply with the pending MCL. The purpose of this report is to review treatment technologies available for removal of arsenic from potable water supplies, and determine which treatment alternative is most appropriate for the Paradise Valley District.

BACKGROUND

Table 1 presents summary information about each of the seven wells serving the Paradise Valley District. The table shows that the average concentration of arsenic in all but two of the wells exceeds the 10 ug/L MCL. Further, although arsenic levels in Wells 17 and PCX-1 have averaged less than 10 ug/L, maximum arsenic levels in both wells are at or close to the MCL. In addition, both wells are impacted by other water quality issues that prevent them from being pumped directly into the distribution system. Specifically, the concentration of nitrate in Well 17 exceeds the drinking water MCL, so Well 17 must be blended with other supplies at the Miler Road Booster Station (MRBS) before being pumped into the distribution system. Well PCX-1 contains elevated levels of trichlorethylene (TCE) that must be removed prior to the distribution system. Flows from Wells 14, 15, and PCX-1 combine at the Miller Road Treatment Facility (MRTF) before being pumped into the distribution system. As a result, the concentration of arsenic at all existing points of entry into the Paradise Valley Distribution system may exceed the MCL of 10 ug/L.

Table 1
Summary of Select Well Characteristics – Paradise Valley District

Well ID	Year Drilled	Depth (ft)	Motor (HP)	Capacity (gpm)	Arsenic (ug/L)[1] Average	Arsenic (ug/L)[1] Maximum
11	1959	1,372	300	1,800	13.3	18
12	1962	1,301	300	1,800	11.4	13
14	1965	1,743	400	2,100	10.7	12
15	1969	1,430	400	2,100	10.9	14
16	1980	1,500	600	2,200	13.7	18
17	1993	1,145	600	2,500	8.7	10
PCX-1	1997	1,245	600	2,300	8.3	9
	TOTAL / AVERAGE[2]			**14,800**	**10.9**	**13.2**

1. Arsenic data are based on approximately 10 water quality samples collected between 1995 and 2002.
2. The overall average and maximum concentrations were calculated based on the flow-weighted capacity of each well.

Figure 1 presents a schematic overview of how the District's existing wells and treatment facilities are configured. Well PCX-1 is owned by the Salt River Project (SRP), but its supply is used by AAW in exchange for AAW's allocation of surface water from the Central Arizona Project (CAP) canal system. Well PCX-1 is operated on an almost continuous basis in an effort to prevent migration of TCE contamination to AAW's other wells.

In 1999, a Comprehensive Planning Study (CPS) was completed for the Paradise Valley District, which included projections of average and maximum daily demands through the year 2012. According to the CPS, average and maximum day demands in the Paradise Valley District may reach 11.3 mgd and 19.3 mgd, respectively, by the year 2012. The combined capacity of the seven wells serving the Paradise Valley District totals approximately 21.3 mgd (14,800 gpm), with a reliable production capacity of about 17.7 mgd (12,300 gpm) assuming the District's largest capacity well is out of service. Although the District has adequate reliable capacity to meet current maximum day demands, it was recommended in the CPS that AAW obtain a backup supply of water from another SRP-owned well (SRP-22.6) to ensure that adequate reliable capacity would be available in the future. Well SRP-22.6 is located on the opposite side of the Arizona Canal near Well 14. The concentration of arsenic in Well SRP-22.6 is not known at the present time, but was assumed to be equal to the highest concentration measured in the District's other existing well supplies.

AAW owns several parcels of property in the vicinity of its well facilities on Miller Road in the City of Scottsdale. The MRTF site consists of approximately 6 acres, bounded by Miller Road on the west, McDonald Drive on the north, the Arizona Canal on the east, and a private parcel to the south. Only a portion of the southern half of the site is currently in use, although space is reserved to allow for future expansion of the MRTF if groundwater contamination continues to migrate and impacts the District's other wells. The northern half of the property currently contains a storm water detention basin, but is otherwise undeveloped.

The MRBS site is made up of five contiguous parcels totaling approximately 11.5 acres. The site is bounded on the west by Miller Road, the east by the Arizona Canal, and the north and south by private parcels. Booster pumping equipment and associated water storage tanks and electrical facilities are positioned near the center of the property, with Wells 11, 12, and 16 spaced out along the Arizona Canal. A 2,500-square foot storage warehouse is also present near the center of the property. The remainder of the site is currently undeveloped. The Water Company is considering sale of a portion of this property if there is land available that is not required for arsenic removal facilities.

PRELIMINARY SCREENING OF TREATMENT ALTERNATIVES

There are several treatment technologies that are capable of removing arsenic from potable water supplies. Included in the Arsenic Rule was a list of seven technologies that USEPA has identified as Best Available Technologies (BAT) for the removal of arsenic from drinking water. Following is a list of the technologies identified by EPA as BATs:

1. Activated Alumina
2. Coagulation/Filtration

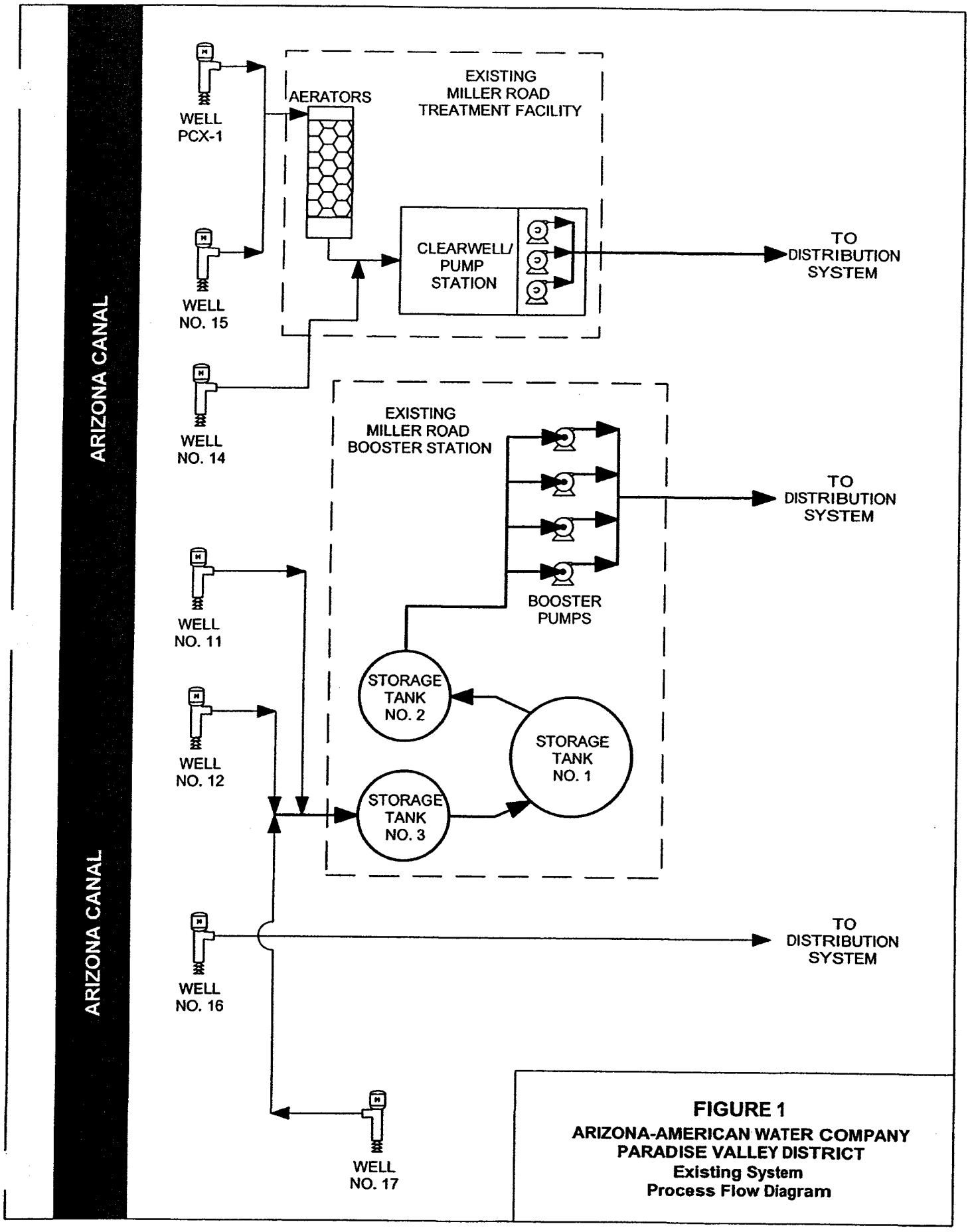


FIGURE 1
ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY DISTRICT
Existing System
Process Flow Diagram

3. Ion Exchange
4. Lime Softening
5. Reverse Osmosis
6. Electrodialysis
7. Oxidation/Filtration.

In February 2003, Arizona Department of Environmental Quality (ADEQ) published an Arsenic Master Plan (AMP) to help identify effective, low-cost methods for complying with the newly promulgated arsenic MCL. The AMP considers the technologies on US EPA's BAT list, as well as treatment with disposable, iron-based absorbent media, which is an emerging treatment technology that has been shown to be effective in numerous pilot studies, but has not yet been designated as a BAT by the US EPA. Iron-based absorbent media is referred to in the AMP and herein as granular iron media. This section provides a summary of each of the BAT processes, as well as granular iron media, and identifies which technology alternatives are feasible and/or likely to be cost-effective for the Paradise Valley District.

Several of these BATs, such as coagulation/filtration and lime softening, may only be feasible if applied as centralized treatment at the point of entry (POE) to the distribution system, whereas others may only be cost-effective if applied in small treatment devices at the point of use (POU). Some of these technologies, such as activated alumina or granular iron media, may be applied at individual wellheads, central POEs, or even in POU devices.

Naturally-occurring arsenic may be present in either a neutrally-charged, reduced state [arsenite – As(III)], or in a negatively charged, oxidized state [arsenate – As(V)]. Other complexed forms of arsenic are also possible, but inorganic arsenite and arsenate are most prevalent in groundwaters throughout the southwest. Many of the treatment technologies require dissolved arsenic to be in the form of negatively charged arsenate [As(V)] to achieve effective removal. If arsenic is present in its reduced (arsenite – As(III)] state, a pre-oxidation step may be required utilizing an oxidant such as chlorine or potassium permanganate.

ACTIVATED ALUMINA

The activated alumina (AA) process involves passing water containing arsenic through a bed of aluminum oxide media in a pressurized column or contactor. The media is positively charged; therefore it adsorbs negatively charged species, including arsenic. Arsenic bonds to the surface of this media until it is exhausted as indicated by the appearance of increased arsenic in the contactor effluent. When the media becomes exhausted, it can either be regenerated with a concentrated caustic solution, or disposed of and replaced. The effectiveness of AA systems may be compromised by elevated pH, with the optimum pH range being 5.5-6.0. Additional interference may be caused by silica, phosphate and sulfate ions in the raw water.

According to the ADEQ AMP, regenerable AA technology results in waste streams that may be considered hazardous and present disposal issues. Therefore, this technology was eliminated as a potential arsenic treatment option for all AAW sites.

