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Exhibit #: CT-100-110
CT 116-120, 122-129

Part 2 of 2

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

BOB STUMP – Chairman
GARY PIERCE
BRENDA BURNS
BOB BURNS
SUSAN BITTER SMITH

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY IN CASA GRANDE, PINAL COUNTY, ARIZONA

DOCKET NO. W-01445A-03-0559

REBUTTAL TESTIMONY OF STEVEN SORIANO
REMAND PROCEEDING II
ON BEHALF OF CORNMAN TWEEDY 560, LLC
JULY 18, 2014

CORNMAN TWEEDY 560 LLC

Rebuttal Testimony of Steven Soriano
Remand Proceeding II

July 18, 2014

I. INTRODUCTION.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven Soriano. My business address is 9532 E. Riggs Road, Sun Lakes, Arizona 85248.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Robson Communities, Inc., as vice-president. Robson Communities, Inc., provides accounting, human resources, legal, capital budgeting and other administrative services to a group of approximately 50-60 affiliated companies collectively referred to as "Robson" or the Robson family of companies. I am an officer of many of the companies within the Robson family, including the water and wastewater utilities that I identify later.

Q. WHAT IS YOUR RELATIONSHIP TO CORNMAN TWEEDY 560, LLC?

A. I am the vice-president of Arlington Property Management Company, which is the Manager and a member of Cornman Tweedy 560, LLC.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. In 1991, I received my degree in business administration with a special emphasis in accounting from State University of New York at Buffalo. After college, I joined the certified public accounting firm of Kenneth Leventhal & Company as an auditor in the New York office. I was licensed in New York as a certified public accountant. In 1994, I transferred to the Phoenix office of Kenneth Leventhal & Company where I worked for approximately one year until I joined Robson in 1995.

Q. PLEASE DESCRIBE YOUR WORK RESPONSIBILITIES AT ROBSON?

A. I have worked in many different areas at Robson, including land acquisitions, new-site development, construction and marketing. I serve as vice-president and Chief Financial Officer for many of the companies within the Robson family.

Q. WERE YOU ACQUAINTED WITH THE LATE JIM POULOS?

A. Yes. Jim Poulos ran the various water and wastewater utilities that are owned by Robson. Being involved in land development and project development, I worked closely with Mr. Poulos on water and wastewater planning for the various Robson developments. Mr. Poulos passed away in September 2009. After his passing, I became the general manager of Robson's utility companies and I continue to serve as the general manager of the utility companies today.

Q. WHAT UTILITIES DOES ROBSON OWN AND OPERATE IN ARIZONA?

A. Robson owns and operates the following utilities in Arizona:

- Pima Utility Company
- Lago Del Oro Water Company
- Ridgeview Utility Company
- Saddlebrooke Utility Company
- Quail Creek Water Company
- Picacho Water Company
- Picacho Sewer Company
- Mountain Pass Utility Company
- Santa Rosa Water Company
- Santa Rosa Utility Company

Q. PLEASE DESCRIBE YOUR TRAINING AND EXPERIENCE WITH RESPECT TO THE ROBSON UTILITIES.

A. I spent 10 years at Robson working with Mr. Poulos and former Robson executive Karl Polen in the development of Robson's water and wastewater utilities. After Mr. Poulos passed away, I spent substantial time reading, studying and learning

about the Robson utilities, water and wastewater regulation in Arizona, and water and wastewater practices in Arizona. I have attended (and continue to attend) best practices and industry meetings in the water and wastewater fields. I am a member of the Water Utilities Association of Arizona, which holds workshops and open houses on utility industry best practices and Arizona utility regulation. I also serve on a committee to the Arizona Department of Water Resources ("ADWR") that studies best management practices.

Q. WHAT ARE YOUR RESPONSIBILITIES FOR THE ROBSON UTILITIES?

A. I oversee the operations and business management functions of the utilities. I am responsible for the daily operations and administration of the utilities, for financial and operating results, for capital and operating cost budgeting, for rate case planning and oversight, and rate setting policies and procedures.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Cornman Tweedy 560, LLC.

Q. HAVE YOU TESTIFIED PREVIOUSLY IN ANY PROCEEDINGS BEFORE THE ARIZONA CORPORATION COMMISSION?

A. Yes. I testified in Phase 2 of Litchfield Park Service Company's rate case in Docket Nos. W-01427A-09-0104 and SW-01428A-09-0103. I also testified in the most recent rate cases for Pima Utility Company in Docket Nos. W-02199A-11-0329 and SW-02199A-11-0330 and Lago Del Oro Water Company in Docket No. 01944A-13-0215.

Q. DO YOU ADOPT ALL OF THE PRE-FILED TESTIMONY OF THE LATE JIM POULOS AS YOUR OWN TESTIMONY IN THIS DOCKET?

A. Yes. I am adopting as my own testimony the following pieces of testimony previously filed on behalf of Mr. Poulos:

- Direct Testimony of Jim Poulos dated June 12, 2006.
- Rebuttal Testimony of Jim Poulos dated July 6, 2006.

- Direct Testimony and Exhibits of Jim Poulos in the Remand Proceeding dated January 4, 2008.
- Rebuttal Testimony and Exhibits of Jim Poulos in the Remand Proceeding dated February 5, 2008.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. I would like to respond to certain statements in the Direct Testimony of Rita P. Maguire that was filed in this docket on May 30, 2014.

Q. HAVE YOU REVIEWED THE DIRECT TESTIMONY OF MS. MAGUIRE?

A. Yes.

III. RESPONSE TO THE DIRECT TESTIMONY OF RITA P. MAGUIRE

Q. IN HER DIRECT TESTIMONY, MS. MAGUIRE STATES THAT "INTUITIVELY, IT MAY MAKE SENSE THAT A SINGLE COMPANY PROVIDING BOTH WATER AND WASTEWATER SERVICES WOULD LEAD TO MORE EFFICIENT USE OF BOTH SUPPLIES, HOWEVER, EXPERIENCE SUGGESTS OTHERWISE."[1] WHAT IS ROBSON'S VIEW REGARDING INTEGRATED WATER AND WASTEWATER UTILITIES?

A. Robson enthusiastically believes in the benefits of integrated water and wastewater utilities. An integrated water and wastewater utility does not treat the delivery of potable water, the collection and treatment of wastewater and the distribution of effluent as separate unrelated activities. Rather, an integrated water and wastewater utility recognizes that the provision of water service is substantially interrelated to the provision of wastewater service. An integrated utility recognizes that groundwater is a scarce resource and that the efficient use of reclaimed water for turf/landscape irrigation and recharge of the aquifer are

[1] Direct Testimony of Rita P. Maguire (May 30, 2014) at 12, lines 8-10.

critical to the long-term sustainable provision of water and wastewater services to its customers. As an example, consider Robson's Pima Utility Company ("Pima"), which is one of the pioneers of effluent recharge and recovery in Arizona. Pima uses groundwater as its initial source of water supply. Using a system of wells, storage facilities and booster stations, groundwater is distributed to residential and commercial customers throughout Pima's service area. Pima then collects the wastewater generated by its customers and treats that wastewater at its reclamation facility. The reclaimed wastewater, or effluent, is then recycled in the Sun Lakes community through Pima's reclaimed water distribution system. Pima delivers reclaimed water to the Oakwood Golf Course for direct use and to five dual-use recharge and recovery wells for recharge into the local aquifer. Reclaimed effluent is recovered from the recharge and recovery wells for delivery to landscaping and golf course uses in the Sun Lakes community. Pima's fully integrated system directly reduces groundwater pumping by meeting turf and landscaping demands with reclaimed water, and Pima replenishes the aquifer by returning remaining unused effluent to the aquifer.

Q. IN HER DIRECT TESTIMONY, MS. MAGUIRE MAKES THE FOLLOWING ASSERTIONS:

> **IN AN EFFORT TO STRETCH THE STATE'S SCARCE GROUNDWATER RESOURCES, THE ADWR, THE ACC, AND THE CITIES AND TOWNS ACROSS THE STATE HAVE ADOPTED A VARIETY OF REGULATIONS AND POLICIES DESIGNED TO ENCOURAGE WATER CONSERVATION AND THE USE OF SURFACE WATER AND EFFLUENT. FOR EXAMPLE, STARTING IN 2006, THE ACC BEGAN INCLUDING IN ITS OPINIONS AND ORDERS TO GRANT OR EXTEND CC&NS, LANGUAGE PROHIBITING THE SALE OF GROUNDWATER BY A PRIVATE WATER UTILITY FOR USE ON GOLF COURSES, ORNAMENTAL LAKES OR OTHER WATER FEATURES IN THE COMMON AREAS OF NEW DEVELOPMENTS. THESE PROHIBITIONS WERE IMPOSED ON UTILITIES DOING BUSINESS IN SOME OF THE MOST THREATENED**

> **GROUNDWATER BASINS IN THE STATE, INCLUDING AREAS OUTSIDE OF THE STATE'S FIVE AMAS. BUT DESPITE SUCH PROHIBITIONS, WATER PROVIDERS HAVE FOUND WAYS TO CIRCUMVENT COMPLIANCE WITH APPLICABLE WATER CONSERVATION REQUIREMENTS.**[2]

MS. MAGUIRE THEN CITES THE DELETION OF SADDLEBROOKE PHASE III AND ITS SUBSEQUENT INCLUSION IN THE NEW CC&N OF RIDGEVIEW UTILITY COMPANY AS AN EXAMPLE OF A WATER PROVIDER CIRCUMVENTING COMPLIANCE. HOW DO YOU RESPOND TO THESE ASSERTIONS BY MS. MAGUIRE?

A. I strongly disagree that Lago Del Oro Water Company or any other Robson utility has circumvented applicable conservation requirements. Let me begin by discussing the deletion of SaddleBrooke Phase III. SaddleBrooke is a Robson master-planned development north of Tucson. Lago Del Oro Water Company held the CC&N to serve the entire SaddleBrooke development, which is comprised of three phases. Back in 2000, Phase III (now known as The Preserve) was planned for 600 residential units, a golf course and some light commercial development. However, it was determined that Lago Del Oro Water Company could not provide service to Phase III without violating the Gallons Per Capita Per Day ("GPCD") program of ADWR's Third Management Plan. In order for Lago Del Oro Water Company to serve Phase III, it would have had to opt out of the GPCD program and participate in ADWR's Non Per Capita Conservation Program ("NPCCP") of the Third Management Plan. That would have resulted in significantly increased costs from enrolling in the Central Arizona Groundwater Replenishment District ("CAGRD"), which costs would have been passed on to the utility's customers. However, by deleting Phase III from Lago Del Oro Water Company's CC&N and forming a new utility to serve Phase III, the customers of

[2] *Id.* at 12-13 (citations omitted).

