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1 **BEFORE THE ARIZONA CORPORATION COMMISSION**  
2 **SEP 10 12 17 PM '99**

3 CARL J. KUNASEK  
4 ~~Commissioner~~ - Chairman  
5 JIM IRVIN  
6 Commissioner  
7 WILLIAM A. MUNDELL  
8 Commissioner

DOCUMENT CONTROL

9 IN THE MATTER OF THE JOINT  
10 APPLICATION OF SUN CITY WATER  
11 COMPANY AND SUN CITY WEST  
12 UTILITIES COMPANY FOR APPROVAL OF  
13 CENTRAL ARIZONA PROJECT WATER  
14 UTILIZATION PLAN AND FOR AN  
15 ACCOUNTING ORDER AUTHORIZING A  
16 GROUNDWATER SAVINGS FEE AND  
17 RECOVERY OF DEFERRED CENTRAL  
18 ARIZONA PROJECT EXPENSES.

) DOCKET NO. W-01656A-98-0577  
) SW-02334A-98-0577

) NOTICE OF FILING  
) TESTIMONY

) Arizona Corporation Commission

) DOCKETED

) SEP 10 1999

19 Pursuant to the Hearing Division's June 17, 1999, Procedural Order, the Sun  
20 City Taxpayers Association ("SCTA") hereby files testimony of Mary Elaine  
21 Charlesworth and Dennis Husted in the above-captioned docket.

DOCKETED BY *[Signature]*  
1999, Procedural Order

22 RESPECTFULLY SUBMITTED this 10th day of September, 1999.

23 MARTINEZ & CURTIS, P.C.

24 By

*Paul R. Michaud*

25 William P. Sullivan  
26 Paul R. Michaud  
27 2712 North Seventh Street  
28 Phoenix, Arizona 85006-1090  
29 Attorneys for Sun City Taxpayers  
30 Association.

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**The original and ten (10) copies of the foregoing are filed this 10th day of September, 1999 with:**

DOCKET CONTROL  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, Arizona 85007

**A copy of the foregoing is mailed this 10th day of September, 1999 to:**

Lyn Farmer  
Assistant Chief Hearing Officer  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, Arizona 85007

Craig Marks  
Citizens Utilities Company  
2901 N. Central Avenue, Suite 1660  
Phoenix, Arizona 85012

Scott Wakefield  
RUCO  
2828 N. Central Ave. Suite 1200  
Phoenix, Arizona 85004

Walter W. Meek  
AUIA  
2100 N. Central Avenue, Suite 210  
Phoenix, Arizona 85004

William G. Beyer  
Beyer, McMahon & LaRue  
10448 W. Coggins, Suite C  
Sun City, Arizona 85351

By PKA

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**BEFORE THE ARIZONA CORPORATION COMMISSION**

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CARL J. KUNASEK  
Commissioner - Chairman  
JIM IRVIN  
Commissioner  
WILLIAM A. MUNDELL  
Commissioner

IN THE MATTER OF THE JOINT )  
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)DOCKET NO. W-01656A-98-0577  
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Arizona Corporation Commission  
**DOCKETED**  
SEP 10 1999

DOCKETED BY *[Signature]*

**TESTIMONY OF MARY ELAINE CHARLESWORTH**

**On Behalf of**

**SUN CITY TAXPAYERS ASSOCIATION  
("SCTA")**

**September 10, 1999**

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DIRECT TESTIMONY OF  
MARY ELAINE CHARLESWORTH  
DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577

4 **Q. Please state your name, title and business address.**

5 A. My name is Mary Elaine Charlesworth. I am the President of the Sun City  
6 Taxpayers Association, Inc. (SCTA). My business address is 12630 N. 103rd  
7 Avenue, Room 221, Sun City, Arizona 85351-3476.

9 **Q. Who are you testifying on behalf in this proceeding?**

10 A. I am testifying on behalf of SCTA.

12 **Q. What is the Sun City Taxpayers Association and what is its purpose?**

13 A. SCTA was formed in 1970 to protect the interests of the Sun City Community.  
14 The Sun City community is a defined, complete and self-contained retirement  
15 community. The Sun City community was fully platted and sold out prior to  
16 1980, the year the Groundwater Management Act was adopted. Because many  
17 of Sun City's residents live on fixed incomes, the community requires  
18 protection from economic threats such as unjustified utility rate increases. As  
19 such, SCTA has a history of active participation in rate proceedings involving  
20 Citizens Utilities Company, and in particular Sun City Water and Sun City  
21 Sewer Companies, for the purpose of ensuring that the rates and charges  
22 imposed by the Company are just and reasonable and take into account the  
23 unique character of the Sun City community.

24 **Q. Does SCTA oppose importation of CAP water?**

25 A. Absolutely not. SCTA recognizes Central Arizona Project (CAP) water  
26 represents a critical and important renewable water resource for central  
Arizona. SCTA does, however, vigorously oppose the imposition of CAP

1 DIRECT TESTIMONY OF  
2 MARY ELAINE CHARLESWORTH  
3 DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577  
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5 related costs on the ratepayers of Sun City Water Company in excess of the  
6 demonstrable direct benefits received by those ratepayers. The cost of CAP  
7 benefits of a regional nature should be borne by the entire region. It is my  
8 understanding these costs are already recovered from Sun City Water  
9 Company's customers in the form of a property tax assessment imposed by the  
10 Central Arizona Water Conservation District, the withdrawal fees imposed by  
11 the Department of Water Resources and general tax revenues appropriated by  
12 the Legislature to fund the Arizona Water Bank (AWB), the Arizona  
13 Department of Water Resources (ADWR) and the Central Arizona Water  
14 Conservation District (CAWCD), among others.

15 **Q. Does SCTA support the proposal advocated by Citizens in this proceeding?**

16 A. No.

17 **Q. Why not?**

18 A. Citizens has not demonstrated its proposal is prudent, nor has Citizens  
19 demonstrated direct benefits to its ratepayers justifying the enormous economic  
20 burden it seeks to impose on its ratepayers.

21 **Q. Would you elaborate?**

22 A. As Mr. Husted's Testimony indicates, the cost of Citizens' proposal to the  
23 ratepayers of Sun City Water Company through the initial term of the CAP  
24 subcontract is estimated to be \$58,282,000. Citizens has provided no analysis  
25 of any kind demonstrating actual tangible benefits to its ratepayers. Rather, it  
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2 MARY ELAINE CHARLESWORTH  
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5 has relied totally on "general" concerns of subsidence, degrading water quality  
6 and increased cost of pumping groundwater.

7 **Q. Does Citizens' arguments that depletion of the groundwater may result in**  
8 **subsidence, poorer water quality or higher pump costs justify placing the**  
9 **costs of using CAP water of Sun City Water Company's ratepayers?**

10 **A.** No. Although these may be legitimate generalized concerns, Citizens should be  
11 required to demonstrate how its proposal will actually lessen these problems  
12 and quantify the savings to ratepayers before the Commission imposes a  
13 \$58,282,000 burden on the ratepayers of Sun City Water Company. If the risks  
14 and benefits are identical throughout the region overall, then the costs should be  
15 borne by all those benefiting, not just the ratepayers of Sun City Water  
16 Company. The ratepayers of Sun City Water Company should only be  
17 responsible to pay for benefits they actually receive from CAP water.

18 It should also be emphasized that the factors relied upon by Citizens today to  
19 justify imposing \$58,282,000 in costs on Sun City Company's ratepayers were  
20 not even considered by Citizens when it decided to take its full allocation. In  
21 November 1984, David Chardvoyne, Vice-President of Water presented an  
22 analysis of the options available to Citizens related to taking CAP water. See,  
23 Attachment MEC - 1. Nowhere did Mr. Chardvoyne express a concern over:  
24 existing customers' contribution to depletion of the aquifer; land subsidence or  
25 other environmental damage; decreased water levels; diminished water quality;  
26 well failures or increased pumping costs. In fact the memo stated "Sun City  
does not appear to have an immediate need for the allocation to supply quality

5 water service.” Citizens listed only the following advantages to taking its full  
6 allocation: (1) securing certificates of assured water supply and providing an  
7 incentive for development in Citizens’ certificated area; (2) appeasement of  
8 political factions pressuring the private water sector to take CAP water; and (3)  
9 the possibility of allocating the CAP water to nearby cities in the future.  
10 Citizens clearly took its full CAP allocation to protect its shareholders, not its  
11 ratepayers.