The ADEQ AMP considers disposable iron-modified AA (Fe-AA) systems to be a feasible alternative for arsenic removal for raw water sources in Arizona. However, pilot

testing at AAW's Sun City West POE No. 1 revealed that Fe-AA did not perform as well as granular iron media. Similar results have been reported from pilot testing at a number of other locations. Although Fe-AA may cost less than granular iron media, it would require more frequent replacement, which would more than offset its lower unit cost. Therefore, disposable activated alumina was eliminated from further consideration for the AAW sites.

COAGULATION/FILTRATION

According to the AZDEQ AMP and numerous other research reports and guidance documents published by the USEPA, chemical coagulation in conjunction with granular media filtration or microfiltration (MF) can be an effective means for removing arsenic from ground water sources. If As(III) is present in the source water, it must be oxidized to the As(V) state prior to the treatment process. Common drinking water coagulants such as alum, ferric chloride, or ferric sulfate may be utilized. However, the iron-based coagulants are generally found to be more effective due to the greater affinity of arsenic to adsorb onto the resulting ferric-hydroxide floc. If iron is present in the source water, it may be precipitated by oxidation, adsorbing arsenic similarly to the iron-based coagulants.

A sedimentation step is typically not required because relatively low doses of ferric chloride are necessary, unless raw water arsenic or iron concentrations are extremely high. Provisions should be made to ensure efficient and effective mixing of the coagulant in the water. After the oxidation and coagulant addition steps, a granular media filter or microfilter removes the resulting floc. Closed, pressure vessel-style filters are typically used so that a subsequent downstream pumping step can be avoided. Open gravity filters are most suitable for larger capacity facilities.

Both granular media and MF systems will experience headloss due to the accumulation of solids on the media or within the microfilter. Terminal headloss requires backwashing of the filters to remove entrapped solids. Backwash wastewater may either be treated and recycled or disposed of. Disposal options included discharging to the sanitary sewer, or discharge to surface or groundwater. Equalization of backwash wastes is typically required as part of recycle or sewer disposal alternatives. In systems where the volume of water discharged to waste is a concern, it is desirable to recover a portion of the backwash water by discharging to a settling tank and recycling the decant water to the head of the plant. Settled solids may be thickened and discharged to the sanitary sewer, if allowed, or dewatered for disposal at a landfill.

MF systems are higher in cost than granular media systems, and the AZDEQ AMP does not consider MF systems to be feasible due to their high cost and level of operational complexity. Therefore, MF systems were eliminated from consideration for the AAW sites. However, coagulation with granular media filtration is a viable option for treatment of arsenic, particularly at the larger (> 5 MGD) AAW sites. This process is currently employed to remove arsenic from water supplies at American Water's Kokomo, Indiana Water Treatment Plant.

ION EXCHANGE

Ion exchange (IX) is a physical-chemical process in which ions are exchanged between a liquid solution phase and a solid resin phase. A strong-base anion exchange in

chloride form is effective in removing As(V). If As(III) is present in the source water, it must be oxidized to the As(V) form upstream of IX.

Arsenic removal is accomplished by passing water under pressure through one or more columns packed with resin beads. As the water passes through the resin, chloride anions are swapped for other anions, including arsenate, sulfate, and nitrate. The efficiency of the arsenate removal is dependent upon the concentration of these competing anions. High levels of total dissolved solids may negatively affect the arsenic removal performance of IX.

Sulfate is removed preferentially to arsenate; therefore, the IX resin must be regenerated prior to sulfate breakthrough. Bicarbonate is also removed initially, so there may be a drop in pH and alkalinity when the column is initially placed in service. An additional concern with IX systems for arsenic removal is a phenomenon known as chromatographic peaking. This occurs when the resin is "exhausted" and begins to exchange less preferentially sorbed ions such as arsenate and nitrate for sulfate. When this occurs, the desorbed ions exiting the resin bed will be present at a higher concentration than in the influent.

Passing a brine solution through the column followed by a clean water rinse regenerates the resin. The resulting waste brine solution will likely contain arsenic concentrations that exceed the 5 mg/L threshold for classification as a hazardous waste. Therefore, the AZDEQ AMP does not recommend use of this technology. Considering the hazardous waste issue, as well as the potential for pH impacts and chromatographic peaking, IX is not considered to be a feasible alternative for any of the AAW sites.

LIME SOFTENING

Lime softening is a physical-chemical process that removes calcium and magnesium cations from solution. Lime addition increases the pH of the water, which results in the precipitation of calcium carbonate and magnesium hydroxide. Arsenic can be removed by co-precipitation of As(V) with magnesium hydroxide. According to the EPA Arsenic Treatment Design Manual for Small Systems, these particulates precipitate in the presence of excess lime when the pH is 10.5-11. The particles can then be removed by traditional clarification and filtration methods.

Lime softening is considered by the EPA to be cost-prohibitive as a primary arsenic treatment technology, and should only be considered by systems that already use lime softening to reduce hardness. None of the AAW wells of concern currently employ or require softening; therefore, it is not considered a viable option for AAW.

REVERSE OSMOSIS

Reverse osmosis (RO) is a high-pressure membrane separation process that removes contaminants by both physical and electrostatic means. RO utilizes semi-permeable membranes enclosed in a cartridge through which pure water moves while contaminants are rejected continuously from the upstream side of the membrane.

RO is typically able to remove greater than 95% of As(V) in source water. In addition, the technology also effectively removes TOC, salts, and other dissolved minerals. However, the process requires that as much as 20 to 40 percent of the total water supply

be wasted on a continuous basis to carry away the dissolved solids that cannot pass through the membrane. In addition, pressures of 100-350 psi, depending on raw water TDS concentration, must be maintained as the driving force upstream of the membranes, resulting in high energy costs.

Due to these concerns, the AZDEQ AMP does not recommend RO systems as a primary arsenic treatment technology. This technology will not be considered for use at any of the AAW arsenic treatment sites.

ELECTRODIALYSIS

Electrodialysis utilizes selectively permeable membranes and an electric current to separate cations and anions from water. The current is reversed periodically to help reduce membrane fouling. Electrodialysis can achieve high removal of total dissolved solids, although electrodialysis systems are typically more expensive than RO and have not been used extensively for drinking water treatment. In addition, only limited demonstration testing has been conducted to date, so the effectiveness for removal of arsenic is not well known. For these reasons, electrodialysis is not considered for use at any of the AAW treatment sites.

OXIDATION/FILTRATION

Oxidation/Filtration is a granular media filtration process where a greensand media facilitates oxidation and the precipitation of iron and manganese in the source water. This technology is similar to the coagulation/filtration process discussed previously in that arsenic is removed by adsorption to and filtering of iron precipitates. Chlorine or potassium permanganate are fed upstream of the filters, serving the dual purpose of oxidation and regeneration of the greensand media. Coagulant addition is typically not required, as this process relies on the native iron content in the source water. As the iron is oxidized, arsenic is removed by adsorption/co-precipitation with the resulting ferric hydroxide precipitate.

The removal efficiency varies with the initial iron concentration and iron to arsenic ratio in the source water. According to the EPA Arsenic Design Manual for Small Systems, iron should be present at 1.5 mg/L or greater, and the iron to arsenic ratio should be at least 20:1 on a mass basis. The process may be enhanced by the addition of an iron salt coagulant.

AAW's wells generally exhibit raw water iron concentrations significantly less than the above referenced 1.5 mg/L level. Therefore, supplemental ferric coagulant addition would be required to make the process work. It is recommended that traditional dual media filtration be employed as opposed to the more costly greensand media at AAW sites for which a filtration technology is feasible.

GRANULAR IRON MEDIA

Iron-based sorbents such as Severn-Trent's Bayoxide E33 (E33) and US Filter's Granular Ferric Hydroxide (GFH) media are emerging technologies for removing As(V) from source waters. Although neither of these proprietary media are currently recommended as a BAT by the USEPA, both are gaining wide acceptance due to their

ability to treat more bed volumes relative to alumina-based sorbents. The AZDEQ AMP recommends these iron-based sorbents for arsenic treatment.

Similar to AA systems, this process involves passing water containing arsenic through a bed of iron-based media in a pressurized column or contactor. Arsenic bonds to the surface of this media until it is exhausted as indicated by the appearance of increased arsenic in the column effluent. When the media becomes exhausted, it is to be disposed of and replaced. Previous studies indicate that spent media is below the Toxicity Characteristic Leaching Procedure threshold for hazardous wastes.

As evidenced by pilot testing conducted as part of a joint American Water Works Research Foundation (AWWARF)/US EPA research project at AAW's Sun City West Water Plant No. 1, iron-based sorbents tend to be more effective than AA or Fe-AA at pH levels up to 8.0. Competing constituents such as phosphate, sulfate, vanadium, and silica may compromise the arsenic removal capacity of iron-based sorbents. The impact of silica interference decreases with decreasing pH, with the optimum level being in the 5.5-6.0 range for waters with silica levels exceeding 50 mg/L. In this case, a pH adjustment step should be considered to optimize the life of the media bed.

The media bed must be backwashed prior to initial operation to remove fines, and as necessary to reduce headloss through the column during normal operation. Disposal options include equalization with discharge to nearby sanitary sewer system (if available) or a backwash storage/settling tank with decant recycle. Settled solids may be hauled, discharged to nearby sanitary sewer, or dewatered and disposed of in a sanitary landfill.

Due to the excellent arsenic removal performance for a wide range of raw water quality conditions, iron-based adsorptive media will be considered for use at the AAW sites.

EVALUATION OF SELECTED ALTERNATIVES

Based on the preceding analysis, granular iron media and ferric chloride coagulation/ filtration are the preferred arsenic treatment alternatives for the Paradise Valley District. The other treatment alternatives are problematic and/or not cost-effective. An in depth analysis of each of these two process alternatives is presented in the sections that follow. Several factors were evaluated, including the following:

- Facility design configurations
- Treatment capacity requirements
- Land area requirements
- Waste handling and disposal
- Operational factors, such as reliability, flexibility, and complexity
- Construction cost
- Operating and maintenance (O&M) cost

GRANULAR IRON MEDIA

Granular iron media treatment is a fairly simple process wherein water is pumped through a fixed bed of manufactured granular media. As the water flows through the

bed, arsenic that is in the +5 (oxidized) state is adsorbed onto the granular media. Oxidation is required if the arsenic is in a reduced (+3) state. Chlorine is typically used, although other chemical oxidants such as potassium permanganate may also be effective. Periodically, the bed needs to be backwashed to remove silts or media fines that accumulate on the surface of the bed during operation. As the mass of arsenic and other competing ions, such as silica and phosphate, accumulate on the media, the adsorptive capacity of the media diminishes. Granular iron media is non-regenerable, so the media must be replaced and disposed of once its arsenic adsorption capacity has become exhausted.

Facility Design Configurations

There are several different ways that granular iron media treatment could be deployed in the Paradise Valley District, including as individual treatment systems for each well, a centralized treatment facility for all of the supplies, or a combination of individual and/or combined treatment facilities. A number of different process treatment configurations are also possible, including single-stage (parallel) or two-stage (series) treatment, and split-stream treatment with finished water blending. Deciding which configuration is best takes into consideration both construction and O&M costs, as well as other factors such as reliability (redundancy), land availability, and impact on neighboring property owners.

Individual Versus Central Treatment

Generally, it is more cost-effective to construct a single, large capacity treatment facility rather than multiple smaller capacity facilities. However, depending on the cost of transmission mains and the availability of space for a centralized facility, it may be that multiple smaller capacity treatment facilities would be more feasible or cost-effective. As was shown in Figure 1, supplies from the seven wells serving the Paradise Valley District are already consolidated into three points of entry (POEs). Further, Well 16 is located adjacent to the MRBS site and piping is already in place to allow its flow to be routed through the MRBS facility. Since adequate land is available at both central locations, it can safely be assumed that constructing centralized treatment facilities at the MRTF and/or MRBS would be substantially more cost effective than placing treatment facilities at the individual wellheads.