Lago Del Oro Water Company would not face increased rates to pay for new customer growth in Phase III. Instead, those costs would be paid by the customers that would locate in Phase III.

Q. WHAT DID ROBSON DECIDE TO DO?

A. Robson formed Ridgeview Utility Company to provide water service to SaddleBrooke Phase III. Ridgeview Utility Company and Lago Del Oro Water Company then filed a joint application with the Arizona Corporation Commission ("Commission") to delete Phase III from Lago Del Oro Water Company's CC&N and grant it to Ridgeview Utility Company.[3]

Q. DID THE COMMISSION APPROVE THE JOINT APPLICATION?

A. Yes. The Commission approved the joint application in Decision 62861, and I would like to point out a few very important findings in that decision. First, the Commission's Utilities Division Staff ("Staff") concurred with the proposal to delete Phase III from Lago Del Oro Water Company's CC&N and grant the area to Ridgeview Utility Company.[4] Staff's support of the joint application was undoubtedly based upon the fact that "[t]he developer and Staff have confirmed with ADWR that the proposal to serve Phase III complies with ADWR's Third Management Plan."[5] I would note also that Ms. Maguire was the director of ADWR at the time her agency confirmed that the proposal regarding Phase III complied with the Third Management Plan.

Second, the Commission found in Conclusions of Law 5 and 6 that "[i]t is in the public interest that the portion of Lago's Certificate located within the area described in Exhibit A be deleted" and "Ridgeview is a fit and proper entity to receive a Certificate to provide water service in the proposed service area."[6]

Third, in Finding of Fact 12, the Commission noted that "[t]o comply with

[3] Docket Nos. W-03861A-00-0208 and W-0944A-00-0208.
[4] Decision 62861 at 2-3, FOF 13.
[5] *Id.* at 3, FOF 14 (emphasis added).
[6] *Id.* at 5, COL 5-6.

ADEQ's Third Management Plan, the developer of Phase III intends to enroll the area, including the golf course, in the CAGRD, thus requiring the use of renewable supplies for both the golf course and home sites."[7] To ensure that Phase III was in fact enrolled in the CAGRD, the Commission adopted the recommendation of Staff as set forth in Finding of Fact 20(b) that "Ridgeview provide documentation confirming that the lands within Phase III of SaddleBrooke have become member lands of the CAGRD within 365 days of the effective date of this Decision."[8]

Q. DID ROBSON ENROLL SADDLEBROOKE PHASE III AS MEMBER LANDS IN THE CAGRD AS REQUIRED BY DECISION 62861?

A. Yes. As a result, the CAGRD is legally obligated to replenish, with renewable water supplies, the amount of the excess groundwater delivered by Ridgeview to its customers. ADWR's assured water supply rules provide a formula for determining the groundwater allowance for each parcel of member land. Absent extinguishment credits, the groundwater allowance in the Phoenix, Tucson and Prescott active management areas is currently 2%. SaddleBrooke Phase III is located within the Tucson AMA. Thus, virtually all of the groundwater that is supplied to Phase III is excess groundwater that must be replenished through participation in the CAGRD. The customers of Ridgeview pay the cost of the groundwater replenishment in their property tax bills.

Q. WAS THERE ANYTHING UNLAWFUL OR IMPROPER ABOUT THE DELETION OF PHASE III FROM LAGO DEL ORO WATER COMPANY'S CC&N?

A. Absolutely not. Curiously, Ms. Maguire faults Robson for failing to comply with a prohibition on the sale of groundwater to golf courses that did not begin appearing in Commission decisions until 2006 based upon her own testimony.[9]

[7] *Id.* at 2, FOF 12 (emphasis added).
[8] *Id.* at 5, lines 13-16.
[9] Direct Testimony of Rita P. Maguire (May 30, 2014) at 12, lines 16-18.

The Ridgeview Utility Company CC&N was granted in 2000 and the last CC&N extension for Lago Del Oro Water Company was granted in 2001. Thus, neither utility is subject to any decision from the Commission prohibiting the sale of groundwater to a golf course. Moreover, the testimony and evidence in this case is that there are no golf course or ornamental water features planned for the Cornman Tweedy property when that property is ultimately developed, so the discussion regarding supplying groundwater to golf course is not relevant in this case.

I would also point out that Ms. Maguire does not cite any statute, any Commission rule or decision, any ADWR rule or regulation, any permit term or condition, any provision of the Third Management Plan, or any county code or ordinance of any kind with regard to the use and conservation of groundwater that has been violated by Lago Del Oro Water Company or Ridgeview Utility Company. Thus, I am at a loss to understand what applicable water conservation requirements she believes have been "circumvented" by Robson. It appears that Ms. Maguire is intent on steering the discussion away from the real question in this case—that is whether integrated water and wastewater service is preferable to service from a stand-alone provider like AWC.

Q. DID ROBSON DELETE SADDLEBROOKE PHASE III FROM LAGO DEL ORO WATER COMPANY'S CC&N IN ORDER TO CIRCUMVENT COMPLIANCE WITH ADWR'S THIRD MANAGEMENT PLAN?

A. To the contrary, Robson found a way to fully comply with the Third Management Plan requirements <u>and</u> fulfill its public service obligation to provide water service to its customers at reasonable rates. I would add also that ADWR subsequently modified its NPCCP in response to the very type of problem that Lago Del Oro Water Company experienced with regard to SaddleBrooke Phase III.

It is ironic that Ms. Maguire would criticize Robson for allegedly circumventing conservation requirements when she herself has criticized Arizona

Water Company for challenging in court the imposition of conservation requirements on water utilities. Ms. Maguire testified as a witness for Global's Palo Verde Utilities Company and Santa Cruz Water Company in Consolidated Dockets W-01445A-06-0199, SW-03575A-05-0926 and W-03576A-05-0926. In the Direct Testimony of Rita Maguire dated January 26, 2007, Ms. Maguire testified as follows:

> **Q. When did Arizona begin to adopt water-conservation measures?**
>
> A. Arizona's adoption of the [Groundwater Management Act] in 1980 was the first state-level effort to formalize the conservation of surface and groundwater supplies. Many citizens do not realize that water conservation is an intrinsic part of the deliveries to their homes and businesses. This is because the regulatory programs governing water conservation are enforced at the water provider's level. Every ten years, ADWR adopts a new Management Plan for each AMA which requires increasingly efficient utilization of the water they deliver or use. <u>This authority was challenged by Arizona Water Company ("AWC") who argued that conservation measures should be imposed on the end user</u>.
>
> Fortunately, the Arizona Supreme Court disagreed and held that "the principal burden of achieving reductions in groundwater use [is] on water providers, who are charged in ADWR's management plans with reducing their total GPCD during each management period."[10] In the same challenge to ADWR's authority, AWC also attempted to limit the imposition of conservation measures to groundwater, excluding the delivery and use of Colorado River water from any requirements to conserve. Again, Arizona's Supreme Court disagreed, recognizing the importance of conserving all water, regardless of its source.[11]

[10] *Arizona Water Company v. Arizona Department of Water Resources*, 91 P.3d 990, 992, 208 Ariz. 147, 149 (Ariz. 2004).

[11] Direct Testimony of Rita Maguire on behalf of Palo Verde Utilities Company and Santa Cruz Water Company (Docket Nos. W-01445A-06-0199, SW-03575A-05-0926 and W-03576A-05-0926) at 20, lines 7-24 (emphasis added).

Q. MS. MAGUIRE STATES THAT "TODAY, RIDGEVIEW UTILITY COMPANY SERVES GROUNDWATER TO ITS CUSTOMERS AND HAS YET TO DELIVER SURFACE WATER OR EFFLUENT EXCEPT FOR A TOKEN AMOUNT OF EFFLUENT TO THE GOLF COURSE ACCORDING TO ITS 2013 ANNUAL WATER USE REPORT TO ADWR."[12] HOW DO YOU RESPOND?

A. All of the reclaimed wastewater from Phase III is beneficially used within SaddleBrooke. There is a significant distance between Phase III and the SaddleBrooke wastewater treatment plant which receives the wastewater from Phase III. In addition, Phase III is significantly higher in elevation than the SaddleBrooke wastewater treatment plant, which means that Ridgeview Utility Company (and ultimately its customers) would face substantial costs to pump the effluent up to Phase III. It is simply more efficient to use the effluent generated from Phase III on the golf courses in other phases of SaddleBrooke. This reduces the costs to the utility company and its customers without increasing groundwater usage.

I would also point out that all of Phase III is enrolled as member lands in the CAGRD so virtually all of the groundwater used in Phase III is being replenished. Given that (i) the groundwater pumped to serve Phase III is being replenished; (ii) all effluent from Phase III is being beneficially used; and (iii) Ridgeview Utility Company and Lago Del Oro Water Company are fully compliant with all applicable conservation requirements, I don't see how anyone can find fault with Robson.

[12] Direct Testimony of Rita P. Maguire (May 30, 2014) at 13, lines 13-15.

Q. MS. MAGUIRE STATES THAT "WHILE EACH ACRE FOOT OF GROUNDWATER PUMPED TO SERVE A MEMBER LAND MUST BE REPLENISHED, PLANNING FOR THE LONG-TERM WATER DEMANDS OF THE MEMBER LANDS IS SIMPLY A MATTER OF PAYING FOR THE WATER SUPPLIES RATHER THAN ASKING WHETHER THE PROPOSED SUBDIVISION AMENITIES MAKE SENSE IN A WATER STRAINED BASIN."[13] HOW DO YOU RESPOND?

A. First, I would note that Robson has no plans to develop the Cornman Tweedy property in the foreseeable future. With that said, even when there was some discussion about developing the property several years ago, there was never any plan for subdivision amenities such as a golf course or ornamental lakes. In fact, I can state definitively that Robson will not build a golf course or ornamental lakes on the Cornman Tweedy property. Given that this remand proceeding is focused on "whether a public service corporation, like Arizona Water, in this water challenged area and <u>under the circumstances presented in this case</u>, is providing reasonable service if it is not able or not willing to provide integrated water and wastewater services,"[14] I cannot see the relevance of Ms. Maguire's opinion on the reasonableness of subdivision amenities.