12 **Q. Does SCTA have any other concerns regarding Citizens’ proposal?**

13 A. Yes. SCTA does not believe the proposal is prudent. Mr. Husted has  
14 evaluated the proposal and found it contains unnecessary and costly  
15 components. He has also compared and contrasted Citizens’ proposal to other  
16 alternatives. The costs of Citizens’ proposal cannot be justified when compared  
17 to these other alternatives. Further, Mr. Husted is critical of the cost recovery  
18 methodology proposed by Citizens, as well as Citizens’ proposed recovery of  
19 100% of the deferred costs.

20 **Q. Does SCTA advocate any of the alternatives evaluated by Mr. Husted?**

21 A. Unfortunately, SCTA had limited funds and time and was unable to perform an  
22 independent cost/benefit analysis or to quantify the value, if any, of potential  
23 direct and demonstrable benefits to the ratepayers of Sun City Water Company  
24 derived from any of the alternatives Mr. Husted evaluated. To the extent  
25 benefits are primarily regional in nature (e.g., participating in recharge with  
26 Central Arizona Water Conservation District and/or the Maricopa County  
Water Conservation District) the costs of such programs should continue to be

1 DIRECT TESTIMONY OF  
2 MARY ELAINE CHARLESWORTH  
3 DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577  
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5 borne equally throughout the region. Such spreading of costs already occurs so  
6 long as the Arizona Water Bank, Central Arizona Water Conservation District  
7 or Central Arizona Groundwater Replenishment District utilize these recharge  
8 sites. It is my understanding these recharge sites will be maximized by others if  
9 not used by Citizens.

10 Although Mr. Husted recognizes all the golf course recharge alternatives he  
11 examined provide some direct benefit to Sun City Water's ratepayers, he was  
12 unable to conclude those benefits justify the enormous costs of these  
13 alternatives. However, it appears obvious to SCTA that Citizens' proposal, the  
14 most expensive alternative reviewed by Mr. Husted, is not prudent and is not  
15 justified.

16 **Q. Under what circumstances does SCTA believe Sun City Water Company**  
17 **should recover CAP related costs?**

18 **A.** If Sun City Water Company wishes to recover the costs of utilizing CAP water,  
19 Sun City Water Company or Citizens, not SCTA, must provide substantial  
20 evidence demonstrating that the CAP water is, or within a definite time period,  
21 will be used and useful by its customers and that the customers will receive  
22 actual tangible benefits equal to or greater than the costs its customers are asked  
23 to bear. Any costs that do not satisfy these criteria must be disallowed and  
24 borne by the shareholders.  
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1 DIRECT TESTIMONY OF  
2 MARY ELAINE CHARLESWORTH  
3 DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577  
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5 **Q. Does SCTA believe CAP water is critical to the existence of Sun City?**

6 A. No. Sun City was fully platted and developed prior to either the adoption of the  
7 GMA or the execution of Citizens' CAP subcontracts. Moreover, no one  
8 disputes the available groundwater is sufficient to satisfy the water demands of  
9 the Sun City community for several decades. I am advised the GMA grants  
10 Sun City Water the right to withdraw and transport groundwater within Sun  
11 City, and the residents of Sun City have the right to use the groundwater so  
12 delivered. I am also advised that all newly platted subdivisions must now  
13 demonstrate they will utilize a renewable water resource, like CAP water,  
14 before they can be platted. It, therefore, appears to SCTA that these new  
15 developments should pay the cost of importing and using CAP water.

16 **Q. Was Sun City developed on the assumption that groundwater or CAP  
17 water would be utilized?**

18 A. Groundwater. In 1974, Wesley E. Steiner, Executive Director of the Arizona  
19 Water Commission, the State of Arizona found that "the water supply available  
20 to the utility is adequate to meet the needs projected for this area and, therefore,  
21 designates the Sun City portion of the franchise as a service area within which  
22 developers are not required to submit water supply plans to the Commission."  
23 Attachment MEC - 2. This determination was based upon one or more reports  
24 submitted by Leonard C. Halpenny and D.K. Greene. As reflected in  
25 Attachment MEC - 3, Mr. Halpenny and Mr. Greene, in their "Review of  
26 Groundwater Supply, Sun City, Arizona" dated December 21, 1973 concluded:

1 DIRECT TESTIMONY OF  
2 MARY ELAINE CHARLESWORTH  
3 DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577  
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4 The review described in this report indicates that the water supply  
5 available within the Sun City Water Company franchised area is fully  
6 adequate to meet demand...

7 \*\*\*

8 The long-term impact of the Sun City development on groundwater  
9 supply of the franchised area has been evaluated in the Chapter entitled  
10 "Elements of Adequacy", especially in the subchapter on Rate of Decline  
11 of Water Levels. The data reviewed indicate an annual future rate of  
12 decline of about three feet per year, at which rate 133 years would elapse  
13 before levels had declined an additional 400 feet. By that time the  
14 deepest wells (1,300 feet) would still have 550 feet of water available  
15 (1,300 minus 350 minus 400). Long before then the total thickness of  
16 water-yielding sediments will have become known as a result of drilling  
17 future wells deeper than 1,300 feet."

18 Similarly, in 1980 the Director of the newly formed Arizona Department of  
19 Water Resources determined Sun City Water Company's service area had an  
20 assured water supply under the Groundwater Management Act based solely on  
21 groundwater. See, Attachment MEC - 4. The foregoing, as well as Citizens'  
22 1994 Water Study entitled "Water Resources Planning Study" all reach the  
23 conclusion the groundwater supply is adequate to meet the demands of the Sun  
24 City community.

25 **Q. Does SCTA agree with Citizens' proposed amount of recovery for its  
26 deferred CAP holding charges and Groundwater Savings Fee?**

A. No. Citizens' proposal to recover 100% of the deferred holding costs over 42  
months with an 8.72% rate of return is unreasonable and unfair to ratepayers.  
The CAP utilization plan Citizens is now proposing, or any of the golf course  
recharge alternatives reviewed by Mr. Husted, could have been implemented

5 fourteen years ago. Citizens could have required Del Webb and/or other  
6 developers to finance most, if not all, of the delivery system as an advance or  
7 contribution. The Company made a management decision to do the minimum  
8 by merely making installment payments, as mandated by CAWCD, to preserve  
9 Citizens shareholders' options in the future, rather than moving forward with a  
10 permanent solution. Thus, the Company should not be rewarded for failing to  
11 put CAP water to beneficial use after holding the CAP water subcontracts for  
12 nearly 15 years. To allow such recovery from ratepayers is unreasonable and  
13 unfair.

14 The unreasonableness is compounded by Citizens' request for an 8.72% return  
15 and recovery over a short 42 month period. If any of the holding charges are  
16 deemed recoverable, which SCTA opposes, they should not include a return  
17 and should be spread over the remaining life of the CAP subcontract.

18 **Q. Does SCTA agree with Citizens' proposed method of recovering the costs  
19 of its CAP utilization plan?**

20 **A.** No. Citizens proposes residential ratepayers be billed based on a flat rate per  
21 household. SCTA disagrees with this proposal. SCTA believes CAP costs  
22 should be recovered primarily from customers entering the system. Any charge  
23 on existing ratepayers should be based on water used. This way all ratepayers  
24 will be billed directly proportionate to the amount of water they consume,  
25 rather than having ratepayers who use limited water subsidize ratepayers who  
26 consume large amounts of water. Further, there should be protection for small

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2 MARY ELAINE CHARLESWORTH  
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5 water users, who generally live on fixed incomes. Again, fairness to the  
6 ratepayers is SCTA's main concern in this proceeding.

7 **Q. Do you have a specific rate proposal at this time?**

8 A. No. SCTA does not believe Citizens or Sun City Water Company has met its  
9 burden of demonstrating the benefits to ratepayers or the prudence of its  
10 proposed CAP utilization plan. Therefore, no cost recovery is currently  
11 warranted. However, the guidelines for rate recovery set forth in Mr. Husted's  
12 my testimony should be used to establish rates if and when the Company meets  
13 its burden and the Commission allows some CAP cost recovery.

14 **Q. Does this conclude your testimony?**

15 A. Yes.  
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## CENTRAL ARIZONA PROJECT (CAP) WATER ALLOCATION CONTRACTS

I. Ultimately there are only three options in each case regarding the Agua Fria and Sun City CAP water contracts:

- A. Option I - Acceptance of the full allocation.
- B. Option II - Acceptance of a reduced allocation.
- C. Option III - Rejection of the allocation.