It may also be possible that constructing a single larger capacity facility at one of these locations would be less costly than two separate facilities, even considering the cost of transmission mains to convey the raw and finished water supplies to/from the central treatment location. Constructing a single facility would reduce the neighborhood impact. Although the level of redundancy would be reduced somewhat, a single centralized treatment facility would include a sufficient number of treatment units, redundant equipment, and backup power to ensure adequate system reliability.

Consideration should also be given to the possibility that existing TCE contamination could affect the District's other well supplies in the future. If that occurs, some of the supplies currently handled at the MRBS may need to be routed to the MRTF for treatment. If two separate arsenic treatment facilities were constructed, the increased flow to the MRTF would either need to be returned to the MRBS for subsequent arsenic treatment, or the capacity of the arsenic treatment facility at the MRTF would need to be increased. Having a single central treatment facility would likely make future expansion of the MRTF easier, and reduce the overall cost since piping would already be in place

to convey flows from the aeration facility at the MRTF to the arsenic treatment facility at the MRBS.

Single-Stage Versus Two-Stage Treatment

Single-stage granular iron media treatment systems are designed with one or more treatment units operating in parallel. With multiple units operating in parallel, the media replacement cycles can be staggered, so that the low arsenic effluent from virgin media units can be blended with the higher arsenic effluent from the spent media units to produce a finished water meeting the target arsenic concentration. Operating in this staggered mode can promote more complete use of the media's adsorptive capacity than if all of the media is replaced at the same time.

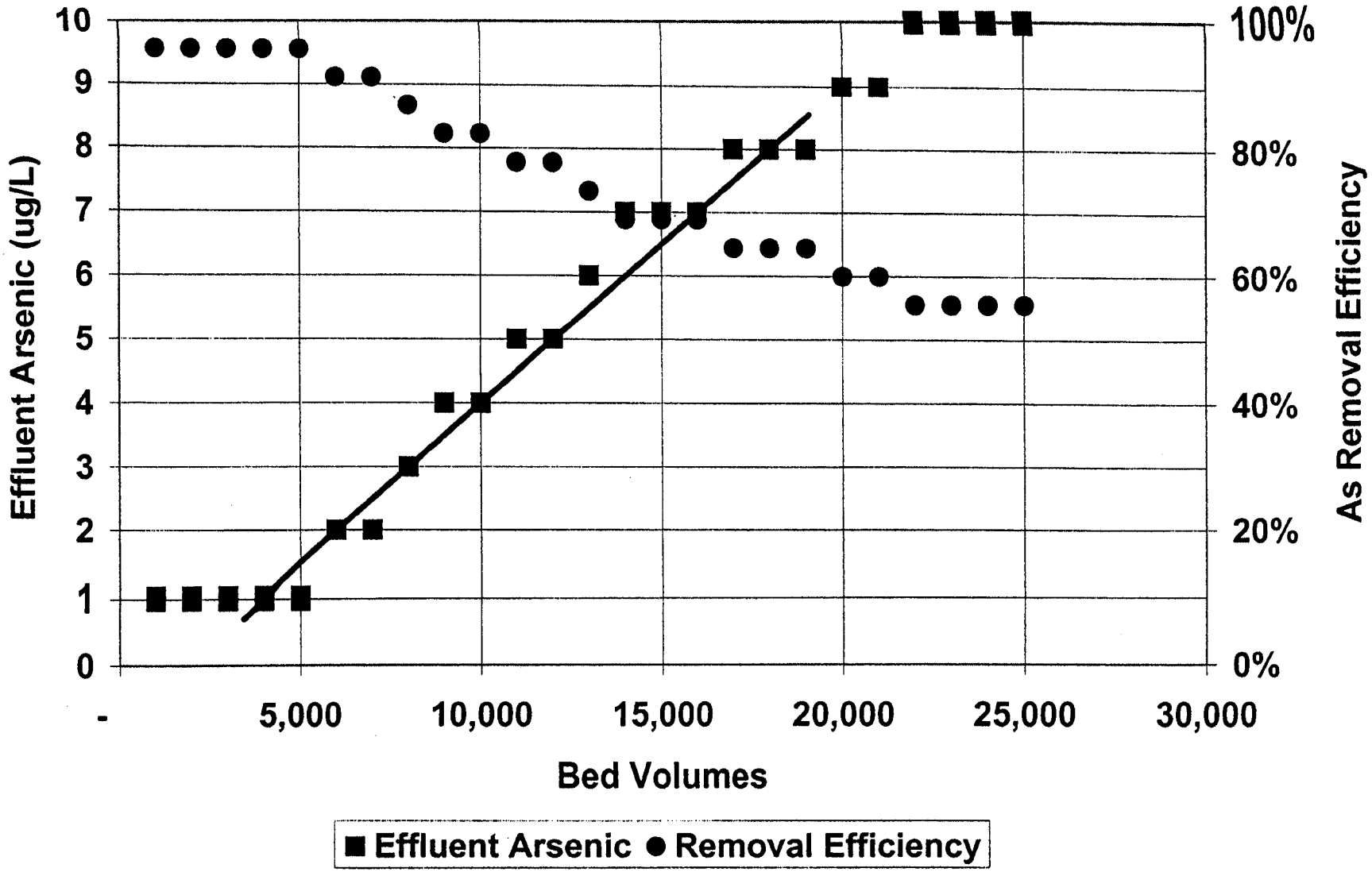
Two-stage systems are designed with two treatment vessels operating in series. Multiple two-stage units can operate in parallel to achieve the required total treatment capacity. Two-stage systems continue to operate for a period of time after the effluent arsenic from the first stage has exceeded the target final effluent concentration. Doing so allows the media in the first-stage vessel to continue to remove a fraction of the total arsenic load. The media in the first-stage vessel is then replaced, and the vessel is placed back into service as the second-stage unit.

The decision to use a single-stage system versus a two-stage system is typically based on the arsenic removal efficiency that is required, as well as capital and O&M costs. At start-up, effluent arsenic concentrations from both single-stage and two-stage systems are typically below detection. Arsenic "break through" eventually occurs as more and more of the adsorption sites becoming occupied by arsenic and/or other competing adsorbates. A two-stage system can maintain low effluent arsenic concentrations on a more consistent basis than a single-stage system because the second stage media bed removes the arsenic that is present in the effluent from the first stage unit. As a result, two stage systems are necessary where a consistently high level of arsenic removal is required, such as in systems with high raw water arsenic concentrations (typically greater than 20 ppb).

Two-stage systems also allow for more complete use of the media's arsenic removal capacity, since the first stage bed can continue to operate and remove a fraction of the arsenic load even when the concentration of arsenic exiting the first stage exceeds the target finished water value. However, two-stage units typically require a higher initial capital investment due to the greater volume of media, additional vessels, and more complex piping and controls. For waters with arsenic concentrations of less than about 15 ug/L, the payback period may be too great to justify the higher initial capital investment for a two-stage system.

Pilot testing of a single-stage granular iron media system was conducted in 2002 at AAW's Sun City West Point of Entry (POE) No. 1 as part of an Implementation Feasibility Study performed for AWWARF and the US EPA. Figure 2 shows the results from the pilot test, which was conducted using granular ferric hydroxide (GFH), a proprietary iron-based absorbent media supplied by US Filter. Initially, arsenic levels in the effluent from the granular iron media pilot unit were below detection, translating into an arsenic removal efficiency of greater than 95%. As the pilot test progressed, "break through" occurred and the arsenic level in the effluent steadily increased. Arsenic removal efficiency dropped below 95% after treating the equivalent of about 5,000 bed

Figure 2
AZAWC - Sun City West Pilot Test
Granular Iron Media Performance



volumes (BVs) of raw water, and effluent arsenic exceeded 8 ug/L after about 19,000 BVs. Due to the relatively high concentration of arsenic in the raw water supplies in the Sun City West system, a two-stage system may be recommended. However, for the Paradise Valley system, the number of bed volumes that could be treated prior to breakthrough is expected to be significantly greater because the concentration of arsenic and the pH of the raw water supply are substantially lower than in Sun City West. Therefore, a single-stage system is expected to be sufficient for Paradise Valley.