Q. MS. MAGUIRE IDENTIFIES ROBSON'S QUAIL CREEK DEVELOPMENT AS ANOTHER EXAMPLE OF A DEVELOPER TRYING TO CIRCUMVENT COMPLIANCE WITH CONSERVATION REQUIREMENTS.[15] HOW DO YOU RESPOND?

A. Again, Ms. Maguire's testimony is off the mark. The Quail Creek Resort Community ("Quail Creek") receives sewer service from Pima County's Green Valley Wastewater Treatment Plant ("GVWWTP"). In early 2001, Robson Ranch Quail Creek, LLC ("RRQC"), which is a Robson company and the developer of

[13] *Id.* at 9, lines 6-8.
[14] Procedural Order dated February 10, 2011 at 2, lines 6-10 (emphasis added).
[15] Direct Testimony of Rita P. Maguire (May 30, 2014) at 16, lines 3-12.

Quail Creek, entered into an agreement with Pima County pursuant to which RRQC paid Pima County $1,200,000 to upgrade the GVWWTP so that it would produce effluent of a quality suitable for reuse and recharge. The agreement also required RRQC to, among other things, convey two parcels of land to Pima County. RRQC then constructed an effluent recharge facility immediately adjacent to the GVWWTP so that RRQC could store the effluent until it is needed.

For reasons that are unclear, Ms. Maguire criticizes RRQC for storing effluent in the aquifer even though the effluent from the GVWWTP wasn't even being beneficially used or stored until (i) RRQC paid for upgraded treatment of the effluent, (ii) built a recharge facility, and (iii) purchased the effluent. Also, Ms. Maguire apparently does not take into account or assign any value to the replenishment by the CAGRD of the groundwater used on the member lands in Quail Creek. Lastly, Ms. Maguire's analysis doesn't take into account that eighteen of the twenty-seven holes of golf were developed pursuant to earlier laws and rules that did not require replenishment.

Q. MS. MAGUIRE ASSERTS IN HER DIRECT TESTIMONY THAT UNDERSTANDING THE COMPLICATED PROGRAMS GOVERNING THE USE OF WATER IN THE ACTIVE MANAGEMENT AREAS REQUIRES ON-GOING PARTICIPATION IN THE WATER COMMUNITY, WHICH IS NOT TYPICALLY SEEN FROM DEVELOPER-OWNED WATER COMPANIES.[16] IS THIS STATEMENT ACCURATE IN THE CASE OF THE ROBSON UTILITIES?

A. No. I cannot speak to what other developer-owned utilities may do, but I can state with absolute certainly that Robson takes very seriously its understanding of and compliance with the requirements of Arizona's water conservation and management programs. In fact, I would put Robson's reputation up against any

[16] *Id.* at 14, lines 13-23.

other utility in the state, developer-owned or otherwise. As I testified before, I have spent substantial time reading, studying and learning about the water and wastewater regulations that apply to Robson's utilities. I attend best practices and industry meetings in the water and wastewater fields. I am a member of the Water Utilities Association of Arizona which holds workshops and open houses on utility industry best practices and Arizona utility regulations. I serve on a committee at ADWR which studies best management practices. I would add also that Robson retains expert legal counsel, engineers and consultants to help with regulatory compliance and operation of the Robson utilities. In short, I believe that Robson provides top-notch utility service in compliance with all applicable statutes and regulations.

Before me, both Karl Polen and Jim Poulos developed extensive knowledge regarding Arizona's water conservation programs, water management and water policy, which attests to the great importance that Robson places on these subjects. In point of fact, Robson representatives have a long history of active involvement in the development of water policy in Arizona. Mr. Polen worked on landmark legislation leading to the creation of the CAGRD, and Mr. Poulos served on the stakeholder working group that assisted with development of the 2005 Plan of Operation for the CAGRD and on the Groundwater Users Advisory Committee for the Pinal AMA. In addition, Robson participates actively through its legal counsel on the 2015 Plan of Operation and in stakeholder processes at ADWR, including the Enhanced Aquifer Management Process currently ongoing.

Q. MS. MAGUIRE MAKES THE FOLLOWING STATEMENT IN HER DIRECT TESTIMONY:

> **THERE MAY ALSO BE A CONFLICT BETWEEN THE DUAL GOALS OF BUILDING SUBDIVISIONS AND OPERATING AN INTEGRATED WATER AND WASTEWATER UTILITY. OFTEN DEVELOPERS BUILD**

> **THE INFRASTRUCTURE AND TREATMENT FACILITIES ONLY TO SELL THEM TO THE MUNICIPALITY AFTER THE SUBDIVISION OR MASTER PLANNED COMMUNITY IS SUBSTANTIALLY BUILT-OUT, BUT BY THEN, THE RESIDENTIAL POPULATION IS LEFT RELIANT ON GROUNDWATER. IF PROBLEMS ARISE WITH THE OPERATION OF THESE FACILITIES, AS HAS OCCURRED IN THE PAST, THE MUNICIPALITIES ARE STUCK WITH REPAIRING/RETROFITTING THE INADEQUATE INFRASTRUCTURE AT A GREATER COST THAN IF THE FACILITIES WERE CONSTRUCTED APPROPRIATELY AT THE OUTSET.**[17]

WHAT IS YOUR RESPONSE TO THIS ASSERTION?

A. Clearly, Ms. Maguire's statements do not apply to or describe Robson or its utilities in any way. Moreover, while Ms. Maguire may be able to come up with the occasional horror story, as in the case of the Rancho Sahuarita Management Company cited in her testimony, I do not believe the problems she describes arise in the case of most developers. With regard to Robson specifically, we hold onto the utilities we construct to serve our developments, so we have every incentive to make sure that the utility infrastructure is properly designed, permitted and constructed. Moreover, engineering plans for utility infrastructure must be approved by the Arizona Department of Environmental Quality ("ADEQ") prior to construction, and once construction is completed, the facilities are inspected and subject to an approval of construction. I would note also that all developers constructing utility infrastructure are subject to these ADEQ approvals.

Further, Robson has never sold any of its utilities to a municipality or any other entity, and none of the Robson utilities have any history of inadequate construction requiring subsequent repairs or retrofits.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

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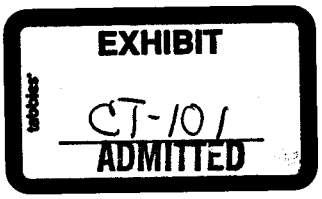
[17] *Id.* at 14-15.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

DOUG LITTLE – Interim Chairman
BOB STUMP
BOB BURNS
TOM FORESE



IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY IN CASA GRANDE, PINAL COUNTY, ARIZONA

DOCKET NO. W-01445A-03-0559

REJOINDER TESTIMONY OF STEVEN SORIANO
(REMAND PROCEEDING II)
ON BEHALF OF CORNMAN TWEEDY 560, LLC
FEBRUARY 1, 2016

CORNMAN TWEEDY 560 LLC

Rejoinder Testimony of Steven Soriano
(Remand Proceeding II)

February 1, 2016

I. INTRODUCTION.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven Soriano. My business address is 9532 E. Riggs Road, Sun Lakes, Arizona 85248.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. Yes. On July 18, 2014, I provided rebuttal testimony in this proceeding. In addition, I have adopted as my own testimony the following pieces of pre-filed testimony previously submitted by the late Jim Poulos:

- Direct Testimony of Jim Poulos dated June 12, 2006.
- Rebuttal Testimony of Jim Poulos dated July 6, 2006.
- Direct Testimony and Exhibits of Jim Poulos in the Remand Proceeding dated January 4, 2008.
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As I testified previously, Mr. Poulos ran the various water and wastewater utilities that are owned by members of the Robson family. Being involved in land development and project development, I worked closely with Mr. Poulos on water and wastewater planning for the various Robson developments. Mr. Poulos passed away in September 2009 and after his passing I became the general manager of the utilities owned by Robson family members and I continue to serve as the general manager of the utilities today.

Q. DO YOU ADOPT YOUR EARLIER PRE-FILED TESTIMONY AT THIS TIME?

A. Yes. I adopt my rebuttal testimony previously filed as well as all of the pieces of testimony provided by Mr. Poulos, as listed above.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Robson Communities, Inc., as vice-president. Robson Communities, Inc., provides accounting, human resources, legal, capital budgeting and other administrative services to a group of approximately 50-60 affiliated companies collectively referred to in my testimony as "Robson" or the Robson family of companies. I am an officer of many of the companies within the Robson family, including the water and wastewater utilities that I identify later.

Q. WHAT IS YOUR RELATIONSHIP TO CORNMAN TWEEDY 560, LLC?

A. I am the vice-president of Arlington Property Management Company, which is the Manager and a member of Cornman Tweedy 560, LLC ("Cornman Tweedy"). I am testifying in this proceeding on behalf of Cornman Tweedy.

Q. WHAT UTILITIES IN ARIZONA ARE OWNED BY MEMBERS OF THE ROBSON FAMILY?

A. Robson family members own interests in the following operating utilities in Arizona:

- Pima Utility Company
- Lago Del Oro Water Company
- Ridgeview Utility Company
- Saddlebrooke Utility Company
- Quail Creek Water Company
- Picacho Water Company
- Picacho Sewer Company
- Mountain Pass Utility Company

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY?

A. I respond to testimony contained in the Surrebuttal Testimony of William A. Garfield (Hearing on Remand-Phase II) filed on January 11, 2016.

III. RESPONSE TO THE SURREBUTTAL TESTIMONY OF WILLIAM M. GARFIELD

Q. IN HIS REBUTTAL TESTIMONY, MR. GARFIELD IS CRITICAL OF PIMA UTILITY COMPANY BECAUSE IT DID NOT USE ALL OF ITS AVAILABLE EFFLUENT IN 2014 TO OFFSET GROUNDWATER PUMPING. IS THAT A FAIR CRITICISIM?

A. Absolutely not. In fact, it actually highlights Arizona Water Company's fundamental lack of understanding regarding the integrated water and wastewater utility model. Let me begin by providing some background regarding Pima Utility Company and the Sun Lake community it serves.

Sun Lakes is a master-planned active-adult community that was constructed in three phases between 1973 and 2008, and currently has approximately 10,000 homes with supporting neighborhood commercial development. Pima Utility Company was formed in 1972 to provide integrated water and wastewater services to the Sun Lakes community. In addition to Sun Lakes, Pima Utility Company serves two adjacent subdivisions known as Oakwood Hills and San Tan Vista. Oakwood Hills was developed in 1991 and consists of 32 custom home lots and San Tan Vista began development in 2004 and consists of approximately 200 custom home lots.