II. Facts:

- A. The acceptance date on the Agua Fria CAP allocation is December 11, 1984 (1,439 acre-ft/yr which equals 1.2 mgd).
- B. The acceptance date on the Sun City CAP allocation is January 2, 1985 (15,835 acre-ft/yr which equals 14.1 mgd).
- C. These allocations, if accepted, would be transferable via approvable inter-company agreements among Sun City, Sun City West, and Agua Fria service areas.
- D. Sun City does not appear to have an immediate need for the allocation to supply quality water service.
- E. Agua Fria may have a need for the allocation to supply quality water service if high density development occurs in the certificated area.
- F. Sun City West does not appear to have an immediate need for the allocation to supply quality water service.
- G. Arizona Department of Health Services encourages duplication of sources and facilities and these allocations could be considered backup capacity.
- H. On a per customer per year basis, the cost associated with acceptance of the entire consolidated allocation of 17,274 acre-feet per year is projected to be:

	<u>1985</u>	<u>1990</u>	<u>2005</u>
Total projected annual cost	\$34,548	\$224,562	\$587,316
Projected number of customers	42,421	58,157	77,105
Projected annual cost per customer	\$.81	\$3.86	\$7.62

- I. On a per customer per year basis, the cost associated with acceptance of a reduced allocation of 6,439 acre-feet per year (5.7 mgd) is projected to be:

	<u>1985</u>	<u>1990</u>	<u>2005</u>
Total projected annual cost	\$12,878	\$83,707	\$218,925
Projected number of customers	42,421	58,157	77,105
Projected annual cost per customer	\$.30	\$1.44	\$2.84

III. Advantages and disadvantages of the options:

A. Option I - Acceptance of the full allocation.

1. Advantages

- a. Assured supply for 100 years and incentive for development in our certificated areas.
- b. Appeasement of all political factions pressuring the private sector to bear a substantial portion of the CAP project cost.
- c. Nearby cities may want our allocation in the future (e.g. Scottsdale and Phoenix) and the rights to CAP water will have positive non-monetary value.

2. Disadvantages

- a. The ultimate costs of the commitment are uncertain and we cannot be assured that this will prove to be the most desirable source of supply for our customers.
- b. The ACC has not yet committed to cost recovery mechanisms so there is shareholder risk.
- c. The poor quality of the CAP water will require capital intensive treatment facilities (\$1.11/gallon of capacity construction cost).
- d. Well facilities will still be required since CAP water will probably only be available for 11 months per year.

B. Option II - Acceptance of a reduced allocation.

1. Advantages

- a. Availability of an assured source of supply capable of sustaining a reasonable but diminished existence for our customers should we lose our groundwater supplies for some unforeseen reason.
- b. Appeasement of political factions pressuring the private sector to bear a substantial portion of the CAP project cost.

- c. Possibility of participating in sources of supply other than CAP that may be developed in the future.
- d. Less financial risk than acceptance of full allocation.
- e. Nearby cities may want our allocation in the future (e.g. Scottsdale and Phoenix) and the rights to CAP water will have positive non-monetary value.

2. Disadvantages

- a. The ultimate costs of the commitment are uncertain and we can not be assured that this will prove to be the most cost-effective source of supply for our customers.
- b. Developers may possibly have a more difficult time getting a 100 year assured supply certificate.
- c. The CAP water will require capital intensive treatment facilities (\$1.11/gallon).
- d. In case we should lose our groundwater sources and other sources have not been obtained, we would be forced to enact a stringent conservation program.
- e. The ACC has not yet committed to cost recovery mechanisms so there is shareholder risk.
- f. Well facilities will still be required as backup to CAP supply.

C. Option III - Rejection of the allocations.

1. Advantages

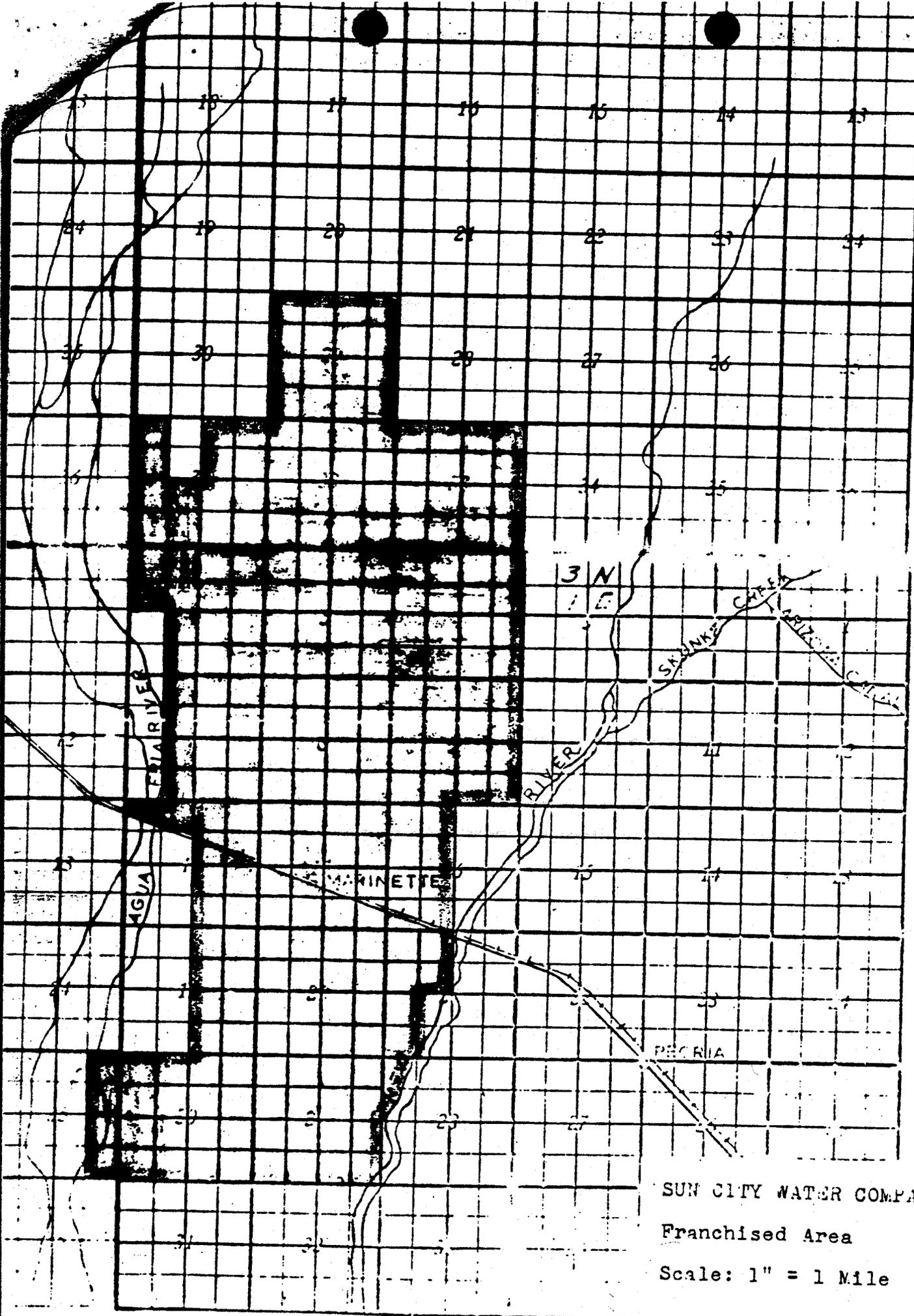
- a. No risk to shareholders due to lack of pass through mechanism.
- b. Ability to participate in more cost-effective alternatives that may be developed in the future.

2. Disadvantages

- a. Developers will certainly have a more difficult time obtaining 100-year assured supply certificate within our CCN areas.
- b. Political factions pressing for private sector cost support may react negatively.
- c. Should our groundwater sources fail we may have no alternative source of supply if other sources have not been secured.