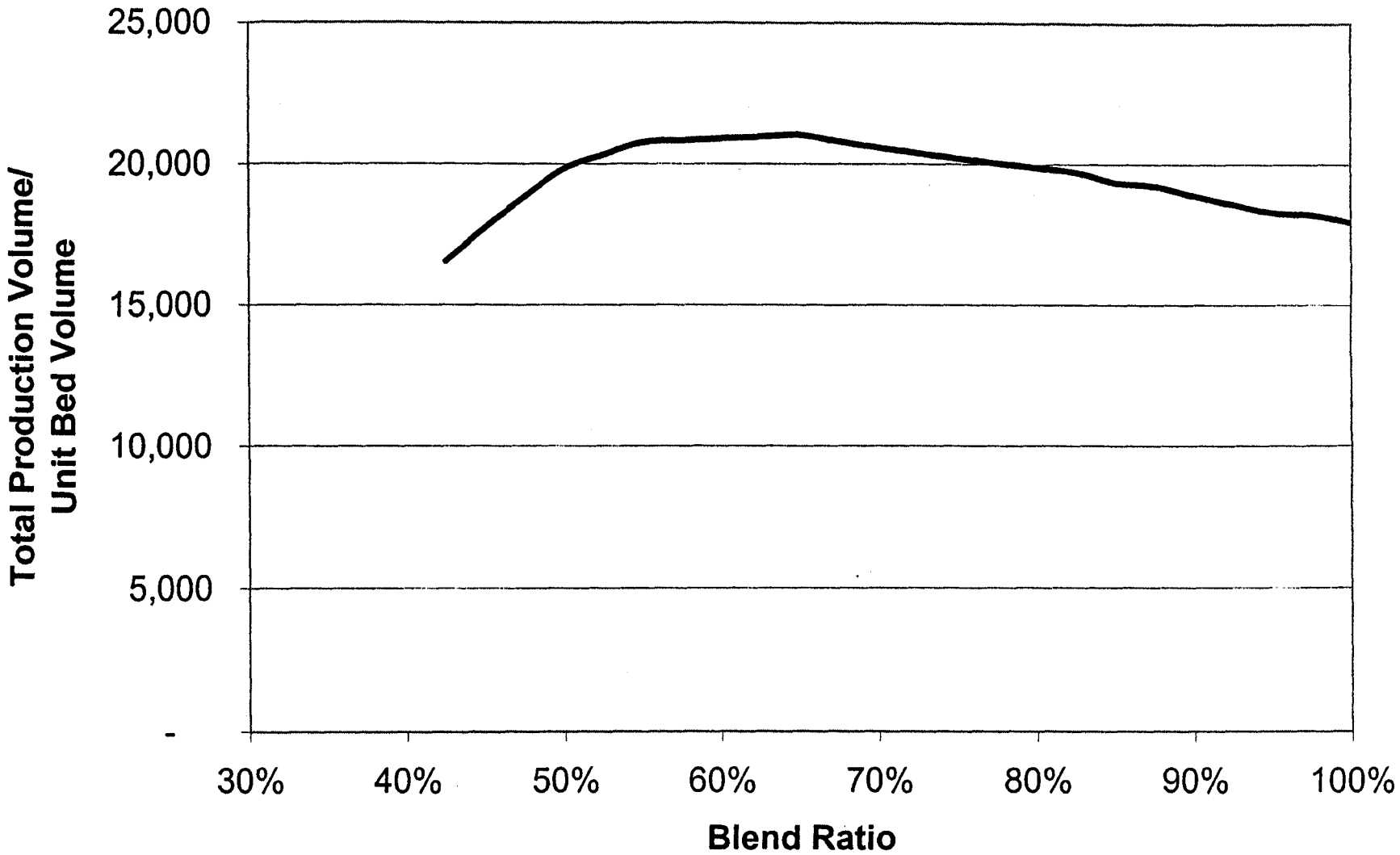
Blending

Since granular iron media systems are able to produce treated effluent that is well below the MCL, consideration can be given to treating only a portion of the total flow, and blending the treated effluent with the remainder of the raw water to meet the target finished water arsenic concentration. By blending, the size of the granular iron media treatment system can be reduced. However, blending is most applicable to two-stage systems, because the concentration of arsenic in the effluent from the treatment units can be maintained at a consistently low enough level that blending with raw water will still allow compliance with the MCL. For single-stage systems, staggering media replacement cycles can similarly help stabilize effluent arsenic concentrations, but the concentration of arsenic will still vary over a wider range than in a two-stage system. Therefore, blending with a single-stage treatment system is generally only practical when the raw water arsenic is fairly low (less than about 12 ug/L). In addition, blending requires that the media be replaced sooner after breakthrough than in a system designed to treat 100 percent of the flow. For example, if a water supply contained 12 ug/L of arsenic (similar to the average concentration in the Paradise Valley District supplies) and the target finished water concentration were 8 ug/L, a granular iron media system sized to treat 67 percent of the flow would require media replacement when the treated arsenic level reached 6 ug/L. If the system were designed to treat 100 percent of the flow, the media would not have to be replaced until the treated effluent arsenic reached 8 ug/L.

Although the data presented in Figure 2 are from the Sun City West pilot study, the shape of the performance curve is typical of most granular iron media systems, and the values can be used to illustrate how blending can be effective when raw water arsenic concentrations are low. Figure 2 shows that effluent arsenic levels did not exceed 6 ug/L until after approximately 13,500 BVs of flow had been treated. Thus, if the system were designed to treat two-thirds of the flow, the total volume of finished water that could be produced per unit volume of media would be in the range of 20,100 BVs. By comparison, the media in a system designed to treat 100 percent of the flow may only produce a total of only 19,000 BVs, since that is the point when effluent arsenic exceeded 8 ug/L.

Figure 3 was developed based on the data shown in Figure 2 by dividing the total volume of finished water produced by the volume of media required to treat the percentage of the total flow shown. As indicated in the preceding example, the maximum finished water production volume per unit volume of granular iron media would be achieved if the facility were designed to treat only about 65% of the total flow. Thus, the initial capital expenditure could be significantly reduced without increasing the total amount of media consumed per unit volume of finished water. Costs for media handling would be somewhat greater because media replacement would be required more

Figure 3
AZAWC-Sun Ciy West Granular Iron Media Pilot Test
Theoretical Production Capacity versus Blend Ratio



frequently, but the increased handling costs would be more than offset by the reduced capital cost and the more efficient media usage.

With the concentration of arsenic in Paradise Valley's well supplies being substantially lower than in the Sun City West supply, it is expected that a greater unit rate of finished water production could be achieved with a single-stage system by treating only a portion of the raw water supply. If granular iron media was the selected option, it would be recommended that pilot testing be conducted to verify the most optimum process configuration.

Treatment Capacity Requirements

Based on the preceding analysis, it appears that one or two central treatment facilities would be most appropriate for the Paradise Valley District. It is recommended that the target concentration for arsenic in the finished water entering the distribution system be set at 80 percent of the MCL or 8 ug/L. The treatment system(s) should be sized to reliably meet the target finished water arsenic concentration on the maximum day (demand) at raw water arsenic concentrations up to 20 percent greater than the maximum historic measurement. Although there is already a factor of safety built into the design by targeting a finished water arsenic concentration that is 20% below the MCL, it is intended to minimize the possibility of an MCL violation due to inaccuracies in blending and/or unanticipated drops in arsenic removal efficiency. Applying the additional factor of safety to the raw water arsenic data is proposed since the number of sample results that were available for calculating the historic average and maximum concentrations was limited. Also, there is the possibility that raw water arsenic levels may increase over time as water levels in the aquifers serving the Phoenix area continue to subside.

Table 2 presents a summary of the projected design capacity for the centralized treatment facility alternatives. For the two-separate central facilities option, each facility was assumed to be sized to handle the full capacity of all of the wells directed to the respective facility. For the single central facility option, treatment capacity is based on meeting the future maximum day demand that was projected in the most recent Comprehensive Planning Study (CPS) for the Paradise Valley District.

According to design information available from manufacturers of granular iron media systems, single-stage systems should be designed for nominal surface loading rates of 5 gpm/sf to 7 gpm/sf. Assuming a maximum available vessel diameter of 12 feet, the maximum rated capacity for an individual vessel would be in the range of 565 to 800 gpm. American Water's standard is to design treatment systems to allow for at least one train/unit to be out of service at nominal plant capacity. Thus, a total of 8 to 12 treatment units would be required for each of the separate MRTF and MRBS facilities, depending on the design surface loading rate selected. A single central facility would require between 12 and 18 individual treatment units depending on the design surface loading rate.

Table 2
Centralized Treatment Facility Capacity Requirements

Well/ Facility	Total Well Capacity (gpm)	Proposed Treatment Capacity (gpm)	Proposed Treatment Capacity (mgd)	Projected Average Use (mgd)	Arsenic (ug/L) Average	Arsenic (ug/L) Max/ Design
11	1,800	-	-	2.0	14	22
12	1,800	-	-	2.0	11	15
16	2,200	-	-	1.0	13	21
17	2,500	-	-	0.5	9	12
MRBS	8,300	5,600	8.1	5.5	12	17
14	2,100	-	-	1.2	11	15
15	2,100	-	-	1.5	11	17
PCX-1	2,300	-	-	3.0	9	11
SRP-22.6[1]	2,100	-	-	0.1	14	22
MRTF	8,600	5,800	8.4	5.8	10	16
Central	13,400	9,000	13.0	11.3	11	17

1. Assumes SRP-22.6 capacity equals 2,100 gpm with average and maximum arsenic concentration equal to the maximum values for the other wells.

Land Area Requirements

Figures 4A and 4B present a schematic of the two alternative centralized treatment facility configurations. Both the MRTF and MRBS have adequate space available to accommodate a separate central treatment facility sized to treat well supplies handled by the respective facilities.

Currently, AAW maintains administrative facilities that are separate from its supply and production facilities at the MRTF and MRBS. AAW is planning to consolidate its operations by including space for administrative activities in the layout of the arsenic treatment facilities. The existing conditional use permit (CUP) for the MRTF site limits the number of workers that are allowed to work on the site on a regular basis. Based on their experience obtaining the original CUP for the MRTF site, AAW anticipates that there will be significant public resistance to modifying the CUP for the MRTF. Therefore, administrative facilities would need to be located at the MRBS if two separate treatment facilities were constructed.

If a single central treatment facility was selected, it would likely only be feasible to locate it at the MRBS site because of the anticipated difficulties associated with modifying the existing CUP at the MRTF.

Waste Handling and Disposal

A major advantage of granular iron media systems is that waste production is minor relative to many other arsenic treatment technologies. The process requires only periodic backwashing to remove media fines and suspended solids that accumulate during the treatment process. Backwash frequencies typically vary between 30 and 90 days, depending on the amount of particulate matter present in the raw water. As a result, the volume of wastewater produced as a percentage of the process throughput is

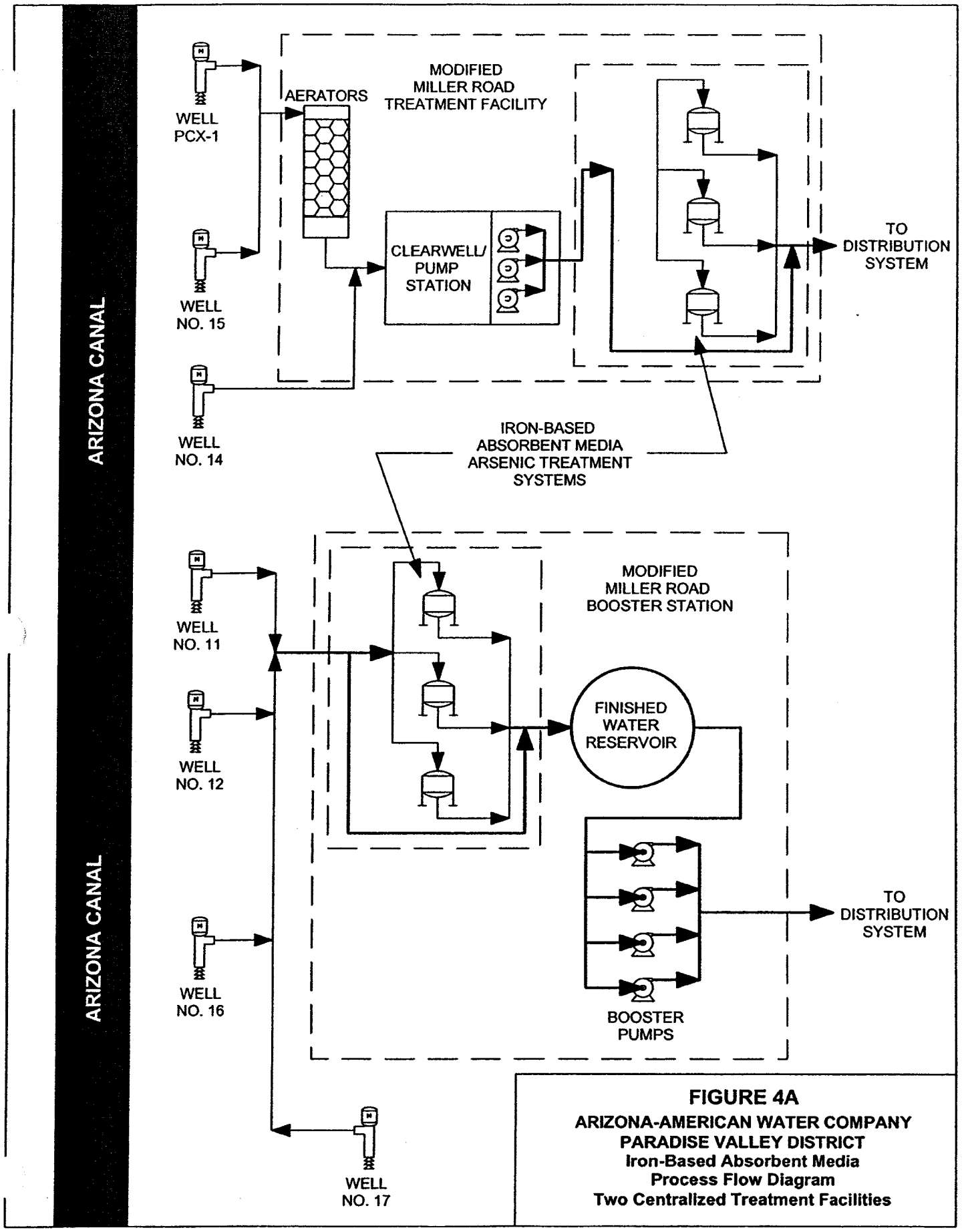


FIGURE 4A
ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY DISTRICT
Iron-Based Absorbent Media
Process Flow Diagram
Two Centralized Treatment Facilities