In 1980, the Arizona Legislature enacted the Groundwater Management Code which, among other things, established an Assured Water Supply Program to address groundwater decline in major urban and agricultural areas of the State called active management areas ("AMAs"). Under the Assured Water Supply

Program, developers must demonstrate a 100-year water supply for new developments located within an AMA. The Arizona Department of Water Resources developed Assured Water Supply Rules which became effective in 1995. Under the rules, there are now strict limits on the amount of groundwater that may be withdrawn to serve a new development. Any groundwater pumped in excess of those strict limits must be replenished.

Sun Lakes Phase I began construction in 1973 and Phase II began construction in approximately 1982. Because these two phases were designed and constructed well before the Assured Water Supply Rules were adopted—and well prior to any requirement to replenish excess groundwater withdrawals—Robson did not install facilities that would have allowed for the direct use of effluent to water golf courses and common areas in those phases. In those days, Pima Utility Company was not generating effluent of adequate quality for reuse or recharge, and we simply were not thinking about reuse of effluent. I don't believe that any other developers at the time were thinking seriously about reuse of effluent either, and I would venture to say the same applied for most of the private and municipal wastewater providers.

Q. WHAT ABOUT SUN LAKES PHASE III?

A. That is a very different story. Unlike the earlier phases, Phase III was designed and constructed with the Assured Water Supply Rules firmly in mind. As a result, the golf course and many common areas in Phase III were designed to directly use effluent. Pima Utility Company spent more than $8 million to construct a new state of the art wastewater treatment plant to treat wastewater to aquifer-quality standards. In fact, Pima Utility Company was one of the pioneers in Arizona in treating wastewater to this high quality for use on golf courses and common areas and for recharge. Pima Utility Company was also in the forefront of permitting and constructing recharge and recovery wells to store effluent during times of the year when the effluent cannot all be used directly. Mr. Goldfield talks more about

this in his rejoinder testimony.

Today, Pima Utility Company directly delivers all of the effluent it can based upon customer demand. The balance of the effluent produced is recharged to the aquifer which benefits every person who relies upon that aquifer.

Q. MR. GARFIELD STATES ON PAGES 5-6 OF HIS SURREBUTTAL TESTIMONY THAT IN 2014 PIMA UTILITY COMPANY DELIVERED 719.89 ACRE-FEET OF EFFLUENT TO GOLF COURSES BUT THAT IT DID NOT DELIVER ALL OF ITS AVAILABLE EFFLUENT AND INSTEAD STORED 522.68 ACRE-FEET. DOES THIS INDICATE ANY ISSUE WITH PIMA UTILITY COMPANY'S MANAGEMENT OF THE EFFLUENT RESOURCE?

A. No. As I explain above, because Sun Lakes Phases I and II were constructed decades ago, there is no delivery infrastructure to deliver effluent to the golf courses or common areas in those phases. While Pima Utility Company can deliver effluent directly to golf courses and common areas in Phase III, the wastewater treatment plant produces more effluent than is currently required to satisfy customer demand. Thus, Pima Utility Company recharges the balance of the effluent to the aquifer. What is important to recognize is that Pima Utility Company uses 100% of the effluent produced at its wastewater treatment plant either through direct delivery or through recharge to the aquifer.

Q. MR. GARFIELD IS CRITICAL OF THE ROBSON UTILITIES FOR RECHARGING EFFLUENT AND ACCRUING STORAGE CREDITS INSTEAD OF DIRECTLY USING EFFLUENT TO OFFSET GROUNDWATER PUMPING. HOW DO YOU RESPOND?

A. Again, this statement reflects a fundamental lack of understanding regarding the beneficial use of effluent. When an acre-foot of effluent is directly delivered to a golf course, this obviously avoids the pumping of an acre-foot of groundwater. However, when an acre-foot of effluent is recharged in the aquifer, the volume of

water stored in the aquifer increases by an acre-foot and that water is available for future use. Whether effluent is directly used or stored through recharge, the benefit to the aquifer is the same. That is exactly the situation with respect to the 522.68 acre-feet of effluent that was stored by Pima Utility Company in 2014—that water has increased the stored water in the aquifer.

Mr. Garfield is essentially quibbling with the timing of Robson's use of the effluent storage credits that are accumulated as a result of recharging the aquifer. However, the decision regarding when to use storage credits is a business decision to be made by the utility. The utilities that are owned by members of the Robson family are operated from a conservative business perspective. Because no one can know what the future may bring, including what new laws may be enacted or current laws changed, the conservative decision has been made to store water in the aquifer for future use. The timing of using effluent recharge storage credits is not important. What is important is that effluent is recharging the aquifer. The way we see it, putting money in a savings account is always a good thing. The fact that recharge credits are not used in the very same year they are accrued is a red herring.

Q. IS AN INTEGRATED WATER AND WASTEWATER PROVIDER BETTER ABLE THAN STAND-ALONE WATER AND WASTEWATER PROVIDERS TO ENSURE THE MOST BENEFICIAL USE OF EFFLUENT?

A. Yes. Integrated water and wastewater providers plan for the delivery of effluent from day one, and working together, they ensure the most beneficial use of the resource. In addition, when you are an integrated provider, you do not see effluent as competition to potable water sales. For example, an integrated utility may request that the Commission approve a reduced rate so that there is more demand for effluent within the service area. While the sale of the effluent may displace the sale of potable water to those customers, the integrated utility is

willing to accept the trade-off in order to manage the effluent from its wastewater treatment plant. By comparison, a stand-alone water company such as Arizona Water Company simply loses revenue when effluent use supplants the use of potable water. In point of fact, Arizona Water Company has previously been involved in litigation to attempt to stop the municipalities of Bisbee and Casa Grande from delivering effluent to customers within the company's service territory.

As another example, an integrated utility may implement tariffs, with prior Commission approval, that promote the use of effluent by certain classes of customers. The end result is that effluent is beneficially used within the service territory which reduces the amount of groundwater or surface water that is used in the service territory.

Q. WHEN YOU TALK OF AN INTEGRATED WATER AND WASTEWATER PROVIDER, WHAT DO YOU MEAN BY THAT?

A. An integrated water and wastewater provider does not treat the delivery of water and the treatment of wastewater as separate unrelated activities. Rather, an integrated water and wastewater provider recognizes that the delivery of water services is substantially interrelated with the provision of wastewater services. An integrated provider recognizes that groundwater is a scarce resource and that the use of reclaimed (recycled) water for turf facilities and recharge of the aquifer are critical to the long-term sustainable provision of water and wastewater services to its customers.

As I stated above, Pima Utility Company is one of the pioneers of effluent recharge and recovery in Arizona. Pima uses groundwater as its initial source of water supply. Using a system of wells, storage facilities and booster stations, groundwater is distributed to residential and commercial customers throughout Pima's service area. Pima then collects the wastewater generated by its customers and treats that wastewater at its reclamation facility. The reclaimed wastewater is

then used in the Sun Lakes community through Pima's reclaimed water distribution system. Pima delivers reclaimed water to the Oakwood Golf Course for direct use and to five dual-use recharge and recovery wells for recharge into the local aquifer. Reclaimed effluent is recovered from the recharge and recovery wells for delivery to landscaping and golf course uses in the Sun Lakes community. Pima's fully integrated system directly reduces groundwater pumping by meeting turf and landscaping demands with reclaimed water, and Pima replenishes the aquifer by returning remaining unused effluent to the aquifer.

Arizona Water Company appears to believe that if they have a contract to acquire effluent that they can deliver within their service territory, then they are effectively operating as an integrated provider. There is simply much more to it than that. The many benefits of service from an integrated water and wastewater provider can only be provided by an integrated provider.

Q. MR. GARFIELD ASSERTS IN HIS SURREBUTTAL TESTIMONY THAT PIMA UTILITY COMPANY HELD 3,245.53 ACRE-FEET OF EFFLUENT STORAGE CREDITS AS OF DECEMBER 31, 2013, AND HE QUESTIONS WHY PIMA UTILITY COMPANY DID NOT USE SOME OF THOSE CREDITS TO OFFSET GROUNDWATER PUMPING FOR WATER DELIVERED TO FOUR GOLF COURSES IN 2014. HE STATES THAT "SOUND WATER MANAGEMENT STRATEGIES CALL FOR FULL USE OF RECOVERED EFFLUENT TO OFFSET THE USE OF GROUNDWATER."[1] DO YOU AGREE?

A. No. As I stated before, Mr. Garfield is really quibbling with the timing of the use of the effluent storage credits that are accumulated as a result of recharging the aquifer. What is relevant and important is that Pima Utility Company has increased stored water in the aquifer by 3,245.53 acre-feet as of December 31,

[1] Surrebuttal Testimony of William M. Garfield (Hearing on Remand-Phase II) at 6, lines 14-15.

2013, through the recharge of effluent, a point that Mr. Garfield does not and cannot refute. Consistent with the conservative approach that Robson applies in all of its business operations, Pima Utility Company maintains a balance of recharge storage credits so that the utility will be prepared for whatever circumstances may arise in the future. I respectfully submit that the conservative approach is a "sound water management strategy." Whether Pima Utility Company applies recharge storage credits today to offset current pumping or accumulates credits for future use, the fact remains that the utility is prudently recharging in the aquifer 100% of the effluent that cannot be directly delivered to customers.

Q. IS SUN LAKES IN THE PHOENIX AMA OR THE PINAL AMA?

A. Sun Lakes is in the Phoenix AMA, whereas the Cornman Tweedy property is located in the Pinal AMA.

Q. MR. GARFIELD STATES THAT "NO EFFLUENT WAS RECOVERED TO OFFSET QUAIL CREEK WATER COMPANY'S USE OF GROUNDWATER OR THE ROBSON AFFILIATE'S USE OF GROUNDWATER FOR GOLF COURSES EVEN THOUGH ROBSON RANCH QUAIL CREEK LLC HAD 16,745.22 ACRE-FEET OF EFFLUENT IN STORAGE ACCORDING TO ADWR AS OF 12/31/2014."[2] AGAIN, MR. GARFIELD STATES THAT ROBSON HAS THE ABILITY TO OFFSET ITS USE OF GROUNDWATER THROUGH STORED EFFLUENT BUT CHOOSES NOT TO. HOW DO YOU RESPOND?