IV. Recommended Approach

- A. Send a letter of intent to CAWCD stating that we intend to contract for some or all of the CAP allocations, explaining that we are seeking approval of a pass through mechanism and asking for an extension of the contracting period to coincide with the Commission's decision.
- B. Submit required plans to the U.S. Bureau of Reclamation.
- C. File requests for pass through mechanisms in both Agua Fria and Sun City.
- D. If CAWCD agrees to the extension period and ACC approves the pass through, we should accept the full allocations in both Agua Fria and Sun City. If the CAWCD does not agree to an extension on the contract period we should continue to pursue the pass through mechanism at the ACC, accept the full Agua Fria allocation, and accept 5,000 acre-feet of the Sun City allocation while requesting first option on the remainder of the allocation.
- E. At the time we send CAWCD a letter of intent and ask ACC for a pass through mechanism we should also request ADHS to acknowledge the benefits and usefulness of a backup source of supply.
- F. At some future date we should develop and seek approval of an equitable means of allocating the costs associated with the CAP allocations between existing customers and developers.



SUN CITY WATER COMPANY  
Franchised Area  
Scale: 1" = 1 Mile

**E. LEONARD**  
CHAIRMAN  
**JOHN S. HOOPES**  
VICE-CHAIRMAN  
**WESLEY E. STEINER**  
EXECUTIVE DIRECTOR  
AND  
STATE WATER ENGINEER



# Arizona Water Commission

222 NORTH CENTRAL AVENUE, SUITE 800  
Phoenix, Arizona 85004  
TELEPHONE (602) 258-7561

**MEMBERS**  
PETER BIANCO  
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WILLIAM H. WHEELER  
**EXOFFICIO MEMBERS**  
ANDREW L. BETTWY  
MARSHALL HUMPHREY

MEC - 2

March 5, 1974

Mr. Paul Emrick, Manager  
Sun City Water Company  
Post Office Box 687  
Sun City, Arizona 85351

Dear Mr. Emrick:

As requested we have evaluated the Sun City Water Company's currently certificated area in and around Sun City as shown on the attached map for possible designation as a service area with an adequate water supply as prescribed in ARS 45-513. It is understood that the Company serves certificated areas outside the area shown on the attached map. These additional areas have not been analyzed by the Commission and are not included in the designation granted herein. The evaluation was based on a report submitted by Mr. Leonard Halpenny of the Water Development Company, Tucson and material available from other sources.

The Commission finds that the water supply available to the utility is adequate to meet the needs projected for this area and, therefore, designates the Sun City portion of the franchise as a service area within which developers are not required to submit water supply plans to the Commission. The service area is considered to be areas served by the utility's system. Conversely, any development within the certificated area but not served by the utility, is considered to be outside the designated service area.

Although the Commission may revoke this designation at any time upon a finding of inadequacy, on the basis of information available today, we feel that the supplies are adequate to meet the projected needs for the foreseeable future. Future additions to these certificated areas will require analysis to determine their water supply adequacy.

Please contact me if you have any questions.

Sincerely,

*Wesley E. Steiner*  
Wesley E. Steiner *TCC*  
Executive Director

Enc. 1

cc: Thomas W. Ryan, Del E. Webb Development Co.

## ABILITY TO MEET DEMAND

The review described in this report indicates that the water supply available within the Sun City Water Company franchised area is fully adequate to meet demand, that the water-supply system as presently developed is adequate to meet demand, and that the plans for remaining future development are adequate to meet ultimate full water demand. Plans presently exist to convert Well No. 20-A to an observation well when Wells Nos. 4-B, 4-C, 4-D, 5-A, and 5-D are brought into the system. At some future date it will become necessary to take Well No. 29-A out of service; it is a former irrigation well and it would be better to replace it than to attempt deepening. Three new wells for domestic supply are planned at sites shown on Plate 1, and additional wells may become necessary.

The franchise area of Sun City Water Company warrants being designated as a service area where an adequate supply of water exists.

## LONG-TERM IMPACT UPON SUPPLY

The long-term impact of the Sun City development upon the ground-water supply of the franchised area has been evaluated in the chapter entitled "Elements of Adequacy", especially in the subchapter on rate of decline of water levels. The data reviewed indicate an annual future rate of decline of about 3 feet per year, at which rate 133 years would elapse before levels had declined an additional 400 feet. By that time the deepest wells (1,300 feet) would still have 550 feet of water available (1,300 - 350 - 400). Long before then the total thickness of water-yielding sediments will have become known as a result of drilling future wells deeper than 1,300 feet.

State of Arizona

**DEPARTMENT OF WATER RESOURCES**

222 North Central Avenue, Suite 850, Phoenix, Arizona 85004



August 26, 1980

R 8-29

Mr. W. J. Ramo, Manager  
 Sun City Water Company  
 PO Box 1687  
 Sun City, Arizona 85372

Dear Mr. Ramo:

This is to notify you of the designation of the service area of the utility as an area with an assured supply as provided under ARS 45-576 of the new Groundwater Management Act. The act requires that a Certificate of Assured Supply be obtained by any person offering to sell or lease subdivided or unsubdivided land within an Active Management Area, and further provides that the Director may designate service areas of private water companies as having an assured supply. Within areas so designated, the requirement to obtain a Certificate of Assured Supply is waived. The plat of a subdivision cannot be approved by the governing body of the city, town or county until it has been established by service area designation or certificate from this Department that an assured supply is available, and the plat must bear a notation from the governing body that this requirement has been met.

The drafters of the legislation intended that a Central Arizona Project water supply be a primary means of demonstrating the existence of an assured supply. An unconditional offer to enter into a contract creates a presumption of an assured supply. The recent action by the Secretary of the Interior, however, indicates that the allocations to municipal and industrial users will be delayed at least another 90 days. I have decided to proceed with designations based on evaluations that led to designations under the prior water supply adequacy program, and information that has become available in the interim period.

The act defines the service area of a city, town or private water company, in part, as the area of land actually being served water, and requires these entities to maintain current maps of their service areas in the Department. A previous letter has been sent to all water distribution entities requesting copies of said maps.

The designation granted herewith applies only to the area that is served water directly by the company's system, or indirectly through an interconnect or similar agreement; areas within the exterior boundaries of the certificated area that are not served water are outside the service area designated by this notice, and any person offering land for sale or lease must obtain an individual certificate of assured supply.

Think Conservation!

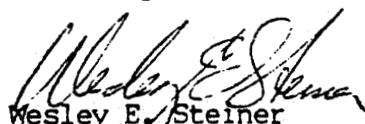
Administration 255-1550, Water Resources and Flood Control Planning 255-1566, Dam Safety 255-1541,  
 Flood Warning Office 255-1548, Water Rights Administration 255-1581, Hydrology 255-1586.

Mr. W. J. Ramo  
Page 2  
August 26, 1980

This designation is based on criteria previously established for determining adequacy of supply, which allow greater overdraft than may be allowed under management plans developed for your area under the requirements of the new law. The designation made herein will be revoked if, under future evaluations or experience, it is found to be inconsistent with the achievement of the management goal for the Active Management Area, unless the utility has protected its designation by filing with the Director an unconditional offer to contract for CAP water and proceeds to enter into the contract when offered by the Secretary.

Please contact Philip C. Briggs, the Department's Chief Hydrologist, if you have any questions.

Sincerely,

  
Wesley E. Steiner  
Acting Director

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**BEFORE THE ARIZONA CORPORATION COMMISSION**

AZ CORP COMMISSION  
DOCUMENT CONTROL

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CARL J. KUNASEK  
Commissioner - Chairman

JIM IRVIN  
Commissioner

WILLIAM A. MUNDELL  
Commissioner

IN THE MATTER OF THE JOINT	)	DOCKET NO. W-01656A-98-0577
APPLICATION OF SUN CITY WATER	)	SW-02334A-98-0577
COMPANY AND SUN CITY WEST	)	
UTILITIES COMPANY FOR APPROVAL OF	)	
CENTRAL ARIZONA PROJECT WATER	)	
UTILIZATION PLAN AND FOR AN	)	
ACCOUNTING ORDER AUTHORIZING A	)	
GROUNDWATER SAVINGS FEE AND	)	
RECOVERY OF DEFERRED CENTRAL	)	
ARIZONA PROJECT EXPENSES.	)	

**TESTIMONY OF DENNIS HUSTEAD**

**On Behalf of**

**SUN CITY TAXPAYERS ASSOCIATION  
("SCTA")**

**September 10, 1999**

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DIRECT TESTIMONY OF  
DENNIS HUSTEAD  
DOCKET NOS. W-01656A-98-0577 and SW-02334A-98-0577

**Q. Please state your name, title and business address.**

A. My name is Dennis Hustead. I am a Registered Civil Engineer with Hustead Engineering. My business address is 568 W. Moon Valley Drive, Phoenix, Arizona, 85023.