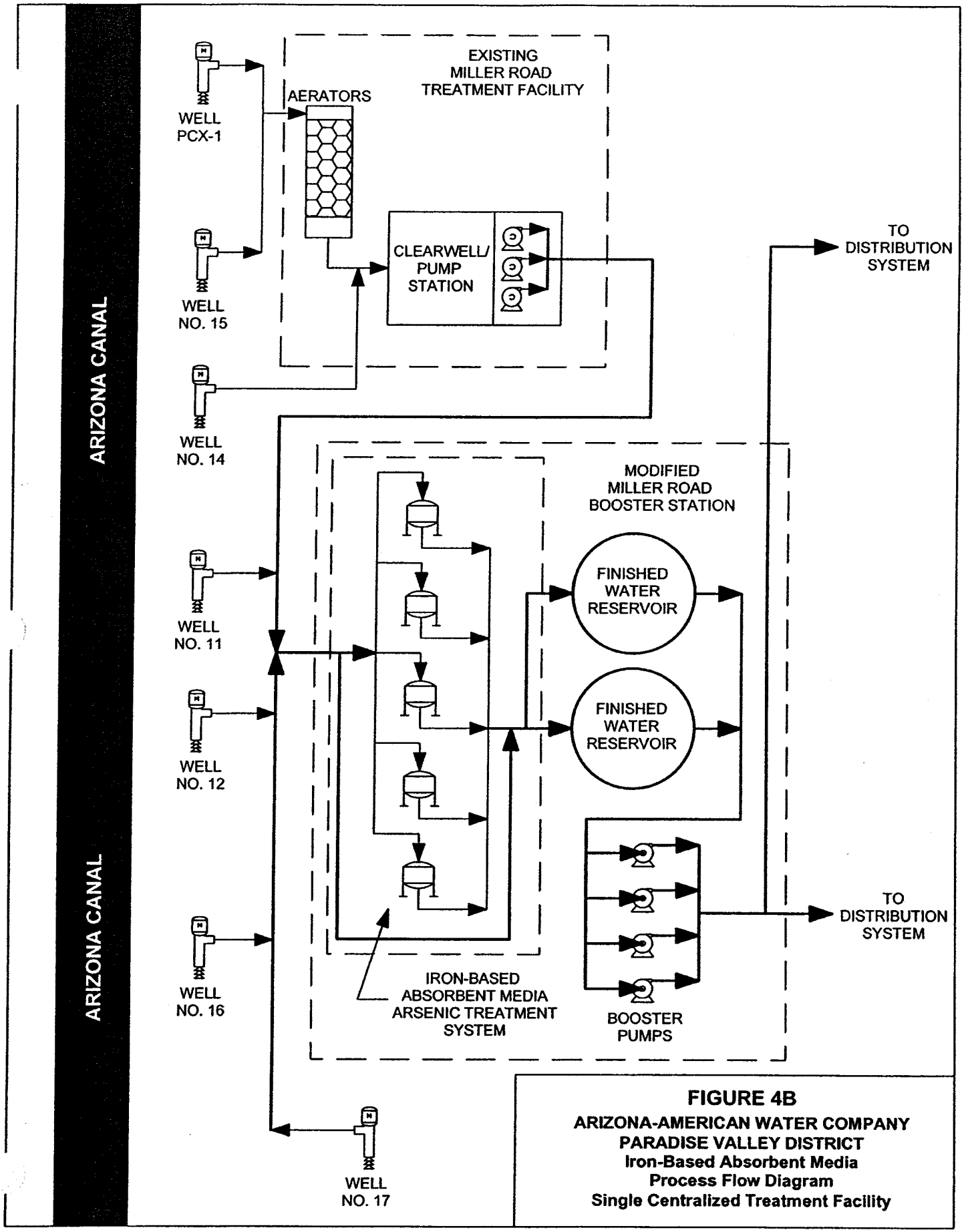


FIGURE 4B
ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY DISTRICT
Iron-Based Absorbent Media
Process Flow Diagram
Single Centralized Treatment Facility

very small. The concentration of arsenic in backwash waste is also typically low because the arsenic that is adsorbed on the media is not washed off to any appreciable extent. As was discussed in the preceding section, possible disposal options for backwash wastes include discharge to the sanitary sewer and recycle back to the process.

The City of Scottsdale owns and operates the sanitary sewer system that serves the MRBS and MRTF facilities. It is not known at this time if the City of Scottsdale would permit the discharge of backwash waste to the sanitary sewer system. If granular iron media treatment appears to be a cost-effective alternative, the City should be contacted to determine if sewer disposal would be acceptable.

Regardless of whether sewer disposal is acceptable or not, consideration should be given to recycling settled backwash wastewater to further minimize the volume of waste that would be produced. At the present time, a formal decision has not been published by AZDEQ as to whether recycle of backwash from granular iron media systems is acceptable. However, it is expected that AZDEQ will approve of backwash recycle, particularly in cases where sewer disposal is not feasible. It is expected that precautions will need to be taken to prevent bacteriological contamination of the recycle stream by providing covers for equalization/storage tanks.

The only other waste produced through the process is the granular iron media itself. In small facilities, media is typically withdrawn from the vessels directly into tank trucks for offsite disposal. For larger installations, facilities can be provided to stockpile virgin and spent media onsite to facilitate media replacement scheduling. Spent media is classified as non-hazardous due to its relatively low concentration of arsenic on a dry unit weight basis and the fact that arsenic does not leach out of the media. As a result, spent media can be disposed of at a non-hazardous landfill.

Operational Factors

Reliability

Although granular iron media is a relatively new technology, several full-scale facilities are in service in Europe. In addition, numerous pilot studies have been conducted in Arizona and elsewhere in the US, including at several American Water sites, which have shown process performance to be consistent and predictable. Both GFH and E33 have been certified by the National Sanitary Foundation as acceptable for use in potable water treatment. In addition, granular iron media is identified in the AMP as a suitable technology for removing arsenic from groundwater supplies in Arizona, and the other hardware components, such as pressure vessels, underdrain systems, and automated valves, are commonly used in the water treatment industry. Therefore, granular iron media treatment is expected to offer a high degree of reliability.

Flexibility

Granular iron media systems are able to accommodate a wide range of influent arsenic concentrations. In addition, due to the modular nature of the pressure vessels, systems can be easily designed to accommodate future expansions.

Complexity

Granular iron media systems are fairly simple to understand and operate. Two-stage systems require somewhat more complex piping arrangements, however, the process generally does not require intensive operator attention.

Construction Cost

Preliminary cost estimates were developed to assess how the cost of a single large capacity granular iron media treatment facility would compare to the cost of separate treatment facilities at the MRTF and MRBS. The analysis considered whether the cost of the raw and finished water transmission mains required under the single central facility option would offset the added cost associated with two separate facilities. The MRBS and MRTF are located approximately 2000 feet apart on Miller Road. It was assumed that two parallel 2,500-foot-long, 24-inch diameter transmission mains would be required to convey supplies to/from the MRTF to a central arsenic treatment at the MRBS. At an installed cost of approximately $150 per liner foot, the transmission mains would cost a total of approximately $750,000.

Based on the information presented in the preceding section on facility capacity requirements, a total of 16 treatment units would be required under the two-facility option, as compared to just 12 units in a single central facility. According to budgetary cost information furnished by Severn Trent, the furnishing of 4 additional adsorptive media vessels plus two sets of control systems would cost in the range of $1.3 million. There would also be other added costs associated with constructing two separate treatment facilities that would further increase this cost differential. Thus, constructing a single central treatment facility at the MRBS would be far less costly than constructing two separate central treatment facilities.

Table 3 presents a summary estimate of probable construction cost for a single central granular iron media treatment facility to serve the entire Paradise Valley District. The cost includes the following major facility components:

- Single masonry building to house treatment units, distributive pumping equipment, electrical distribution equipment, chemical feed facilities, and administrative functions
- Seventeen 12-foot diameter granular iron media units
- Two 1-million gallon steel finished water storage reservoirs
- Distributive pump station with can-type vertical turbine pumps
- Bulk hypochlorite storage and feed facility
- New electrical service, power distribution switchgear, MCC, and standby generator
- Backwash waste holding and recycle facilities
- Miscellaneous site improvements, including perimeter wall, paving, etc.

O&M Cost

Table 4 presents an estimate of the annual O&M cost for a granular iron media system. The cost was based on the following major operating expenses:

Table 3
Arizona-American Water Company - Paradise Valley District
Granular Iron Media Treatment Facility
Estimate of Probable Construction Costs

	Division/Item	Unit of Measure		Unit Cost		Extended Total
1	Mobilization/Bonds/Insurance	2%	of subtotal	$12,920,770		$269,230
2	Sitework					
	24" RW and FW transmission piping	5,000	LF	$150	/LF	$750,000
	Perimeter wall	2,100	LF	$95	/LF	$199,500
	Driveways/pavement	1,389	SY	$72.00	/SY	$100,000
	Bldg excavation	2,042	CY	$12.73	/CY	$25,996
	B/W holding tank excavation	509	CY	$12.73	/CY	$6,480
	B/W holding tank backfill	140	CY	$25.00	/SY	$3,500
	Miscellaneous site improvements	2.5%	of sitework	$1,085,476		$27,137
3	Concrete					
	Building slab	1021	CY	$500	/CY	$510,507
	B/W holding tanks	120	CY	$500	/CY	$60,050
5-9	Building, Misc. Metals, Etc.					
	Building	19,200	SF	$150	/SF	$2,880,000
	Paint	1	allowance	$300,000	allowance	$300,000
11	Equipment					
	Granular iron media and vessels	17	Vessels	$175,000	/EA	$2,975,000
	Onsite hypochlorite generator	1	LS	$172,000	/EA	$172,000
	Washwater pumps	2	EA	$12,500	/EA	$25,000
	B/W recycle canned LS	2	LS	$60,000	/EA	$120,000
	Distributive pumps (4 mgd)	3	EA	$26,000	/EA	$78,000
	Distributive pumps (8 mgd)	2	EA	$43,000	/EA	$86,000
13	Special Construction					
	Twin 1-MG Ground Reservoirs	2	EA	$600,000	/EA	$1,200,000
	B/W Holding Tanks	2	EA	$90,000	/EA	$180,000
15	Mechanical					
	MOVs	7	MOVs	$5,000	/EA	$35,000
	Large Manual Valves	48	valves	$4,000	/EA	$192,000
	Exposed Plant Piping (CLDIP)	720	LF	$100	/LF	$72,000
	Plant Process Pipe Fittings (CLDIP)	260	fittings	$1,000	/fitting	$260,000
	Hydropneumatic Tanks and Yardpiping	1	LS	$160,000	/EA	$160,000
	Misc Piping and Equipment Installation	20%	of eqpt sub	$3,456,000	sub	$691,200
16	Electrical					
	MCC	6	sections	$20,000	/section	$120,000
	Washwater pump VFDs	2	total	$8,000	/VFD	$16,000
	Distributive pump VFDs	5	total	$35,000	/VFD	$175,000
	Emergency Generator	1	LS	$200,000	/EA	$200,000
	SCADA system	1	LS	$500,000	/EA	$500,000
	Installation & conducits/conductors	20%	of eqpt & M	$4,002,000		$800,400
	CONSTRUCTION SUBTOTAL					**$13,190,000**
	Engineering	8%	of construction subtotal			$1,030,000
	Contingency	20%	of construction subtotal			$2,640,000
	AFUDC	7%	of construction subtotal			$940,000
	PROJECT TOTAL					**$17,800,000**