A. As Mr. Garfield correctly acknowledges, Quail Creek Water Company is a water-only company serving the Quail Creek master-planned community in the Tucson AMA. As a result, Quail Creek Water Company does not enjoy the above-described benefits of delivering water and wastewater services as an integrated provider. Thus, my first response to Mr. Garfield is that he is making an apples to

[2] *Id.* at 7, lines 3-6.

oranges comparison because he is not talking about integrated services. Second, I would submit that the example he cites actually demonstrates Robson's commitment to sound water management strategies.

Q. PLEASE EXPLAIN.

A. Pima County is the wastewater provider for the area that is served by the Quail Creek Water Company. Pima County did not have a recharge facility to recharge its effluent and the effluent was being discharged to a wash. Seeing that the effluent resource was going to waste, Robson funded a $1.2 million upgrade to Pima County's wastewater treatment plant so that it could produce high quality effluent suitable for recharge. Robson then funded and constructed a recharge facility so that the effluent storage credits could be captured. Pursuant to a contract with Pima County, Robson Ranch Quail Creek LLC takes effluent from the County and recharges it at the recharge facility. As of December 31, 2014, Robson Ranch Quail Creek LLC had recharged 16,745.22 acre-feet of effluent in the aquifer.

Q. WHY DOESN'T QUAIL CREEK WATER COMPANY APPLY SOME OF THE RECHARGE CREDITS TO OFFSET ITS GROUNDWATER PUMPING?

A. The simple answer is that Quail Creek Water Company does not use the credits because it does not own the credits. Quail Creek Water Company did not pay for the recharge facility, nor does it pay to operate and maintain the facility. Thus, the customers of Quail Creek Water Company do not pay for the construction, operation and maintenance of the recharge facility in their rates. I would also point out that Robson Ranch Quail Creek LLC is not a public service corporation.

I would also like to point out that under the contract between Pima County and Robson Ranch Quail Creek LLC, the price paid for the effluent increases over time. Knowing that the effluent will be more expensive later, Robson Ranch Quail Creek LLC is accruing credits today in case they are needed in the future.

Q. DO THE CUSTOMERS OF QUAIL CREEK WATER COMPANHY BENEFIT IN ANY WAY FROM THE RECHARGE?

A. Yes. The customers benefit greatly from the recharge project because 16,745.22 acre-feet of effluent have been recharged in the aquifer underlying the Quail Creek community, thereby firming up the supply of groundwater upon which they rely. By focusing on the accounting for the credits, Mr. Garfield again tries to misdirect the discussion away from the fact that the Robson utilities are exercising wise stewardship over groundwater resources in water challenged areas.

Q. MR. GARFIELD STATES THAT "ROBSON RANCH QUAIL CREEK LLC ASSIGNS EFFLUENT CREDITS THAT IT HAS ACCUMULATED IN ROBSON'S QUAIL CREEK DEVELOPMENT SO THAT ROBSON DOES NOT HAVE TO PAY TO REPLENISH GROUNDWATER FOR ITS GOLF COURSE."[3] WHY ARE THE CREDITS ASSIGNED?

A. Robson Ranch Quail Creek LLC does currently assign a limited number of recharge credits for use at the golf course at SaddleBrooke Ranch. This will continue until there are enough homes within the development to produce sufficient effluent to water the entire golf course. As a result of the great recessions of 2009-2009, sales of homes at SaddleBrooke Ranch has been slower than was originally forecast.

Q. IS MR. GARFIELD CORRECT WHEN HE ASSERTS THAT ROBSON AVOIDS PAYING THE $615 PER ACRE-FOOT REPLENISHMENT COST IN THE TUCSON AMA?[4]

A. Robson avoids the $615 per acre-foot replenishment tax because Robson is using effluent recharge credits to offset its groundwater withdrawals. The replenishment tax is charged to cover the cost of replenishing pumped groundwater. By using effluent recharge credits, Robson Ranch Quail Creek LLC has itself paid the cost

[3] *Id.* at 9, lines 6-8.
[4] *Id.*

of recharging the groundwater pumped.

Q. MR. GARFIELD STATES THAT "WHILE SADDLEBROOK RANCH AND QUAIL CREEK UTILITY CUSTOMERS COULD BENEFIT FROM THE USE OF STORED EFFLUENT TO OFFSET THE USE OF CONTINUED MINING OF GROUNDWATER..., ROBSON CHOOSES NOT TO DO SO."[5] IS THIS A VALID CRITICISM?

A. No. As I discussed above, the credits which are accrued by Robson Ranch Quail Creek LLC for recharging effluent at Quail Creek belong to Robson Ranch Quail Creek LLC, which paid for the construction of the recharge facility and pays the on-going operation and maintenance costs of the facility. Thus, there is certainly nothing improper at all about Robson Ranch Quail Creek LLC assigning a portion of those credits for use within the same AMA at SaddleBrooke Ranch. But more to the point, Mr. Garfield glosses over the critical fact that it is effluent—via recovered effluent storage credits—that is being used to water the SaddleBrooke Ranch golf course. Robson is not "mining" groundwater but is using effluent recharge credits to water the golf course. This is wise management of the effluent resource and it accrues to the benefit of those living in Quail Creek and SaddleBrooke Ranch.

Moreover, as I stated before, the customers at Quail Creek benefit greatly from the recharge of the 16,745.22 acre-feet of effluent that is represented by the accrued storage credits.

Q. DOES MR. GARFIELD MENTION ROBSON'S SADDLEBROOKE DEVELOPMENT IN HIS SURREBUTTAL TESTIMONY?

A. No, and his omission is noteworthy. SaddleBrooke is a master-planned community north of Tucson that was started in 1987. Water and wastewater services at SaddleBrooke are fully integrated and virtually all of the effluent at SaddleBrooke is directly used. SaddleBrooke and Sun Lakes Phase III were

[5] *Id.* at 9, lines 10-13.

constructed by Robson with the Assured Water Supply Rules in mind to maximize the direct use of effluent. Among the various Robson communities, these are the best examples of the benefits of integrated water and wastewater communities.

Q. MR. GARFIELD STATES THAT "IN A WATER CHALLENGED AREA, ONE WITH A HISTORY OF GROUNDWATER OVERDRAFT AND LAND SUBSIDENCE, I FIND IT UNREASONABLE THAT PUBLIC SERVICE CORPORATIONS LIKE ROBSON'S THAT HAVE THE ABILITY TO OFFSET GROUNDWATER USE WITH STORED EFFLUENT FAIL TO DO SO."[6] HOW DO YOU RESPOND?

A. Robson's utilities have been recognized leaders in the use of effluent to reduce groundwater pumping. Our model of integrated water and wastewater utilities provides superior benefits to customers as compared to stand-alone water and wastewater providers. Mr. Garfield cites examples from the Phoenix AMA (Pima Utility Company) and the Tucson AMA (Quail Creek Water Company and Mountain Pass Utility), but I would like to point out the focus of this proceeding is on the Cornman Tweedy property in the Pinal AMA. The Pinal AMA is uniquely different than either the Phoenix or Tucson AMAs. The benefits of integrated water and wastewater providers have been clearly demonstrated in the evidence that we have presented in this docket. Robson's track record clearly shows that it is a vigilant and wise steward of groundwater resources, and that it provides a level of service and value to its utility customers that is unsurpassed by any other utility provider in this state, Arizona Water Company included.

Q. MR. GARFIELD NOTES IN THIS TESTIMONY THAT THIS CASE IS NOT ABOUT WHETHER ANOTHER UTILITY SHOULD PROVIDE WATER SERVICE TO THE CORNMAN TWEEDY PROPERTY, BUT "WHETHER A PUBLIC SERVICE CORPORATION, LIKE ARIZONA WATER, IN THIS WATER CHALLENGED AREA AND UNDER THE

[6] *Id.* at 7, lines 13-16.

CIRCUMSTANCES PRESENTED IN THIS CASE, IS PROVIDING REASONABLE SERVICE IF IT IS NOT ABLE OR NOT WILLING TO PROVIDE INTEGRATED WATER AND WASTEWATER SERVICES."[7] DO YOU AGREE?

A. Yes. For all of the reasons that have been described by the witnesses for Cornman Tweedy, Cornman Tweedy would like the opportunity to have its property served by an integrated water and wastewater provider when there is a need for services at some time in the future. Because Arizona Water Company does not hold the wastewater CC&N to serve the property (nor does it hold any wastewater CC&Ns), Arizona Water Company can never provide integrated water and wastewater service. For this reason, the Cornman Tweedy property should not be included in the CC&N of Arizona Water Company.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

[7] *Id.* at 3.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON – Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE, PINAL COUNTY, ARIZONA	**DOCKET NO. W-01445A-03-0559**

EXHIBIT
CT-102
ADMITTED

DIRECT TESTIMONY AND EXHIBITS OF JIM POULOS IN THE REMAND PROCEEDING

ON BEHALF OF INTERVENOR

CORNMAN TWEEDY 560, L.L.C.

JANUARY 4, 2008

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Jim Poulos. I am Vice President of Cornman Tweedy 560, LLC ("Cornman Tweedy"), the intervenor in this case. I am also a Vice President or general manager of various land acquisition companies, land development companies, construction companies and public utilities owned or controlled by Edward J. Robson ("Robson"). My business address is 9532 East Riggs Road, Sun Lakes, Arizona 85248.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I have an economics degree with an emphasis in accounting from Claremont McKenna College in Claremont, California. I am a certified public accountant in Arizona. I have over 25 years' business experience, most of which has involved forming, certificating, permitting, constructing, operating and managing water and sewer companies in Arizona. I am the general manager of ten public utilities owned or controlled by Robson: Ridgeview Utility Company, SaddleBrooke Utility Company, Picacho Water Company, Picacho Sewer Company, Lago del Oro Water Company, Santa Rosa Water Company, Santa Rosa Utility Company, Mountain Pass Utility Company, Pima Utility Company (water and sewer), and Quail Creek Water Company (collectively, the "Robson Utilities"). I have worked for Mr. Robson and his various business enterprises, including the Robson Utilities, for nearly 24 years.

Q. PLEASE DESCRIBE YOUR DUTIES AS GENERAL MANAGER OF THE ROBSON UTILITIES.

A. As general manager, I am responsible for the overall management, operation and performance of the Robson Utilities. A brief summary of my duties and responsibilities is as follows:

- Organization and Certification. I oversee the formation of each new entity that will operate as a public service corporation. I am responsible for preparing and prosecuting applications for new certificates of convenience and necessity ("CC&Ns") filed with the Arizona Corporation Commission ("Commission"). In connection with these applications, I prepare or oversee the preparation of proposed tariffs and pro forma financial statements which are submitted with the applications. I am also responsible for obtaining franchises from city or county governments to use public roadways, rights-of-way and easements.