**Q. Please state your qualifications to testify in this matter.**

A. I am a Registered Civil Engineer in the states of Arizona and California with thirty-five years experience. I have significant expertise in managing the planning and design of major public works and transportation projects throughout Arizona and California. My statement of professional qualifications is provided in Attachment DH - 1.

**Q. Who are you testifying on behalf in this proceeding?**

A. I am testifying on behalf of the Sun City Taxpayers Association ("SCTA").

**Q. SCTA retained your services for what purpose?**

A. I was retained by SCTA to review the technical and economic impacts of Citizens' proposed plan for putting CAP water to use and to develop possible modifications or alternatives if possible. I also reviewed the recharge options potentially available to put the CAP water to proper use.

**Q. What is the cost of Citizens' proposed CAP utilization plan (Option 4) to Sun City Water Company and its ratepayers over the remaining life of the CAP subcontract?**

1 DIRECT TESTIMONY OF  
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5 A. I have estimated the total cost of Citizens' proposed Cap Utilization Plan  
6 (Option 4) to Sun City Water Company and its ratepayers based upon the data  
7 available in the Final Report of the CAP Task Force. My use of the data  
8 supplied by Citizens throughout my testimony does not indicate acceptance of  
9 Citizens' calculations or Citizens' positions regarding recovery. The purpose of  
10 these calculations are to provide the Arizona Corporation Commission with a  
11 better understanding of the full cost and impact of Citizens' proposal over the  
12 remaining life of the CAP subcontract. I estimate there are 42 years remaining  
13 on the initial term of Citizens' CAP subcontract, with a right to renew for an  
14 additional 50 years. It is important that the Arizona Corporation Commission  
15 consider the long-term benefits and costs to these companies and their  
16 ratepayers; not just the immediate benefits and costs.

17 Further, my calculations will tend to understate the actual costs because I have  
18 assumed a constant cost for O&M and CAP water over the remaining term of  
19 the CAP subcontract, where it is reasonable to anticipate inflationary increases.  
20 I have also assumed the golf courses will contribute \$131,000 per year for using  
21 the CAP water in lieu of pumping. I have also averaged Citizens' proposal  
22 Capital Cost Component using 50% of the estimated cost of construction as the  
23 average base over the remaining life of the Cap subcontract. Based upon the  
24 foregoing assumptions, over a 42 year period, the total impact of Citizens'  
25 proposal (Option 4) is \$58,282,000.  
26

5 **Q. Do you think it prudent to approve Citizens' proposed plan, or any plan**  
6 **dependent on placing CAP water on the golf courses before there are**  
7 **enforceable contracts in place with the golf courses?**

8 A. Definitely not. The entire concept is dependent on the golf courses taking the  
9 CAP water. Therefore, without contracts in place, the proposal is speculative at  
10 best. Moreover, without a binding contract, the revenues Citizens is projecting  
11 \$5,502,000 (\$131,000 per year x 42 years) in fees from the golf courses to help  
12 offset the costs of the proposed plan are likewise speculative.

13 **Q. Did your review of Citizens' proposed plan (Option 4) for use of CAP**  
14 **water discern any problems with the plan from an engineering viewpoint.**

15 A. My review of Citizens' proposed plan (Option 4) reached the conclusion that the  
16 plan is far more costly than it needs to be. Specifically, it includes extra costs  
17 for a pump station and a reservoir, which are simply not necessary. Regarding  
18 the pump station, the delivery system should be a closed pipeline from the CAP  
19 turnout to delivery at the golf courses. This negates the need for a pump  
20 station. This is true because the turnout at the CAP canal at Lake Pleasant Road  
21 is at an approximate elevation of 1500 feet, and the golf courses are at  
22 elevations ranging from 1300' to 1200'. Thus, the pipeline will be operating  
23 with a head of over 200 feet and will produce sufficient pressure to deliver the  
24 flow to each golf course without the need for a pump station.

25 Regarding the reservoir, there is no need to store water in a reservoir prior to  
26 delivery to the golf courses because the golf courses already have reservoirs on

5 site. These golf reservoirs are designed to store the daily irrigation  
6 requirements of the golf course (continuous water flow over 24 hours and  
7 irrigate at night during a 12-hour period), plus an emergency supply of water to  
8 last one to three days. Thus, the reservoir designed under Citizens' proposed  
9 plan (Option 4) is simply not needed.

10 Further, I determined that it would be most cost effective to maximize CAP  
11 water deliveries to Sun City West golf courses where a distribution system  
12 already exists and thereby minimize the installation of a new distribution  
13 system in Sun City. I will refer to this alternative as "Option 4 Modified".

14  
15 **Q. What are the cost impacts of the Option 4 Modified on Sun City Water  
16 Company?**

17 **A.** Eliminating the pump station and reservoir and maximizing deliveries to Sun  
18 City West, reduces total construction costs from about \$15 million to about \$9  
19 million. A table of Capital Cost for Citizens' plan as modified is shown in  
20 Attachment DH - 2. Sun City Water Company's costs would be reduced from  
21 over 9.6 million dollars to approximately 5.7 million dollars. Importantly, this  
22 cost allocation is based on Citizens allocating 4,189 af to Sun City and 2,372 af  
23 to Sun City West. If cost allocations followed the place of use, Sun City Water  
24 Company's costs would be even lower, but Sun City West's costs would  
25 increase.  
26

5 The elimination of the pump station and reservoir from the system under  
 6 Citizens' proposed plan would also reduce annual O&M costs as follows:

7 Annual Costs in \$1,000s

	Citizens' Plan (as proposed)		Citizens' Plan (as modified)	
	<u>Sun City</u>	<u>Sun City West</u>	<u>Sun City</u>	<u>Sun City West</u>
8 Reservoir O&M	36	20	0	0
9 Pipeline Maint.	10	5	10	5
10 Pump Station Maint.	40	31	0	0
11 Pump Station Power	165	102	0	0
12 O&M Contingency	47	30	5	2
13 GW Pumping Offset	(131)	(90)	(131)	(90)
14 Total Annual Costs	\$150	\$89	(\$116)	(\$83)

15 Again, the foregoing table reflects Citizens' speculative assumption that the  
 16 golf courses will actually take delivery of and pay for CAP water. The  
 17 assumption is speculative until there are binding contracts in place with the golf  
 18 courses.

19  
 20 **Q. What is the total economic impact of the Option 4 Modified on Sun City  
 21 Water and its ratepayers over the remaining life of the CAP subcontract?**

22 **A.** Under Option 4 Modified, the cost of CAP water would not change, but the  
 23 capital component and O&M would decrease significantly. I did not have the  
 24 time or data necessary to calculate the precise total impact, but have  
 25 approximated the cost to provide a comparison between the various plans.

5 Using the same methodology as set forth for calculating total costs of Citizens'  
6 proposal (Option 4), the estimated costs of Option 4 modified are \$40,214,000.

7 **Q. Did your review of Citizens' proposed plan (Option 4) reveal the possibility**  
8 **of yet another alternative plan for putting CAP water to use?**

9 A. Yes. A joint transmission facility could be built with the Aqua Fria Division so  
10 all CAP water available to Citizens could be delivered to its certificated area.  
11 The joint transmission pipeline would be constructed from the CAP canal at  
12 Grand Avenue to the Aqua Fria delivery point at Sarival Avenue, and would  
13 continue along Grand Avenue and the Beardsley alignment to a tie at the Sun  
14 City West delivery system at the Hillcrest Golf Course. Other alignments  
15 should be examined to determine the most cost-effective route. The existing  
16 Sun City West distribution system would deliver the water supply to all the golf  
17 courses in Sun City West and transport the remainder of the CAP supply to the  
18 existing pump station at Beardsely and 107th Avenue. From this point, the Sun  
19 City distribution would deliver the supply to only the Willow Brook and Union  
20 Hills Golf courses. See Attachment DH - 3 which shows the system layout  
21 under this alternative plan.