Table 4
Arizona-American Water Company - Paradise Valley District
Granular Iron Media Treatment Facility
Estimate of Annual Operation and Maintenance Costs

Item	Unit of Measure	Unit Cost	Extended Total
Power			
Pumping	258,405 kW-hr/yr	$0.08 /kW-hr	$20,672
Onsite hypochlorite generation	268,943 kW-hr/yr	$0.08 /kW-hr	$21,515
Misc. low voltage	131,837 kW-hr/yr	$0.08 /kW-hr	$10,547
Chemicals			
Salt	181 ton/yr	$80 /ton	$14,482
Labor			
Sampling, inspection, monitoring	1 hr/day	$50 /hr	$18,250
Equipment maintenance	4 hr/wk	$50 /hr	$10,400
Media			
Granular Iron Media	138,403 lb/yr	$2 /lb	$276,806
Media Handling Service	1 LS	$40,000 /yr	$40,000
Disposal			
Landfill	69 dry ton/yr	$120 /dry ton	$8,304
ANNUAL O&M			**$420,976**

- Power – pumping and other plant needs
- Chemicals – Sodium hypochlorite (bulk liquid)
- Labor for operation and equipment maintenance
- Spent media replacement
- Spent media disposal.

As can be seen in Table 4, spent media replacement accounts for more than 65 percent of the estimated annual operating cost of a granular iron media system. A unit cost for media replacement of $2/lb was used. Although media costs may decline in the future as manufacturers increase production capacity in the US, the cost to replace the media is likely to remain a significant percentage of the annual cost to operate a granular iron media treatment facility.

FERRIC CHLORIDE COAGULATION/FILTRATION

Ferric chloride coagulation/filtration entails the adsorption of arsenic to ferric hydroxide precipitates, with subsequent removal of arsenic bearing iron particulates through a granular media or membrane filtration process. Chemical (chlorine) oxidation may be required to convert the arsenic to the +5 (oxidized) state. As was discussed earlier, membrane filtration systems have higher capital and operating costs than granular media filtration systems designed at the same capacity. Therefore, consideration is only given to granular media filtration in this evaluation.

Ferric chloride is added upstream of the filters through a static mixer or other suitable mixing system. Granular media filters can be of either the open gravity or closed pressure vessel type. The pressure vessel type is more commonly used in groundwater applications because they allow water to be pumped directly through the vessels into the distribution system or into onsite storage reservoirs. Filter media typically consists of dual beds of anthracite and sand on top of support gravel. Pressure vessels can be either horizontal or vertical. Horizontal pressure vessels are often used because a greater amount of surface area can be provided per vessel.

As ferric hydroxide precipitates accumulate in the filter bed, pressure loss across the filter increases. Periodic backwashing is required to remove the accumulated solids to maintain treatment capacity and prevent breakthrough of arsenic bearing floc particles into the treated effluent. Facilities are required for handling and/or disposal of the backwash wastewater.

Facility Design Configurations

Pilot testing of ferric chloride coagulation/filtration was conducted at the Sun City West POE No. 1. Test results showed that greater than 80% removal of arsenic could be achieved at a ferric chloride dose of approximately 5 mg/L. Laboratory-scale testing was conducted to evaluate arsenic removal as a function of ferric chloride dosage on samples of water from Paradise Valley's Well 11. The laboratory test results were similar to the pilot test results, with greater than 80% removal of arsenic being achieved at a ferric chloride dosage of 5 mg/L.

The ferric chloride coagulation/filtration process can consistently achieve a high percentage removal of arsenic. Since the concentration of arsenic in the raw water supplies in the Paradise Valley District is relatively low, consideration can be given to treating only a portion of the total flow, and blending the treated effluent with the remainder of the raw water to meet the target finished water arsenic concentration. Providing a split treatment system will allow the size/capacity of the treatment equipment to be minimized, while at the same time reducing the amount of chemicals used and sludge that is produced.

Due to the number of ancillary facilities required to handle backwash wastewater and chemicals, it would not be practical to construct a separate ferric chloride coagulation/filtration system for each wellhead. Also, as was demonstrated in the preceding discussion on granular iron media, a single central treatment facility to serve the entire Paradise Valley District would be more cost-effective than separate facilities at the MRTF and MRBS sites.

Treatment Capacity Requirements

As was proposed for granular iron media, it is recommended that the target concentration for arsenic in the finished water entering the distribution system be set at 80 percent of the MCL. The treatment system should be sized to reliably meet the target finished water arsenic concentration on the maximum day at raw water arsenic concentrations up to 20 percent greater than the maximum historic measurement. Based on the data presented in Table 2, a single central treatment facility should be able to handle maximum raw water arsenic concentrations of up to 17 ug/L. Based on these criteria, the coagulation/filtration facilities would need to be sized to treat a maximum flow of 12.5 mgd, which equates to approximately 65 percent of the projected future maximum daily demand of 19.3 mgd.

Based on the results from the Sun City West pilot study, as well as design information available from manufacturers of pressure filtration equipment, it is recommended that the filters be designed for a maximum surface loading rate of 5 gpm/sf. A standard 10-foot diameter horizontal pressure vessel provides 10 square feet of filter surface area per lineal foot of shell length. Assuming a maximum shell length of 35 feet, the rated capacity for an individual vessel would be in the range of 2.5 mgd. Allowing for at least one train/unit to be out of service, a minimum of 6 horizontal pressure filters would be required for the Paradise Valley District.

Land Area Requirements

Based on the analysis of centralized granular iron treatment facility alternatives, it is expected that a single ferric chloride coagulation/filtration facility located at the MRBS would be more feasible and cost-effective than constructing separate treatment facilities at the MRTF and MRBS. A preliminary layout of a ferric chloride coagulation/filtration facility was developed that confirmed that adequate space is available on the MRBS site to accommodate the treatment, storage, and waste handling structures that would be required at a single central treatment facility. Figures 5A and 5B present two alternatives site plan layouts, based on residuals handling alternatives discussed in the section that follows.

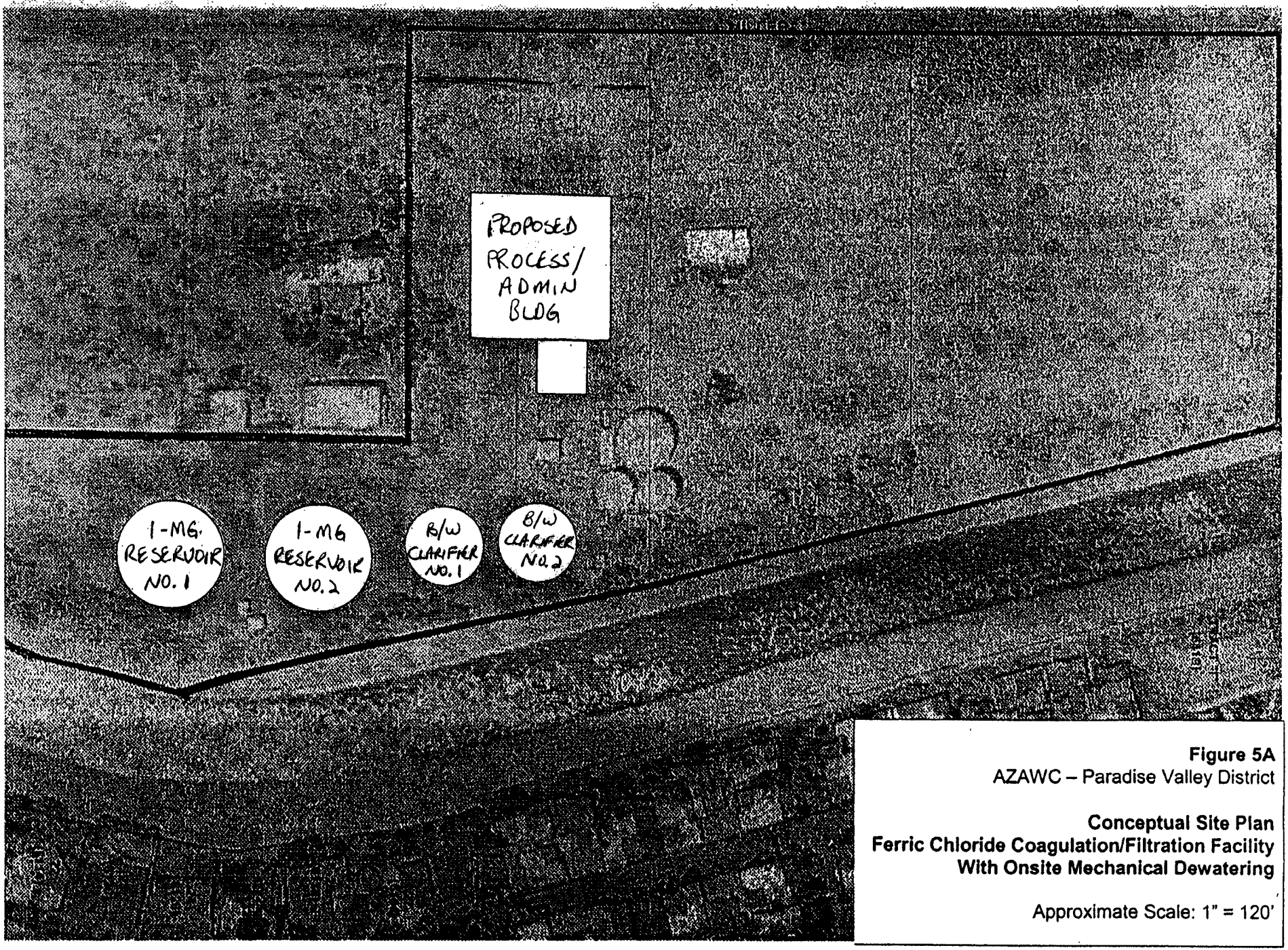


Figure 5A
AZAWC – Paradise Valley District

Conceptual Site Plan
Ferric Chloride Coagulation/Filtration Facility
With Onsite Mechanical Dewatering

Approximate Scale: 1" = 120'