- Utility System Design, Engineering, Permitting and Construction. Although I am not an engineer, all engineers working on Robson projects report to me. As a result, I have spent substantial time over the past twenty years working with the engineers who design the water and wastewater systems that serve the various Robson developments. I oversee the preparation of design and engineering plans and work with the engineers to develop integrated water and wastewater systems that incorporate technology which promotes conservation of groundwater resources, ensures delivery of safe and reliable water, and maximizes the use of reclaimed wastewater. I am responsible for obtaining the various approvals required to construct and operate water and wastewater utilities, and I have obtained dozens of such approvals from the Arizona Department of Environmental Quality ("ADEQ") and the Arizona Department of Water Resources ("ADWR"). I am also responsible for overseeing construction of utility plant.

- Hiring and Employee Oversight. I am responsible for hiring, directing, monitoring and evaluating the certified operators and other employees of the Robson Utilities. The certified operators and employees of the Robson Utilities report to me.

- Financial Performance. I am responsible for preparing and

monitoring annual budgets for the Robson Utilities. I also monitor utility expenses and approve capital expenditures for the Robson Utilities. If an increase in rates is deemed necessary, I am responsible for overseeing the filing and prosecution of a rate application with the Commission. If the Robson Utilities have capital needs, I oversee the filing of financing applications.

- Customer Relations. I am responsible for ensuring that customer problems or complaints are quickly resolved.

- Commission Filings. I oversee the filing of the various reports that must be filed with the Commission. I also file tariff amendments from time to time as necessary. I participate in various generic dockets at the Commission and meet with Utilities Division Staff regarding the operations of the Robson Utilities.

- Policy Development. I am responsible for monitoring the operations of the Robson Utilities and identifying and implementing improvements in operations. Specifically, I look for advances in technological and administrative activities of other utilities which may be implemented at the Robson Utilities. I have extensive water and wastewater policy experience and background. Recently, I have participated as a stakeholder in the second update to the plan of operations for the Central Arizona Groundwater Replenishment District, as a member of the steering committee looking at modifications of the aquifer protection permit rules, and as a member of the subcommittee which worked on the most recent Pinal County assured water supply rule change. These are just a few of the many public policy forums in which I participate.

- Water and Wastewater Safety. Last, and perhaps most importantly, I am responsible to ensure that the Robson Utilities provide adequate and safe water and wastewater service at all times. Specifically, I am responsible for ensuring that all water delivered to customers meets the requirements of the Safe Drinking Water Act, and that all reclaimed wastewater

discharged from Robson's wastewater treatment plants meets the requirements of the applicable permits.

Q. PLEASE DESCRIBE THE ROBSON UTILITIES.

A. Attached to my testimony as Exhibit 1 is a table describing the Robson Utilities. As you can see, the seven water utilities and wastewater utilities operating at this time serve nearly 33,000 customers or services in Maricopa, Pima and Pinal Counties, and they have combined utility plant of approximately $50 million, based upon figures submitted in our 2006 annual reports filed with the Commission. The five Robson Utilities which provide water service can produce a combined 25,000 gallons per minute of groundwater from 30 wells, and have combined storage capacity of approximately 6.6 million gallons. The three Robson Utilities currently providing wastewater service can treat approximately 3.65 million gallons of wastewater per day.

Q. IS IT ACCURATE TO SAY THAT YOU HAVE SUBSTANTIAL EXPERIENCE IN ESTABLISHING, PERMITTING AND OPERATING WATER AND WASTEWATER UTILITIES IN ARIZONA?

A. Yes. I have experience in virtually all aspects of the water and wastewater business. I note also that the combined size of the Robson Utilities places them among the largest private utilities in Arizona.

Q. PLEASE DESCRIBE ROBSON'S BUSINESS.

A. Robson acquires, develops, and builds homes on real property in Arizona and Texas, and operates various businesses related to the acquisition and development of real property and the construction of homes. Connected to its development business, Robson owns or controls the water and wastewater utilities which serve most of the master-planned communities developed by Robson, as well as some other areas.

Q. PLEASE IDENTIFY ROBSON'S MASTER-PLANNED COMMUNITIES.

A. Since 1972, Robson has developed, or is developing, the following age-restricted

master-planned communities: Sun Lakes, Sunbird, PebbleCreek, SaddleBrooke, SaddleBrooke Ranch, Quail Creek, Robson Ranch Arizona and Robson Ranch Texas. Cornman Tweedy, a Robson-owned company, owns approximately 2,344 acres in Pinal County (the "EJR Ranch Property") which is being held for future sale or development. The EJR Ranch Property is located adjacent to and north of Robson Ranch and is shown on the map attached to my testimony as Exhibit 2.

Q. IN ADDITION TO YOUR RESPONSIBILITIES WITH REGARD TO THE ROBSON UTILITIES, ARE YOU INVOLVED IN THE DEVELOPMENT SIDE OF ROBSON'S BUSINESS?

A. Yes. I am either directly responsible or participate in a variety of activities related to Robson's development business including zoning and entitlements for all properties, environmental due diligence, water rights due diligence, endangered species due diligence, development plans, planning for utility services, and construction of on-site improvements (lot preparation, streets, curbs, sidewalks, dry utilities, etc.). I am also responsible for maintaining a sufficient inventory of finished lots to meet demand in the various Robson communities.

Q. PLEASE DESCRIBE CORNMAN TWEEDY'S BUSINESS.

A. Cornman Tweedy was formed for the purpose of assembling through a series of acquisitions the land which makes up the EJR Ranch Property.

Q. IS CORNMAN TWEEDY AFFILIATED WITH ROBSON?

A. Yes. Cornman Tweedy is one of the entities that is owned or controlled by Robson.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS REMAND PROCEEDING?

A. I am testifying on behalf of Cornman Tweedy.

Q. ARE YOU AUTHORIZED TO TESTIFY ON BEHALF OF CORNMAN

TWEEDY?

A. Yes.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE ARIZONA CORPORATION COMMISSION?

A. Yes. I have testified as a witness for the various Robson Utilities in dozens of proceedings at the Commission, and I have participated in numerous other proceedings at the Commission. In this case, I previously filed direct testimony dated June 12, 2006, and Rebuttal testimony dated July 6, 2006, and I testified as a witness in the hearing held July 10-11, 2006. I hereby adopt and incorporate by this reference my prior pre-filed testimony and my oral testimony in this case. My testimony before the Commission is a matter of public record on file with Docket Control.

Q. MR. POULOS, PLEASE DESCRIBE WHAT HAS LED US TO THIS POINT IN THIS CASE.

A. On August 12, 2003, Arizona Water Company ("AWC") filed an application with the Commission to extend its CC&N to include eleven square miles—or more than 7,000 acres—in Township 6 South, Range 7 East, G&SRB&M, in Pinal County, Arizona (the "Extension Area"). The Extension Area is shown on the map attached to my testimony as Exhibit 2. AWC's application was based on only two requests for service—one for property called Post Ranch which consisted of approximately 480 acres and another for property called Florence Country Estates which consisted of approximately 240 acres.

On December 8, 2004, Cornman Tweedy acquired the 240-acre Florence Country Estates property. Cornman Tweedy also acquired other property within the Extension Area which, when combined with the Florence Country Estates property, totals approximately 1,138 acres (the "Cornman Tweedy Property"). In addition, Cornman Tweedy owns approximately 1,206 acres immediately south of the Cornman Tweedy Property, for a total of approximately 2,344 acres

which comprises the land which I refer to herein as the EJR Ranch Property. The Cornman Tweedy Property and the EJR Ranch Property (which includes the Cornman Tweedy Property) are shown on Exhibit 2 to my testimony.

In Decision 66893 (April 6, 2004), the Commission conditionally approved the extension of AWC's CC&N to include the Extension Area, subject to the following conditions:

1. AWC was ordered to file with the Commission a copy of a certificate of assured water supply for both the Post Ranch property and the Florence Country Estates Property within 365 days of Decision 66893; and
2. AWC was ordered to file a main extension agreement associated with the Extension Area within 365 days of Decision 66893.

Decision 66893 included an ordering paragraph stating that if AWC failed to meet the two conditions in the time specified, Decision 66893 would be deemed null and void without further order of the Commission. On the verge of missing the April 6, 2005 deadline for both conditions, AWC filed a request on March 30, 2005 for additional time to comply with the conditions. On April 7, 2005, Cornman Tweedy filed a letter with the Commission asserting that Decision 66893 was null and void because AWC had failed to meet the April 6, 2005 deadline. The letter further stated that Cornman Tweedy did not desire to have its property included in AWC's Extension Area, that Cornman Tweedy had requested water utility service from its affiliate, Picacho Water Company, and that Cornman Tweedy would prefer to receive water and wastewater service from Robson affiliates Picacho Water Company and Picacho Sewer Company for reasons of cost, convenience, timing, avoidance of confusion, and avoidance of unnecessary duplication of facilities. Since the filing of that letter in April 2005, Cornman Tweedy has sought to have the Cornman Tweedy Property excluded from AWC's CC&N.

I note also that Cornman Tweedy is the successor to approximately 649

acres within the Extension Area that was previously owned by the Dermer Family Trust (the "Dermer Trust"). The Dermer Trust docketed a letter in this case dated April 21, 2004, stating that the due to the illness and death of Mr. John Dermer, a principal of the Dermer Trust, the Dermer Trust was not aware of AWC's application, did not receive notice of the application, and did not want the Dermer Trust's 649 acres included in the Extension Area. Since the filing of the April 2004 letter, the Dermer Trust and then Cornman Tweedy have sought to have the Dermer Trust property excluded from AWC's CC&N.

To this date, there is no certificate of assured water supply and no main extension agreement for any part of the Cornman Tweedy Property, nor is there a request for water service to AWC for any part of the Cornman Tweedy Property. Notwithstanding these uncontested facts, in Decision 69722 the Commission ordered that the conditions set forth in Decision 66893 were fulfilled, thereby removing the conditionality from the CC&N. As a result, AWC obtained a CC&N for more than 7,000 acres on the basis of two requests for service (one of which was effectively withdrawn) covering only 720 acres, or about 10%.

An expansive grant of additional certificated territory without underlying requests for service is one of a number of public policy issues which should be addressed in this case. Accordingly, in Decision 69722, the Commission ordered further proceedings on remand to determine whether AWC should continue to hold a CC&N for the Cornman Tweedy Property. The Commission ordered that the proceedings "be broad in scope so that the Commission may develop a record to consider the overall public interest underlying service to the Cornman property." (Decision 69722 at p. 20, ¶ 104).