22 **Q. What are the project cost impacts of the alternative plan?**

23 A. This alternative plan actually costs about \$10 million compared to the \$15  
24 million for Citizens' proposed plan (Option 4) or the \$9 million for Option 4  
25 Modified. However, under this alternative the Aqua Fria Division would also  
26 be able to deliver its full CAP allocation. A significant portion (62.8%) of the

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5 construction costs for the joint facilities would be allocated to the Agua Fria  
6 Division and away from Sun City and Sun City West. Certain costs would be  
7 allocated to the Sun Cities only and some costs would be assigned to a  
8 particular water system. Compared to Citizens' proposed plan (Option 4),  
9 where Sun City and Sun City West ratepayers are being asked to provide  
10 approximately \$21,761,000 in cost of capital, this alternative reduces this  
11 potential obligation to about \$15,783,000. Further, it provides the Agua Fria  
12 Division a means of delivering its 11,093 af of CAP water to its service area.  
13 Please see Attachment DH - 4 for details on the construction costs under this  
14 alternative plan.

15 **Q. What is the total economic impact of the alternative plan on Sun City**  
16 **Water Company and its ratepayers over the remaining life of the CAP**  
17 **subcontract?**

18 Utilizing the same methodology as set forth above, the estimated cost of this  
19 alternative to Sun City Water and its ratepayers over the remaining 42 year term  
20 of the CAP subcontract would be approximately \$34,362,000.

21 **Q. Did you review the possible options of putting the CAP water to use by**  
22 **either leasing capacity at CAWCD's Agua Fria Recharge Project or**  
23 **utilizing the Groundwater Savings Project/Exchange with Maricopa Water**  
24 **District?**

25 **A.** Yes. I reviewed these two options using the data provided by Citizens. Under  
26 the CAWCD Agua Fria Recharge Project option, Citizens would lease recharge

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5 capacity in the CAWCD's Agua Fria Recharge Project. Water would be  
6 conveyed from the CAP canal to the recharge facility by gravity via the channel  
7 of the Agua Fria River. Recharged water would be recovered through existing  
8 wells in Sun City and Sun City West. The total cost of this option to Sun City  
9 Water Company over the remaining life Citizens' CAP subcontracts would be  
10 approximately \$26,844,000.

11 Under the Groundwater Savings Project/Exchange with Maricopa Water  
12 District option, CAP water would be delivered through an existing distribution  
13 system to farms located in MWD's service area that have historically used  
14 groundwater pumped by MWD. By doing this, every gallon of groundwater not  
15 pumped by MWD would legally available to Citizens be withdrawn later as  
16 CAP water. CAP water recharged or exchanged with MWD would be recovered  
17 through existing wells in Sun City and Sun City West or from other recovery  
18 wells, even if the water was not used in the Sun Cities. If the water is  
19 withdrawn, especially if it withdrawn for use outside the Sun Cities, there  
20 would be no net benefit to the aquifer or the Sun City Water Company's  
21 ratepayers. The total cost of this option to Sun City Water Company over the  
22 remaining 42 year life of Citizens' CAP subcontracts is estimated to be  
23 \$20,334,000.  
24  
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26

5 **Q. Please summarize the total economic impact of all of the options reviewed**  
6 **on the Sun City community over the life of Citizens' CAP subcontracts.**

7

8 <u>Option:</u>	9 <u>Total Cost:</u>
10 Citizens' Project (Option 4)	\$58,282,000
11 Option 4 Modified	\$40,214,000
12 Alternative Joint Project	\$34,362,000
13 CAWCD/Agua Fria Recharge Project	\$26,844,000
14 MWD Recharge Project	\$20,334,000

15 These calculations are summarized on Attachment DH – 5.

16 **Q. Do any of the alternatives you reviewed provide direct benefits to Sun City**  
17 **Water Company ratepayers?**

18 A. The CAWCD and MWD recharge projects may provide very long range and  
19 indirect benefits to Sun City Water Company ratepayers if the water is not  
20 recovered, but there is nothing in Citizens' filing that allows me to quantify this  
21 benefit. Further, the benefits would be substantially the same for persons  
22 residing elsewhere in the region.

23 The benefits to Sun City Water Company ratepayers would be more direct and  
24 greater with any of the three golf course recharge alternatives I have discussed.  
25 However, again, nothing in Citizens' filing allows me to quantify these benefits  
26 or permits me to determine whether the benefits are sufficient to justify

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DIRECT TESTIMONY OF  
DENNIS HUSTEAD  
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incurring the significant costs associated with direct delivery to the golf courses

**Q. What is your opinion of Citizens' request to include recovery of deferred CAP recovery charges?**

A. I believe that these costs have accrued because Citizens, for more than ten (10) years, failed to design a plan to put CAP water to use. Thus, to retroactively collect these charges from existing customers, many of whom may not have resided in Sun City during the period the charges were incurred, is not equitable. If any of these deferred costs are to be collected from the ratepayers, a better method might be to charge a connection fee to all new developments and new existing service reconnections.

**Q. Do you agree with Citizens' proposed method of recovering costs of its CAP utilization plan?**

A. No. The Final Report of the CAP Task Force, page 14) states that "CAP water should be considered the first water supply delivered to customers, roughly the first 3,500 gallons, instead of making CAP water a portion of every gallon delivered. If CAP water is assessed based on consumption, then the larger water users will unfairly subsidize small water users even though on a per household basis the demand is comparable." I disagree with this statement.

The best method to recover the cost for utilization of CAP water is from customers entering the system today. To the extent CAP costs are recovered

5 from existing customers, these costs should be blended with the rates generally  
6 and not recovered as a flat per household charge. The more water consumed by  
7 a customer, the greater the need for CAP water. Therefore, CAP costs should  
8 be recovered based upon usage, if not totally recovered from customers entering  
9 the system. This places the greatest burden on those using the most water,  
10 encourages conservation and protects persons on fixed incomes.

11 **Q. At this time, can you recommend which option, if any, should be adopted**  
12 **by the Commission to put the CAP water to use?**

13 A. No. Although I now have a good understanding of the costs for each of the  
14 options, I was unable to perform an independent cost/benefit analysis or to  
15 quantify the value of potential direct and demonstrable benefits to the Sun City  
16 community. Certainly the golf course recharge options provide more potential  
17 to directly benefit Sun City's ratepayers than the other recharge options, but at  
18 significant cost. The CAWCD and MWD recharge projects appear to provide  
19 regional benefits rather than direct benefits for the Sun Cities. To the extent  
20 benefits of these projects are regional in nature, the costs of such recharge  
21 projects should be borne equally throughout the region. Such costs spreading  
22 already occurs when the AWB, CAWCD or CAGR D utilize these recharge  
23 sites.

24 **Q. Does this conclude your testimony?**

25 A. Yes.

**HUSTEAD ENGINEERING****Dennis Hustead, P.E.****TITLE**

President

**REGISTRATION**

Arizona, 1972, Civil Engineer, No. 8566  
 Arizona, 1984, Land Surveyor, No. 16840  
 California, 1967, Civil Engineer, No. 39180

**EDUCATION**

B.S., 1963, Civil Engineering  
 California State University - Los Angeles

Organizational - Financial Management  
 Stanford Univ., Graduate School of Business

**PROFESSIONAL MEMBERSHIPS**

American Society of Civil Engineers  
 American Public Works Association  
 American Water Works Association  
 National Society of Professional Engineers  
 Water Pollution Control Federation

**EXPERIENCE**

Mr. Hustead offers 35 years of civil engineering experience with significant expertise in managing the planning and design of major public works and transportation projects throughout Arizona and California. Mr. Hustead typically serves as a Project Manager for unique projects with complex design, extensive agency coordination and/or "fast track" project schedules. Mr. Hustead also assumes the role of Project Principal for various other in-house projects, where his responsibilities include quality assurance/quality control, overall project management, and technical assistance.

**PAVING/DRAINAGE, SITE DEVELOPMENT**

**West Water Yard Paving - City of Phoenix**  
 Preparation of construction plans for the removal of deteriorating surface and

replacement of new pavement to provide proper drainage. The design incorporated the requirement to provide continued operations at the yard during the repaving.

**Glenrosa and Union Hills Service Center  
 Phase I Paving & Lighting - City of  
 Phoenix**

Preparation of grading and drainage plans for replacement of existing pavement on the south portion of Glenrosa and, and lighting at Glenrosa and Union Hills to properly illuminate the sites. The sites are each about 7.5 acres.

**Mountain View Park - City of Phoenix**

This project included preparation of plans for site grading to alleviate drainage problems, landscape design, and lighting for an 8 acre recreation area at Grovers and 9th Street.