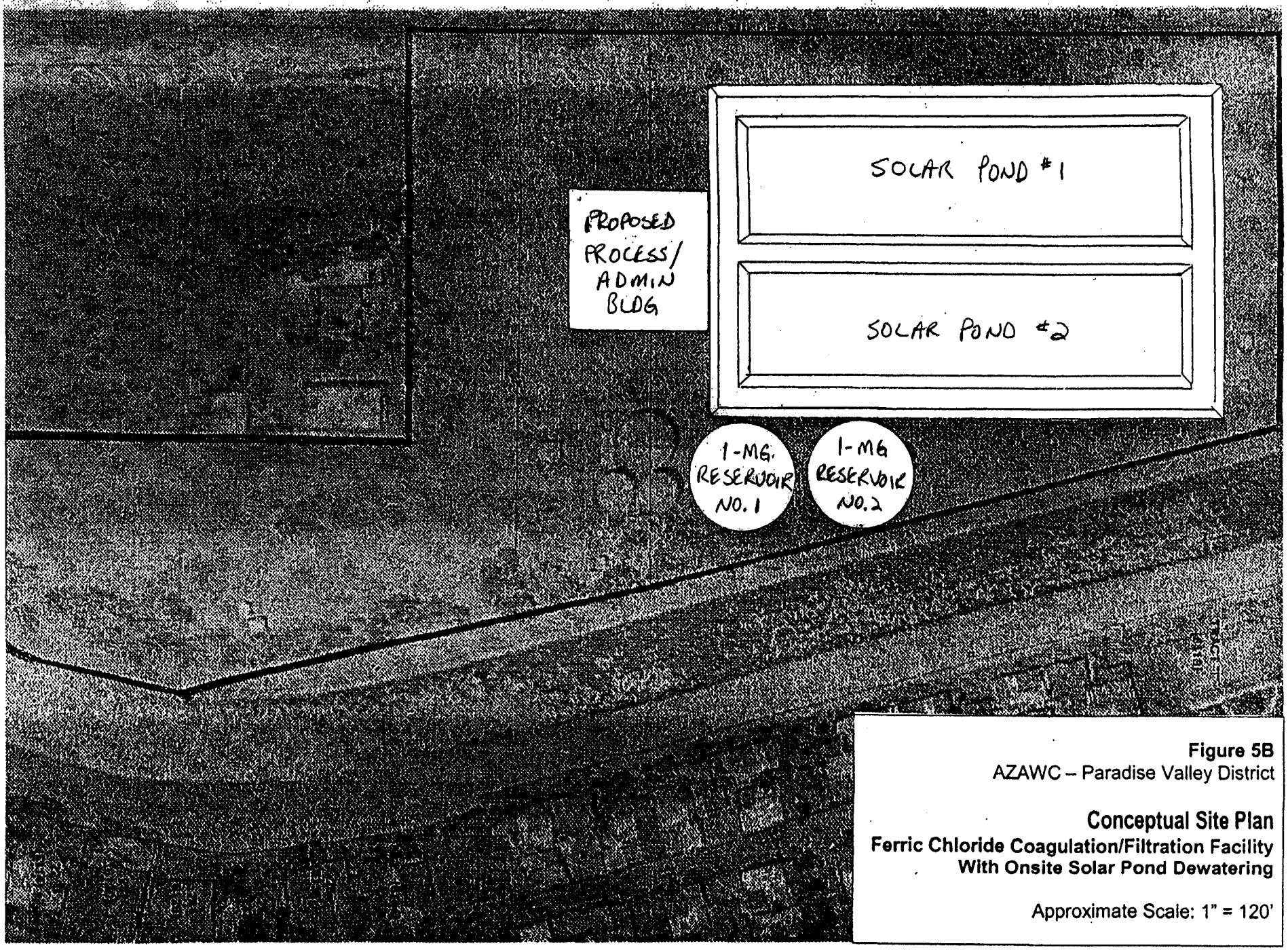


Figure 5B
AZAWC – Paradise Valley District

Conceptual Site Plan
Ferric Chloride Coagulation/Filtration Facility
With Onsite Solar Pond Dewatering

Approximate Scale: 1" = 120'

Waste Handling and Disposal

As was described above, granular media filters require periodic backwashing to remove arsenic bearing iron precipitates that are separated from the water during treatment. For a typical granular media filtration system, backwash volumes amount to 1 to 5 percent of the treated supply. Peak backwash rates can be in the range of 15 to 20 gpm/sf. Based on the size of the proposed filters, maximum backwash rates of 7,000 gpm may be required. It is possible to compartmentalize the filter vessels to reduce the instantaneous backwash rate that is required. However doing so increases the cost of the filters and has no impact on the total volume of backwash waste that is produced. Compartmentalizing filter vessels is most useful when dedicated wash water supply pumps or separate wash water storage is not provided. It is anticipated that up to two million gallons of finished water storage capacity will be provided as part of the proposed facility for the Paradise Valley system. Thus, a significant volume of water will be available on site for filter backwashing, and the cost to furnish dedicated wash water supply pumps would more than offset by the lower cost and maintenance requirements associated with compartmentalized filters.

There are several approaches to handling backwash wastewater, including the following:

1. Direct disposal to sanitary sewer (no treatment)
2. Onsite clarification/dechlorination with supernatant discharge to surface water
3. Onsite clarification with supernatant discharge to groundwater discharge
4. Onsite clarification with supernatant recycle

Alternatives 1 through 3 all result in wasting/disposal of the entire volume of backwash water. Due to the scarcity of water resources in the region, it is assumed that recycling of backwash water would be preferred. Therefore, only Alternative 4 is assumed to be a feasible approach to backwash handling in Arizona. However, there are also a number of methods that can be considered for treating/recycling backwash wastewater, including the following:

1. Clarifier/thickener with sewer disposal of thickened sludge
2. Clarifier/thickener with hauling of thickened sludge and disposal at a WWTP
3. Clarifier/thickener with onsite mechanical dewatering and landfill disposal
4. Solar pond clarification/dewatering and landfill disposal.

AAW met with representatives from the City of Scottsdale to inquire about the feasibility of disposing of thickened ferric sludge to the sanitary sewer. The City concluded that sewer disposal would not be acceptable because the concentration of arsenic in the waste would exceed the City's allowable discharge limits. The City of Phoenix reportedly has similar restrictions, so hauling and disposal of thickened sludge to the City of Phoenix WWTP was also presumed to not be feasible. AAW owns and operates a WWTP in its Sun City West District, which may be capable of receiving thickened treatment residuals for dewatering and disposal. However, the cost of trucking waste from Paradise Valley to Sun City West would be considerable, so the feasibility and cost-effectiveness of this alternative should only be evaluated if other feasible options appear to be costly.

Based on the above, onsite clarification and dewatering may be the only feasible residuals handling alternative if ferric chloride coagulation/filtration were the selected

treatment alternative. A preliminary cost estimate was developed to compare the cost of constructing and operating clarifiers, thickeners, and a mechanical dewatering facility (Alternative 3), to the cost of solar ponds (Alternative 4). Table 5 presents a summary of the projected costs.

Based on Table 5, constructing solar ponds would require a much lower capital investment, as well as less annual cost to operate and maintain. There is sufficient space on the northern half of the MRBS property to accommodate solar ponds. However, if mechanical dewatering were employed, it is possible that the northern half of the MRBS could be subdivided and sold for residential development. According to AAW, the market value of the property appears to be sufficient to offset the higher capital cost of a mechanical dewatering facility. In that case, a mechanical dewatering facility would require only a relatively small amount of additional revenue on an annual basis to cover the higher projected operating costs.

Table 5
Comparison of Backwash Handling Costs

Cost	Solar Ponds	Mechanical Dewatering
Capital Cost[1]	$1,225,000	$3,755,000
Annual O&M	$27,000	$50,000
Total Annual Revenue Requirement[2]	$202,000	$586,000

1. Estimated cost for design and construction of backwash waste handling facilities only.
2. Estimated annual revenue requirement based on total capital cost divided by seven plus annual O&M expense.

AAW will need to obtain a conditional use permit (CUP) from the City of Scottsdale for construction and operation of an arsenic treatment facility at its MRBS site. Based on their experience obtaining a CUP for the MRTF, AAW anticipates that the neighboring public may be resistant to the use of solar ponds for backwash waste treatment because of aesthetic and/or safety concerns. Thus, it is possible that solar ponds may not be permitted under the CUP. Even if solar ponds were ultimately acceptable, AAW expects that proposing their use would prolong the time required to obtain a CUP, which in turn could jeopardize their ability to complete construction in time to comply with the January 23, 2006 MCL deadline. Assuming that the northern portion of the MRBS property can be sold to offset the cost difference between solar ponds and mechanical dewatering facilities, it is recommended that backwash recycle and onsite mechanical dewatering be used to handle wastes produced by the ferric chloride coagulation/ filtration process. Figure 6 presents a schematic for the proposed treatment process configuration. An evaluation should also be performed to assess whether disposal of residuals at the Sun City West WWTP would be a feasible and cost effective alternative.

Operational Factors

Reliability

Pressure filtration is used extensively in the water treatment industry to remove iron and manganese from groundwater supplies. The process of adding ferric chloride to the water to create ferric hydroxide precipitates results in essentially the same water chemistry as occurs in conventional iron filtration. Therefore, the ferric chloride coagulation/filtration process is expected to be very reliable. As was discussed earlier,

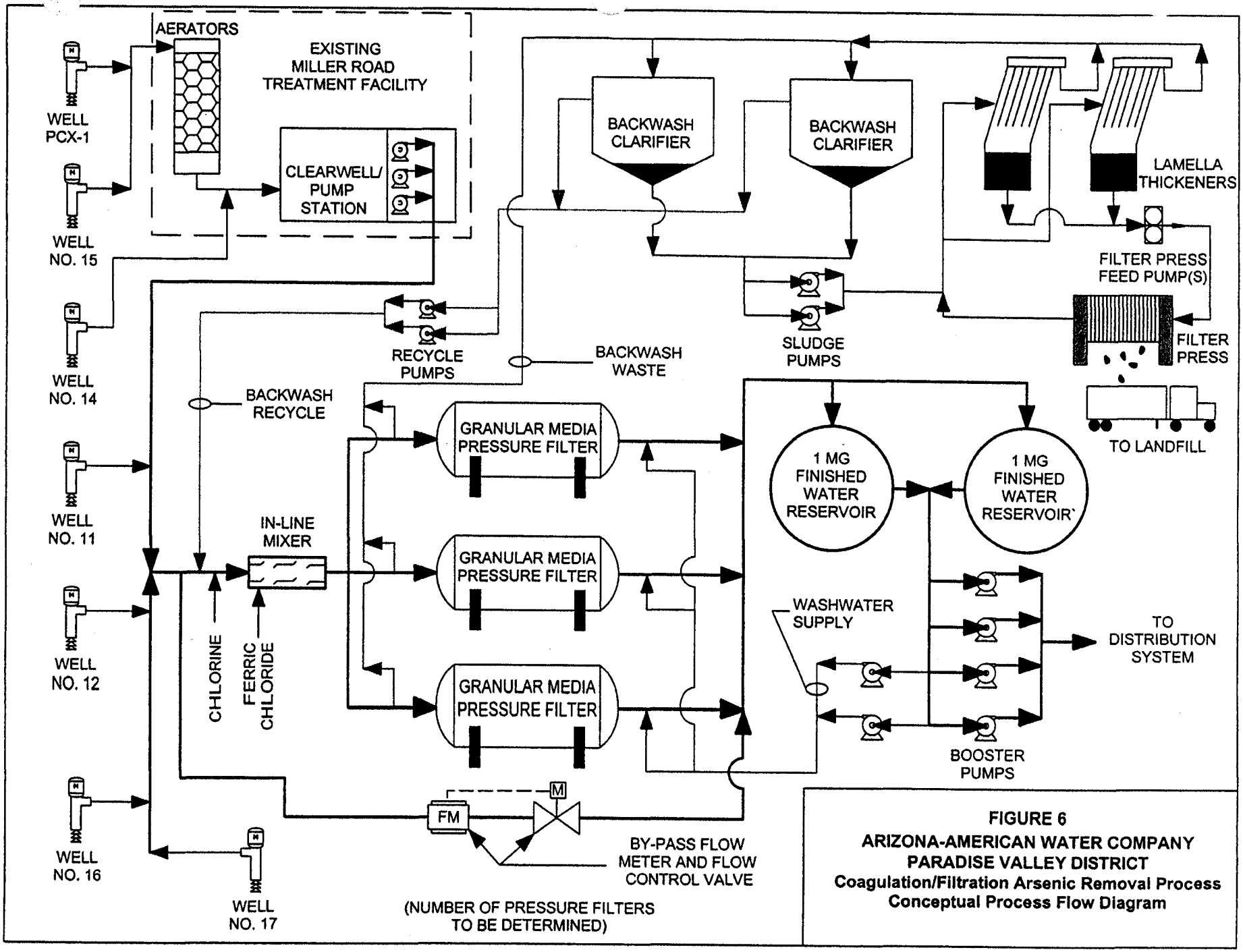


FIGURE 6
ARIZONA-AMERICAN WATER COMPANY
PARADISE VALLEY DISTRICT
Coagulation/Filtration Arsenic Removal Process
Conceptual Process Flow Diagram

the system should be designed to meet the maximum day demand with at least one train/filter out of service.