Q. WHAT ARE THE PUBLIC POLICY ISSUES YOU WANT THE COMMISSION TO ADDRESS IN THIS CASE?

A. The Commission should address the following public policy issues in this case:

1. Should the Commission allow a water provider to hold a CC&N for property where there is no evidence of a current need and necessity for water service on the property?
2. Should the Commission allow a water provider to hold a CC&N for property where the owner of the property has not requested water service?
3. Should the Commission allow a water provider to hold a CC&N for property where the owner of the property desires exclusion from the CC&N? In other words, what weight should be given the desires of the landowner with respect to the water provider serving the property?
4. Where there is an option for a single water provider to serve an entire development, should the Commission opt for a single provider instead of splitting the development between two water providers?
5. Where there is an option for an integrated water and wastewater provider for a development, should the Commission opt for an integrated water and wastewater provider over stand-alone water and wastewater providers?

My pre-filed direct testimony addresses issues 1, 2 and 3 above. Issue 4 will be addressed in the pre-filed direct testimony of Fred E. Goldman, Ph.D, P.E. Issue 5 will be addressed in the pre-filed direct testimony of Paul S. Hendricks, M.P.A.

Q. WHY DID CORNMAN TWEEDY SELECT FRED GOLDMAN AND PAUL HENDRICKS AS WITNESSES IN THIS CASE?

A. Robson used Dr. Goldman and Mr. Hendricks in the planning and development of Pima Utility Company's integrated water and wastewater system at Sun Lakes, which has become the template for all Robson communities where Robson provides water and wastewater service. This integrated approach to providing water and wastewater service has been a great success for Robson and for Arizona, maximizing the efficient reuse of reclaimed wastewater and

recharge to the aquifer, which reduces the pumping of groundwater. In my opinion, the Pima Utility Company model at Sun Lakes should be emulated whenever possible, and Dr. Goldman and Mr. Hendricks who pioneered this model, along with myself, are best qualified to testify regarding the water conservation, cost savings, reliability, and other benefits of a single water provider serving the entire development and integrated water and wastewater systems.

Q. THE FIRST PUBLIC POLICY ISSUE YOU IDENTIFIED ABOVE IS WHETHER THE COMMISSION SHOULD ALLOW A WATER PROVIDER TO HOLD A CC&N FOR PROPERTY WHERE THERE IS NO EVIDENCE OF A CURRENT NEED AND NECESSITY FOR WATER SERVICE ON THE PROPERTY. IS THERE A CURRENT NEED AND NECESSITY FOR WATER SERVICE ON THE CORNMAN TWEEDY PROPERTY?

A. No. As I testified at the hearing, the business plan for the EJR Ranch Property changed 180 degrees since December 2004. Cornman Tweedy purchased the EJR Ranch Property with the plan of developing the property in a strong real estate market, and Robson commenced the process of entitling the property. However, Robson did not anticipate the tremendous appreciation in the value of the property which occurred after the acquisition, nor did Robson anticipate the dramatic decline in the demand for new residential housing which commenced in late 2005 and continues today. As a result of these changed circumstances, Robson ceased further development activities except for certain pending entitlement activities that could be expeditiously completed. Robson has no plans to develop the EJR Ranch Property. The property has been indefinitely shelved. There is no need and necessity for water service.

Q. YOU MENTIONED A DRAMATIC DECLINE IN THE DEMAND FOR NEW RESIDENTIAL HOUSING SINCE LATE 2005. IN YOUR POSITION AS A

VICE PRESIDENT WITH ROBSON, DO YOU HAVE SPECIFIC KNOWLEDGE ABOUT RESIDENTIAL REAL ESTATE MARKET CONDITIONS IN ARIZONA?

A. Yes. I am a past member of the board of directors of the Home Builders Association of Central Arizona ("HBACA") and I am actively involved with the HBACA. Through this affiliation, I have regular contact with several Arizona homebuilders, and we discuss residential market conditions in Arizona. In addition, I see all of the home closing numbers for the Robson developments on a monthly basis. The data that I review within Robson is consistent with the information I have received from other home builders.

Q. BASED ON YOUR EXPERIENCE AND KNOWLEDGE OF THE RESIDENTIAL REAL ESTATE MARKET IN ARIZONA, WHAT IS THE OUTLOOK FOR ROBSON'S RESIDENTIAL REAL ESTATE MARKET?

A. In short, there is a substantially reduced market for new homes at this time. As I stated above, home sales slowed dramatically for Robson beginning in late 2005. To provide some scale regarding the downturn, Robson closed 1,222 homes in Arizona in 2006, most of which were sold in 2005 at the height of the market. We have projected 368 closings in Arizona for 2008, a reduction of 70%. Consistent with this reduction in sales, Robson has necessarily reduced the workforce in its core development and home construction business by approximately 35%. I am not expecting Robson's market to improve any time soon. Moreover, Robson has approximately 24,000 lots which are being readied for sale in its core retirement community business, so the EJR Ranch Property is not needed for inventory.

Q. IS RESIDENTIAL DEVELOPMENT ACTIVITY OCCURRING ON THE CORNMAN TWEEDY PROPERTY?

A. No. Attached to my testimony as Exhibit 3 are a series of 21 photographs taken on December 26, 2007, which show the existing condition of the EJR Ranch

Property. Included as part of Exhibit 3 is a key and a map which shows the location of each photo, the direction of the view, and the GPS coordinates of each photo. Pictures 1-4, 6, 10 and 13 depict views of the Cornman Tweedy Property. Pictures 11-12 and 14-21 depict views of the southern half of the EJR Ranch Property. As you can see, most of the EJR Ranch Property is being farmed, and no residential development activities are occurring anywhere. The remaining photos show other portions of the Extension Area.

Q. WERE THE PHOTOS ATTACHED AS EXHIBIT 3 TO YOUR TESTIMONY TAKEN UNDER YOUR DIRECT SUPERVISION, AND DO THE PHOTOS ACCURATELY AND FAIRLY REPRESENT THE CURRENT CONDITION OF THE EJR RANCH PROPERTY?

A. Yes. I instructed Dave Voorhees (my superintendent for Pima Utility Company, Picacho Water Company, and Picacho Sewer Company) to take the photos and he returned the photos to me together with the key and map. Although I did not personally take the photos, I am very familiar with the EJR Ranch Property, having been on the property many times, and I am familiar with each of the locations where the photos were taken.

Q. DO YOU BELIEVE THE COMMISSION SHOULD GRANT AN EXTENSION OF A CC&N WHERE THERE IS NO EVIDENCE OF A CURRENT NEED AND NECESSITY FOR WATER SERVICE IN THE EXTENSION AREA?

A. No. It is my understanding that one of the two findings the Commission must make before extending a CC&N is that there is a "need and necessity" for the utility service. The other finding, of course, is that the applicant is "fit and proper" to hold a CC&N. In cases where there is entitlement work (*i.e.*, zoning, permitting, certificates of assured water supply, main extension agreements, etc.) which must be completed before homes can be constructed and occupied, the Commission attaches conditions to ensure, among other things, that the "need

and necessity" is real and on-going. In the June 12, 2006, Staff Report in this case, Assistant Director Steve Olea stated that "[t]he basic reason to require a time limit for the submission of both the developer's CAWS and the MXA is to help ensure that there is truly a necessity for the service being provided." Staff Report at 1 (June 12, 2006).

The evidence in this case has been uncontested that there is no need and necessity for water service at the Cornman Tweedy Property. The grant of a CC&N without such a showing will lead to the type of problems we have seen in this case. Perhaps most importantly, the premature grant of a CC&N forecloses options for the Commission which may provide greater public benefits. Those benefits are described in my testimony and the testimony of Dr. Goldman and Mr. Hendricks.

Q. ANOTHER PUBLIC POLICY ISSUE YOU IDENTIFIED ABOVE IS WHETHER THE COMMISSION SHOULD ALLOW A WATER PROVIDER TO HOLD A CC&N FOR PROPERTY WHERE THE OWNER OF THE PROPERTY HAS NOT REQUESTED WATER SERVICE. HAS CORNMAN TWEEDY EVER REQUESTED WATER SERVICE FROM AWC?

A. No. In fact, since April 2005, Cornman Tweedy has been working to get the Cornman Tweedy Property excluded from AWC's CC&N. Before that, the Dermer Trust (to which Cornman Tweedy is a successor) began working to get its property excluded from AWC's CC&N in April 2004. This case does not only involve a lack of a request for service, but also involves affirmative and relentless efforts to get the Cornman Tweedy Property excluded from AWC's CC&N.

Q. IN YOUR OPINION, IS IT GOOD PUBLIC POLICY TO PERMIT THE EXTENSION OF A CC&N WHERE THERE IS NO UNDERLYING REQUEST FOR SERVICE IN THE EXTENSION AREA?

A. No. Such a practice leads to the very problems we see in this case. AWC obtained a 7,000-plus acre extension of its CC&N based on two requests for service on only 720 acres. I recently observed portions of the Extension Area and did not see any residential construction activity. The premature grant of a CC&N without a request for service will often contradict the desires of the landowner, especially where property is being assembled over time for inclusion in a master-planned development. It can also lead to a situation, such as this case, where a single development is potentially split between two water providers of which the pitfalls are discussed in Dr. Goldman's testimony. In addition, it can foreclose desirable options for the landowner such as selecting an integrated water and wastewater provider, the benefits of which are addressed in the testimony of Mr. Hendricks. Requiring a request for service before extending a CC&N promotes the public interest because it prevents the premature foreclose of the full range of options that may be considered by the Commission.

I would also like to point out that the grant of a CC&N without an underlying request for service is consistent with the Commission's current practice. If AWC was to apply today for a CC&N to include the Cornman Tweedy Property, that application would almost certainly be denied because there is no request for service from Cornman Tweedy. The Commission now regularly denies applications for CC&N extension where there is no accompanying request for service. Examples of such instances are found in Decision 59396 (Nov. 28, 1995); Decision 68453 (Feb. 2, 2006); Decision 68445 (Feb. 2, 2006); Decision 68247 (Oct. 25, 2005); and Decision 64062 (Oct. 4, 2001). I would also note that a parcel of land was excluded from AWC's requested extension area in Docket W-01445A-05-0469 because the landowner revoked his request for service and AWC honored the landowner's request. Decision 68607 at FOF 13 (March 23, 2006).