**24th Street and Yuma Intersection at Sky  
 Harbor - City of Phoenix**

The design of this intersection at the airport provides improved access for the interterminal buses from the air freight terminal to the passenger terminals via 24th Street and Buckeye. The project included saw cutting the curb from the gutter and use of the remaining gutter as a valley gutter across the new intersection.

**Site Development at Fire Station # 30 - City of  
 Phoenix**

This design included the parking, paving, and utilities to serve the new fire station. The project also included the widening of Belmont Avenue to facilitate the access by fire trucks to the station.

**Glenrosa Service Center Paving and Lighting  
 Phase II - City of Phoenix**

Preparation of plans for repaving and lighting the north portion of Glenrosa. The project also included the design for construction of the south half of Turney Street with curb and gutters to protect the site from offsite drainage.

## **WATER**

**Water System Appraisal/Valuation,** including RCNLD, economic analysis, water rights determination and expert witness in court proceedings for:

- **Carefree Water Co. - (Major Stockholders)**  
Carefree Water Company
- **City of Chandler -**  
Kyrene Water Company  
Palm Water Company  
Cooper System Tankersley Water Co.
- **City of Phoenix -**  
Paradise Valley Water Company  
Sende Vista Water Company  
Consolidated Water Utilities Ltd.
- **City of Scottsdale -**  
Pinnacle Paradise Water Company  
Desert Springs Water Company  
Ironwood Water Company  
North Valley Water Company

**Expert Testimony on Water Rights for Colorado River Indians.** Project Manager for expert testimony on water rights in Arizona vs. California Litigation of Colorado River adjudication including agricultural development project for the Colorado River Indians.

**Planet Ranch Water Resources Study - La Paz County, for the City of Scottsdale.** Project Manager for the planning and analysis of cost to develop water resources, establish water rights and transport a supply to the City of Scottsdale for domestic use. The study included the planning of a collection system, pump stations and pipelines to deliver the Planet Ranch water right to the CAP canal for delivery to the City. Cost estimates of the purchase of the ranch and facilities to transport the water were the basis for an economic evaluation of the acquisition.

**University Avenue Water Line for City of Phoenix.** Project Manager for the design of a 2 mile segment of a 60-inch transmission line conveying domestic water to the City's storage reservoir at South Mountain and 41st Street, and included tunneling under the I-10 freeway.

**South Mountain Reservoir for City of Phoenix.** Project Manager for design and inspection of a 20 MG reservoir located in South Mountain Park. The reservoir was designed as a free

formed structure to blend with surrounding terrain, and was awarded NSPE recognition for landscaping and environmentally sensitive design.

**Navajo Indian Reservation Water and Sanitation Authority Establishment.** Project Manager and principal investigator in the establishment of a water and sanitation authority to provide service for the entire Navajo Indian Reservation. Assignment included preparing a master plan report which inventoried all facilities for the 25,000 square mile indian reservation, structuring of an agency to provide maintenance and operation of facilities, and the establishment of rate structures for the services to be provided.

**Colorado River Indian Tribe Irrigation Project, La Paz County.** Project Manager to plan and design a irrigation system for the Colorado River Indian Tribe's 11,000 acre agricultural development project. Project included feasibility analysis, preliminary design involving environmental planning, clearing and leveling the land, farm layout, operations and maintenance. Assistance was also provided in securing a Bureau of Rec. PL 84-984 loan for financing the project, analyzing water costs, and developing a loan repayment program. Design for the irrigation system provided for 19 miles of concrete canals, 80 miles of farm distribution laterals, farm land development, and appurtenant roads, housing and farm buildings.

**Design of Hydroelectric Generating Facility for Yuma County Water Users Association.** Project Manager for planning, design and construction administration of 4.7 MW hydroelectric generating facility at Siphon Drop in Yuma County.

**Water System Planning for Fort Mojave Indians in Yuma County.** Project Manager responsible for agricultural water system planning for 32,000 acres of arid desert land near the Colorado River.

**Santa Fe Avenue Water System Improvements for City of Flagstaff.** Design for water system improvements, including pipeline services, appurtenant valves and fittings within Santa Fe Avenue for City of Flagstaff and involving extensive coordination with the ADOT.

**Water and Sewer Master Plan for Grover City, California** - for a population of 15,000 with estimated construction costs for the 20-year program of \$1.3 million. Preparation of the master plan was in accordance with HUD requirements for water and sewer systems improvements.

**Economic Analysis of Agricultural Lands in Cawelo and Kem Delta Water Districts, California.** Prepared engineering and economic studies for the agricultural lands in Cawelo and Kem Delta Water Districts, including planning of water ex-changes, and for transmission and distribution facilities for 175,000 acres of farm land.

**Water Master Plan for City of Atascadero, California.** As Project Manager, Mr. Husted was responsible for preparing a water system master plan for the City of Atascadero for the purposes of securing a HUD grant. The report included a comprehensive study of water usage and improvements to production, storage, and distribution facilities for a community of 12,000 people. Estimated cost for the 20-year improvement program was \$1.3 M.

**Groundwater Recharge Analysis for Rosedale-Rio Bravo Water Storage District, California.** As Project Manager, Mr. Husted evaluated the effect of groundwater recharge for this 43,000 acre agricultural district. The recharge project had the capability of delivering about 100,000 acre-feet per year to the district. Plans and specifications were prepared for a 42-inch transmission main to import water for agricultural use to the district.

**Kufra 25,000 Acre Agricultural Development Project located in the Sahara Desert in Libya, North Africa.** As resident project engineer, Mr. Husted was responsible for the planning and development of water production and distribution facilities for the development of 25,000 acres of previously barren desert. Nine 16-inch diameter production wells with capacities of 2,000 and 3,000 gpm at 600 feet depth, and 45 miles of distribution systems, including on-farm sprinkler systems for the first phase were designed. Trained and supervised Libyan personnel in installation, operation, and maintenance of the system.

Developers in Scottsdale joined forces to finance and construct a system to deliver treated wastewater effluent to their golf courses. Nine golf courses were initially involved in the project, with provisions to accommodate an additional 11 golf courses. The implementation of this project will enable the golf course operators to convert from the use of domestic quality water to reclaimed wastewater or raw (untreated) CAP water. Key design features included:

- 12 miles of pipeline 30" - 16"
- 2 miles of 36-inch pipeline
- 1.5 miles of 20-inch Gravity Line
- 10 MG Storage Reservoir
- 50,000 gal. Steel Tank Reservoir
- 21 MGD Pump Station
- 14 MGD Pump Station
- 3 Pump Stations (10 MGD or less)

As Project Manager, Mr. Husted was responsible for the overall project management and coordination of the project. His involvement included extensive coordination with representatives of the City of Scottsdale, the developers and other affected agencies to assure that the project remained on the fast-track schedule and stayed within budget.

**Urban Phoenix 208 Study - Phoenix, Arizona for the U.S. Army Corps of Engineers.** Project Director for the evaluation and planning for reuse of treated effluent from sewage treatment plants including golf course and green belt irrigation, industrial cooling, and ornamental water features. The study evaluated the acceptability of use, regulatory criteria, and feasibility.

## **RECLAIMED WATER**

**Scottsdale Effluent Delivery System for Southwest Community Resources.**

## **SEWAGE**

### **Sewage Collection and Treatment Facility -**

**Miami, Arizona for the Town of Miami.** Mr. Husted directed the engineering design and construction inspection for a 16,000 ft. interceptor sewer involving 12- and 15-inch diameter pipe, and a 300,000 gpd sewage treatment plant serving the town of Miami. This facility, serving 3,400 residents, was financed by EPA and the Four Corners Commission, to replace the existing line and oxidation ponds that were subjected to repeated damage by flooding from the Miami and Blood Tanks Washes. Replacement of the facility, was accomplished by building a pump station outside the floodplain and locating the treatment plant on top of the 300 foot high tailings dam of Inspiration Copper Company. The effluent from the treatment plant is used for irrigation of an adjacent golf course or for revegetation of the tailing dam.

### **Route Study and Design of Camelback Road**

**Trunk Sewer for City of Phoenix.** Project Manager for a route study and design of 3 miles of 21" to 39" trunk sewer in Camelback Road for the City of Phoenix. The selected route traverses through the Biltmore Shopping Plaza, and by-passes major utility conflicts at the 24th Street and Camelback intersection, providing relief capacity for the overburdened sewer system of the area.