Flexibility

Based on the laboratory and pilot-scale test results, the degree of arsenic removal through the ferric chloride coagulation/filtration process is fairly independent of influent arsenic concentration. Thus, the process is able to handle fluctuations in raw water arsenic concentration without a major impact on treated water arsenic levels. Treatment capacity can also be readily expanded by the addition of additional filter units. In addition, the process could be located either upstream or downstream of the existing aeration facility at the MRTF, and can be configured to allow direct pumping from the wells into the distribution system or into a finished water storage reservoir.

Complexity

Compared to the granular iron media process, ferric chloride coagulation/filtration systems are more complicated to operate. Chemical feed systems and rates need to be maintained and regular filter backwashing is required. However, treatment systems can be fully automated, thereby reducing the amount of operator monitoring and adjustments that are required.

Construction Cost

Table 6 presents a summary of estimate of probable construction cost for a single central ferric chloride coagulation/filtration treatment facility to serve the entire Paradise Valley District. The cost includes the following major facility components:

- Single masonry building to house pressure filters, distributive pumping equipment, backwash clarifiers, lamella thickeners, mechanical dewatering equipment, chemical feed facilities, electrical distribution equipment, and administrative functions
- Six 35-foot-long by10-foot-diameter dual media pressure filters
- Two 1-million gallon steel finished water storage reservoirs
- Distributive pump station with can-type vertical turbine pumps
- Ferric chloride storage and feed facility
- Bulk hypochlorite storage and feed facility
- Two backwash clarifiers
- Two lamella thickeners
- New electrical service, power distribution switchgear, MCC, and standby generator
- Miscellaneous site improvements, including perimeter wall, paving, etc.

Operating Cost

An estimate of the annual operating cost for a ferric chloride coagulation/filtration system is presented in Table 7. The cost was based on the following major operating expenses:

- Power – pumping, dewatering, and other plant needs

Table 6
Arizona-American Water Company - Paradise Valley District
Ferric Chloride Coagulation/Filtration Treatment Facility
Estimate of Probable Construction Costs

	Division/Item	Unit of Measure		Unit Cost		Extended Total
1	Mobilization/Bonds/Insurance	2%	of subtotal	$12,315,398		$254,602
2	Sitework					
	24" RW and FW transmission piping	5,000	LF	$150	/LF	$750,000
	Perimeter wall	2,100	LF	$95	/LF	$199,500
	Driveways/pavement	2,222	SY	$72.00	/SY	$160,000
	Bldg excavation	2,402	CY	$12.73	/CY	$30,584
	B/W clarifier excavation	5,907	CY	$12.73	/CY	$75,196
	B/W clarifier backfill	660	CY	$25.00	/SY	$16,500
	Miscellaneous site improvements	2.5%	of sitework	$1,231,780		$30,795
3	Concrete					
	Building slab	1201	CY	$500	/CY	$600,620
	Clarifiers	897	CY	$700	/CY	$627,721
5-9	Building, Misc. Metals, Etc.					
	Building	22,400	SF	$150	/SF	$3,360,000
	Clarifier walkways/stairs	792	SF	$102	/SF	$80,982
	Paint	1	allowance	$250,000	allowance	$250,000
11	Equipment					
	Pressure filters	6	Filters	$100,000	/EA	$600,000
	Ferric bulk tanks (3,600 gal)	2	Tanks	$8,000	/EA	$16,000
	Transfer pumps	2	pumps	$1,500	/EA	$3,000
	Ferric day tanks (300 gal)	1	Tank	$1,000	/EA	$1,000
	Metering pumps	4	pumps	$2,000	/EA	$8,000
	Onsite hypochlorite generator	1	LS	$172,000	/EA	$172,000
	Washwater pumps	2	EA	$12,500	/EA	$25,000
	Backwash clarifier drives/Eqpt	2	EA	$92,000	/EA	$184,000
	B/W recycle canned LS	2	LS	$60,000	/EA	$120,000
	Distributive pumps (4 mgd)	3	EA	$26,000	/EA	$78,000
	Distributive pumps (8 mgd)	2	EA	$43,000	/EA	$86,000
	Sludge Pump Station	1	LS	$60,000	/EA	$60,000
	Lamella Thickeners	2	EA	$100,000	/EA	$200,000
	Plate & Frame Filter Press	1	EA	$500,000	/EA	$500,000
13	Special Construction					
	Twin 1-MG Ground Reservoirs	2	EA	$600,000	/EA	$1,200,000
15	Mechanical					
	MOVs (4 per filter + 1 per HSP + 1 per re	29	MOVs	$5,000	/EA	$145,000
	Large Manual Valves	26	valves	$4,000	/EA	$104,000
	Exposed Plant Piping (CLDIP)	500	LF	$100	/LF	$50,000
	Plant Process Pipe Fittings (CLDIP)	170	fittings	$1,000	/fitting	$170,000
	Hydropneumatic Tanks and Yardpiping	1	LS	$160,000	/EA	$160,000
	Misc Piping and Equipment Installation	25%	of eqpt sub	$2,053,000	sub	$513,250

Table 6
Arizona-American Water Company - Paradise Valley District
Ferric Chloride Coagulation/Filtration Treatment Facility
Estimate of Probable Construction Costs

	Division/Item	Unit of Measure		Unit Cost		Extended Total
16	Electrical					
	MCC	6	sections	$20,000	/section	$120,000
	Washwater pump VFDs	2	total	$8,000	/VFD	$16,000
	Distributive pump VFDs	5	total	$35,000	/VFD	$175,000
	Emergency Generator	1	LS	$200,000	/EA	$200,000
	SCADA system	1	LS	$550,000	/EA	$550,000
	Installation & conducits/conductors	25%	of eqpt & M	$2,709,000		$677,250
	CONSTRUCTION SUBTOTAL					**$12,570,000**
	Engineering	10%	of construction subtotal			$1,260,000
	Contingency	20%	of construction subtotal			$2,520,000
	AFUDC	7%	of construction subtotal			$880,000
	PROJECT TOTAL					**$17,230,000**

Table 7
Arizona-American Water Company - Paradise Valley District
Ferric Chloride Coagulation/Filtration Treatment Facility
Estimate of Annual Operation and Maintenance Costs

Item	Unit of Measure		Unit Cost		Extended Total
Power					
Pumping	258,405	kW-hr/yr	$0.08	/kW-hr	$20,672
Onsite hypochlorite generation	268,943	kW-hr/yr	$0.08	/kW-hr	$21,515
Mechanical dewatering	20,800	kW-hr/yr	$0.08	/kW-hr	$1,664
Misc. low voltage	137,037	kW-hr/yr	$0.08	/kW-hr	$10,963
Chemicals					
Ferric chloride	112	ton/yr	$380	/ton	$42,650
Salt	181	ton/yr	$80	/ton	$14,482
Polymer	1,122	lb/yr	$1.00	/lb	$1,122
Labor					
Sampling, inspection, monitoring	4	hr/day	$50	/hr	$73,000
Equipment maintenance	4	hr/wk	$50	/hr	$10,400
Mechanical dewatering	520	hr/yr	$50	/hr	$26,000
Disposal					
Roll-off container rental	1	roll-of	$100	/wk	$5,200
Hauling and landfill tipping fee	374	wet ton/yr	$40	/wet ton	$14,965
ANNUAL O&M					**$242,634**

- Chemicals – ferric chloride for arsenic coagulation, sodium hypochlorite for oxidation/disinfection, and polymer for dewatering
- Labor for operation, equipment maintenance, and sludge dewatering
- Hauling and landfill tipping fees for dewatered sludge cake disposal.

RECOMMENDED TREATMENT ALTERNATIVE

Granular iron media and ferric chloride coagulation/filtration are both arsenic removal technologies that would be suitable for use in the Paradise Valley District. Table 8 presents a summary comparison of some of the advantages and disadvantages of each technology.

Table 8
Summary of Advantages and Disadvantages

Process	Advantages	Disadvantages
Granular Iron Media	• Low complexity • Small footprint • Able to handle varying influent As concentrations • Minimal waste volumes • Non-hazardous waste	• Impacted by high pH • Competing ion interferences • Limited media life span • High replacement media cost • High capital cost
Ferric Chloride Coagulation/ Filtration	• Small footprint[1] • Able to handle varying influent As concentrations • Consistent removal efficiency • Proven technology • Low operating cost • Non-hazardous waste	• Higher complexity • Significant backwash waste volumes • Sludge handling/dewatering requirements

1. Assuming onsite mechanical dewatering rather than solar pond dewatering.

Due to the relatively low concentration of arsenic in the raw water supplies and the technologies' ability to achieve high levels of arsenic removal, it will be possible to treat only a portion of the total supply and blend with the remaining water to achieve the target finished water concentration. However, granular iron media is expensive as compared to conventional anthracite and sand filter media. As a result, it is projected that a granular iron media facility would cost more to construct than a ferric chloride coagulation/filtration facility, even though the latter requires a far more significant investment in waste handling facilities. The adsorptive capacity of granular iron media is also limited, so the media will need to be disposed of and replaced on a periodic basis. Therefore, the annual expenses associated with operation of a granular iron media system are projected to be more than double those of a ferric chloride coagulation/filtration facility. Table 9 presents a comparison of the estimated capital and operating costs for the two alternatives. In either case, efforts will be made during the design phase to value engineer facilities to minimize the cost of construction and operation.

Table 9
Comparison of Estimated Costs[1]

Cost Component	Granular Iron Media	Ferric Chloride Coagulation/Filtration
Total Project Cost[2]	$17.8	$17.0
Annual O&M Cost	$0.4	$0.2
Total Annual Revenue Requirement[3]	$2.9	$2.6

1. Dollar values in millions.
2. Estimated cost includes design, construction, AFUDC, and contingency.
3. Estimated annual revenue requirement based on total capital cost divided by seven plus annual O&M expense.

Based on the preceding analysis, ferric chloride coagulation/filtration is a reliable process that has been identified by the US EPA as BAT technology for arsenic removal. In addition, it is estimated that the total revenue required to install and operate a ferric chloride coagulation/filtration would be substantially less than granular iron media. Therefore, it is recommended that AAW proceed with design, permitting, and construction of a ferric chloride coagulation/filtration treatment facility at the MRBS site.