### **Regional Sewage Treatment Facility Master**

**Plan for City of Taft, California.** As Project Manger, Mr. Husted prepared an engineering report on the planning and financing of a regional sewage treatment facility for a community of 17,000 people. The report was used to support a bond authorized election and to obtain federal and state grants to fund the \$1 million project. Earthen aerated lagoons were recommended as a solution to the subsiding soils problem that had forced abandonment of the existing trickling filter plant due to structural damage to its concrete components.

## **DRAINAGE**

### **Design of 48th Street Storm Drain for City of**

**Phoenix.** Project Manager for 48th Street storm drain project serving Tempe and Phoenix. The 90" and 102" diameter pipe included a crossing at I-10 junction with an existing 54" pipe and outlet to Tempe drain.

### **Indian Bend Wash Open-end Contract for U.S. Army Corps of Engineers.** Project included

electrical/mechanical investigations, design of lighting for Indian Bend Wash Project, site development for recreational facilities, study of drainage and flood control facilities.

### **East Yuma Storm Drainage Study.** Study

provided pipelines, channelization and detention basins to protect the East Meas area of Yuma. The assignment also included the planning and design of the East Mesa Outfall to the Colorado River.

## **MISCELLANEOUS**

### **Preliminary Design of Dreamy Draw Dam**

**Recreation Park for the U.S. Army Corps of Engineers.** Mr. Husted provided the preliminary design and plans for park facilities, parking lot, kiosks, restrooms and equestrian tunnels under Northern Avenue.

### **Rio Salado Golf Course Design for the City of**

**Phoenix.** Project Manager for planning and design of golf course and park development on south bank of Salt River at 7th Street. The site was reclaimed from landfill operations and included the design of a methane gas collection system and utility supports to withstand settlement caused by decomposing refuse in the landfill. The project also included bank protection, well design, irrigation, and drainage to protect against groundwater pollution.

### **TPC Golf Course for the City of Scottsdale.**

This project included the drainage design for constructing a golf course in the detention area of the CAP dike, as well as development of a water supply from a well and from the CAP, and use of lakes on the golf course for groundwater recharge.

### **Open Ended Planning and Design Contract in**

**Arizona for the U.S. Army Corps of Engineers.** As Project Manager, Mr. Husted was responsible for the planning and design of miscellaneous facilities and related work in Phoenix and Tucson, Arizona. Contract work included analysis and design of electrical and mechanical systems at military bases; architecture, landscape architecture and associated site development at recreational areas; as well as flood control analysis and design of facilities.

**Design and Inspection Services at Usery Mountain Park in Maricopa.** Project included roads, parking and water system improvements, as well as improvements to the admittance station and maintenance building.

**Repair, Restoration and Maintenance for Electrical Systems at Yuma Proving Grounds for U.S. Army Corps of Engineers.** As Project Manager, Mr. Husted conducted a field survey of the electrical utility system to determine the required repairs for the transmission system. Subsequent service contracts were issued over 50 miles of pole lines and six substations (69, 34, 12 and 4 kv).

**Repair of Marine Corps Air Station Piping Systems in Yuma, for the U.S. Navy.** Project included the design plans, specifications and cost estimates for interior repair of baths and waste piping for 182 units at the Marine Corps Air Station.

**Gas System Rehabilitation for Northern Arizona University in Flagstaff.** This project included the design and inspection of 20,000+ L.F. of gas line, pressure regulation stations and other appurtenances. In addition, pavement replacement was also included as part of the design.

CAPITAL COST OF SYSTEM  
OPTION #4 "MODIFIED"

Alignment along Lake Pleasant Road to pump station @ Beardsley & 107th Avenue; Joint transmission with Sun City West; Delivery of 5161 AF/Yr to golf courses in Sun City West through existing effluent delivery system; Delivery of 1400 AF/Yr to Willow Brook and Union Hills golf courses in Sun City; Closed system with no reservoir or pump station required; Reduced delivery system to Sun City (20,000 LF - 10" Diameter Pipe); Sun City capacity = 63.8%, Sun City West capacity = 36.2%, based on CAP allocation.

<u>DESCRIPTION</u>	<u>TOTAL</u>	<u>SUN CITY</u>	<u>SUN CITY WEST</u>
1 Transmission Pipe (Q=5416GPM) 21,000 LF ; 21" Dia.	\$4,404	\$2,810	\$1,594
2 Storage Reservoir Not Required	0	0	0
3 Booster Pump Station Rehab for SCW	\$ 149	0	\$ 149
4 Distribution System (6561 AF/Yr)			
a) Sun City West (5161 AF/Yr)	\$ 218	0	\$ 218
b) Sun City (1400 AF/ Yr)	\$ 720	\$ 720	0
20,000 LF - 10" Dia. @ \$36/LF			
Subtotal	\$5,491	\$3,530	\$1,961
Contingency 30%	\$1,647	\$1,059	\$ 588
Engr, Adm, Legal 25%	\$1,785	\$1,147	\$ 637
<b>TOTAL PROJECT COST</b>	<b>\$8,923</b>	<b>\$5,736</b>	<b>\$3,186</b>



CAPITAL COST OF SYSTEM  
JOINT TRANSMISSION SYSTEM w/ AQUA FRIA DIVISION

Alignment along Grand Avenue from CAP turnout to Beardsley alignment, then east to Hillcrest GC; tie into existing Sun City West effluent distribution system for delivery of 5161 AF/yr to golf courses in Sun City West; Delivery of 1400 AF/ Yr to Willow Brook and Union Hills golf courses in Sun City from 107th Avenue; Closed system with no reservoir or pump station required; Reduced delivery system to Sun City(20,000 LF - 10" Diameter Pipe); Sun City capacity = 23.7%, Sun City West capacity = 13.5%; Aqua Fria capacity = 62.8%, based on CAP allocation.

Capacity in Grand Avenue Transmission Line to Aqua Fria Delivery point: (A to B)

USER	CAP allocation	%
Sun City	4,189 AF/Yr	23.7%
Sun City West	2,372 AF/Yr	13.5%
Aqua Fria Divison	11,093 AF/Yr	62.8%

Capacity in Transmission Line from Aqua Fria Delivery Point to Hillcrest GC: (B to C)

USER	CAP allocation	%
Sun City	4,189 AF/ Yr	63.8%
Sun City West	2,372 AF/ Yr	36.2%

Cost of Facilities and Allocation of Costs:

Joint Transmission Line

Reach	Q gpm	Size	LF	Unit \$	\$1000	SC	SCW	A. F.	
A - B	14,559	30"	32,000	\$120/lf	3,900	924.3	526.5	2,449.2	
B - C	5,411	18"	20,500	\$ 70/lf	1,435	915.5	519.5	0	
C - D	Use	Exist.	SCW	System		0	0	0	
D - E	1,155	10"	20,000	\$ 36/lf	720	720.0	0	0	
Subtotal					6,055	2,559.0	1,046.0	2,449.2	
Contingency					30%	1,816.5	767.9	313.8	734.8
Engr,Adm,Legal					25%	1,967.9	831.9	340.0	796.0
TOTAL PROJECT COST					9,839.4	4,159.6	1,699.8	3,980.0	

**SUN CITY WATER COMPANY**

Total cost burden on the Sun City community over the lives of the projects.

	<u>Citizens Plan</u>	<u>Citizens Plan (Modified)</u>	<u>Joint Pipeline (Alternative)</u>
Holding Costs	\$629,000	\$629,000	\$629,000
CAP Costs	\$22,696,000	\$22,696,000	\$22,696,000
Operating Costs	\$5,011,000	\$630,000	\$756,000
Cost of Capital	\$35,448,000	\$21,761,000	\$15,783,000
Less CAP Fees	(\$5,502,000)	(\$5,502,000)	(\$5,502,000)
Total Costs	<u>\$58,282,000</u>	<u>\$40,214,000</u>	<u>\$34,362,000</u>

**SUN CITY WATER COMPANY**

Total cost burden on the Sun City community over the lives of the recharge projects.

	<u>CAWCD Recharge</u>	<u>MWD Recharge</u>
Holding Costs	\$629,000	\$629,000
CAP Costs	\$22,696,000	\$22,696,000
Lease Costs	\$3,519,000	\$0
CAP Fees	<u>\$0</u>	<u>(\$2,991,000)</u>
Total Costs	\$26,844,003	\$20,334,000