Q. ANOTHER PUBLIC POLICY ISSUE YOU IDENTIFIED ABOVE IS WHETHER THE COMMISSION SHOULD ALLOW A WATER PROVIDER TO HOLD A CC&N FOR PROPERTY WHERE THE OWNER OF THE PROPERTY DOES NOT WANT TO BE INCLUDED IN THE CC&N. DOES CORNMAN TWEEDY WANT AWC TO BE THE WATER PROVIDER FOR THE CORNMAN TWEEDY PROPERTY?

A. No. There are a number of reasons why this is so. First, if AWC is the water provider for the Cornman Tweedy Property, the EJR Ranch will be split into two halves—the north half served by AWC and the south half which will be served by Picacho Water Company. This will require the construction of two water campuses to serve the EJR Ranch instead of a single water campus. This unnecessary doubling up of water infrastructure will increase costs to the developer which will cause water rates to be higher than they would otherwise need to be. Dr. Goldman will address the added infrastructure costs of two water campuses versus one in his direct testimony.

In addition to the extra infrastructure costs, Cornman Tweedy would incur added costs in dealing with AWC that it would not incur if its affiliate, Picacho Water Company, provides the water service. For example, Cornman Tweedy would incur the added costs of negotiating and administering a master agreement and main extension agreement with AWC. Moreover, Cornman Tweedy would incur added costs related to designing a water system to AWC's standards, criteria and specifications, which vary from those of Picacho Water Company. Cornman Tweedy would also incur added costs of modeling a water master plan to the specifications of AWC, which vary from those of Picacho Water Company. At Robson's SaddleBrooke Ranch project in southern Pinal County, which is expected to open for sales in the winter of 2008, AWC is the water provider. We believe that the additional costs of working with AWC have been well in excess of $100,000 and the project is not even open yet. These are costs

that will ultimately be borne by the ratepayers.

Beyond the added costs outlined above, Cornman Tweedy would certainly experience time delays in dealing with AWC that it would not experience dealing with its affiliate, Picacho Water Company, particularly in light of the frustration Robson has already experienced in dealing with AWC on its SaddleBrooke Ranch project discussed below. It is simply easier and more efficient to deal with your own affiliate—one where you know the design criteria, construction procedures, and business practices. This is particularly true for Robson because the engineering, land department and utilities will report to me. Robson has a well-established and successful track record of constructing and operating water systems. We are very familiar and comfortable with our design standards and engineering practices with respect to the design and construction of water and wastewater systems. We have an excellent compliance history with ADEQ who reviews and approves design plans and specifications. Based on my personal experience, working with AWC is less efficient, more costly, more time-consuming, and more frustrating, which negatively impacts the ratepayers.

Second, if AWC is the water provider for the Cornman Tweedy Property, Cornman Tweedy would lose the ability to integrate the water and wastewater systems serving the property. Mr. Hendricks discusses the operational benefits of integrated water and wastewater systems in his direct testimony. However, I would like to say a few words about another significant benefit of an integrated system—maximization of the use of reclaimed wastewater and conservation of groundwater supplies.

Q. HOW DOES INTEGRATING THE WATER AND WASTEWATER SYSTEMS IN A DEVELOPMENT MAXIMIZE THE USE OF RECLAIMED WASTEWATER AND CONSERVE GROUNDWATER AS COMPARED TO UNAFFILIATED STAND-ALONE WATER

PROVIDERS?

A. It is largely a matter of managing risk. So long as AWC has the CC&N to serve the Cornman Tweedy Property, Picacho Sewer Company (or any other sewer company for that matter) would not construct infrastructure to supply non-potable uses within the Cornman Tweedy Property. This is because there is a real risk that AWC could seek a rate below the Picacho Sewer Company rate for reclaimed wastewater and take away customers from Picacho. Under such a scenario, the delivery infrastructure constructed by Picacho Sewer Company would be stranded investment. By comparison, if affiliates Picacho Water Company and Picacho Sewer Company serve the Cornman Tweedy Property, this risk of competition for non-potable customers is eliminated because Picacho Water Company would never seek such a rate below that of Picacho Sewer Company causing it to strand its investment. Picacho Sewer Company would serve the non-potable uses within the Cornman Tweedy Property and Picacho Water Company would provide potable water.

I would also add that AWC has only one product to sell—groundwater—whereas the integrated Picacho utilities can sell potable water and reclaimed wastewater. AWC has a financial incentive to maximize the sale of potable water to customers within its CC&N, even if those customers could receive reclaimed water.

Q. WHY WERE PICACHO WATER COMPANY AND PICACHO SEWER COMPANY ESTABLISHED AS SEPARATE LEGAL ENTITIES INSTEAD OF A SINGLE ENTITY PROVIDING BOTH WATER AND WASTEWATER SERVICE?

A. Again, it is a matter of managing risk. The Picacho utilities were set up as separate entities in the event that one or the other experienced financial hardship. The assets of the sewer company are protected in the event of financial hardship at the water company, and the assets of the water company are protected in the

event of financial hardship at the sewer company. However, the two companies have overlapping ownership, management and employees, and they will be run as an integrated utility provider. This is consistent with past practice at other Robson affiliated utilities.

Q. ARE THERE OTHER BENEFITS OF INTEGRATING THE WATER AND WASTEWATER SYSTEMS THAT YOU WOULD LIKE TO DISCUSS?

A. Yes. Paul Hendricks will discuss the benefits of integrated utilities in his testimony with respect to efficiently dealing with waste streams. In addition, I would like to discuss the benefits of operating joint treatment facilities, and want to discuss a real-life example of Robson's system at SaddleBrooke where one treatment system solved both water and sewer issues instead of each utility having to construct and operate independent treatment systems.

The water supplied by Lago del Oro Water Company at Robson's SaddleBrooke development is high in dissolved oxygen which causes leaks in the copper piping in homes and businesses. This problem was addressed by installing a caustic soda feed system which coats the pipes and limits contact with the water to the point where the leaks ceased. Once the leaks stopped, Lago del Oro Water Company stopped operating the caustic soda feed system. A few years later, ADEQ lowered the permitted level of copper discharge from the wastewater treatment plan ("WWTP") and SaddleBrooke was at risk of exceeding the discharge limit for copper. One option was to install treatment capability at the WWTP to remove the copper. However, it was eventually determined that Lago del Oro Water Company could restart the caustic soda feed system and further coat the inside of the copper piping, thereby preventing leaching of the copper into the wastewater. The use of the existing caustic soda feed system at the water plant eliminates the cost of installing additional treatment infrastructure at the WWTP to remove copper, which was estimated to

cost $1,000,000. Integrated water and wastewater operations permit this type of cooperative and cost effective approach to problem solving.

Q. IS THERE ANY OTHER REASON WHY CORNMAN TWEEDY OPPOSES INCLUDING THE CORNMAN TWEEDY PROPERTY IN AWC'S CC&N?

A. Yes. Robson's relationship with AWC is often frustrating and costly, as evidenced by its SaddleBrooke Ranch development in southern Pinal County where AWC is the water provider. Robson has had to deal with excessive costs to ratepayers and higher costs to Robson, and unresponsiveness from time to time. Robson simply does not have these kinds of issues when its integrated utilities provide water and wastewater service to its developments.

Q. WOULD CORNMAN TWEEDY PREFER THAT PICACHO WATER COMPANY SERVE THE CORNMAN TWEEDY PROPERTY?

A. Yes. For all of the reasons discussed in my testimony and the testimony of Dr. Goldman and Mr. Hendricks, Cornman Tweedy would prefer that Picacho Water Company serve the Cornman Tweedy Property.

Q. IN YOUR OPINION, WHAT WEIGHT SHOULD BE GIVEN THE DESIRES OF THE LANDOWNER WITH RESPECT TO THE UTILITY PROVIDER WHICH WILL SERVE HIS OR HER PROPERTY?

A. The desire of the landowner is not dispositive with respect to certificating the utility providers that will serve the landowner's property, but should be given appropriate weight under the circumstances of the case. Absent a clear public interest reason for rejecting the desire of the landowner, the landowner's choice of utility providers should be honored. The Commission has consistently considered the desire of landowner in certificating utilities. For example, in Decision 68453 (February 2, 2006) issued in the contested case involving AWC and Woodruff Water Company (Docket No. W-04264A-04-0438), former Commissioner Spitzer reiterated comments of Commissioner Gleason that the

desire of a landowner is relevant in certificating a public utility to serve the landowner's property, stating: "Commissioner Gleason alluded to it very early that the property owner ought to have some say in how utility service is provided...the rights of the property owner ought to be accorded some degree of respect." *Transcript of Open Meeting* at 109 (Jan. 27, 2006).

Cornman Tweedy does not want AWC as its water provider for the Cornman Tweedy Property and there is no current need and necessity for water service. Absent a clear public interest reason to retain the Cornman Tweedy Property in the AWC CC&N, the property should be excluded.

Q. WHAT IS CORNMAN TWEEDY ASKING THE COMMISSION TO DO IN THIS PROCEEDING?

A. Cornman Tweedy requests that the Commission exclude the Cornman Tweedy Property from AWC's CC&N for the reasons that are stated in my testimony and the testimony of Dr. Goldman and Mr. Hendricks. The Cornman Tweedy Property is identified on Exhibit 2 attached to my testimony.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, thank you.

EXHIBIT 1

EXHIBIT 1

ROBSON WATER COMPANIES[1]								
NAME	METERS	WELLS	PUMP YIELD (GPM)	GALLONS PUMPED	STORAGE CAPACITY	BOOSTER PUMPS	MAINS (LIN. FT.)	PLANT (OC LESS AD)
Lago Del Oro (Pinal)	6,184	17	8,175	943,632,000	1,836,000	30	426,896	$8,500,343
Picacho (Pinal)	147	2	4,200	75,450,000	800,000	3	7,920	$1,454,605
Pima Utility (Maricopa)	10,167	7	10,700	2,069,502,000	2,500,000	14	466,536	$10,996,234
Quail Creek (Pima)	1,653	2	1,100	134,874,000	1,500,000	4	85,301	$1,924,103
Ridgeview (Pinal)	126	2	1,280	155,212,000	Shared with Lago Del Oro		20,009	$1,994,450
Santa Rosa (Pinal)	Not yet providing service to customers							
TOTAL	**18,277**	**30**	**25,455**	**3,378,670,000**	**6,636,000**	**51**	**1,006,662**	**$24,869,735**

ROBSON WASTEWATER COMPANIES[2]								
NAME	CUSTOMERS	GALLONS TREATED	TREATMENT FACILITY	DESIGN CAPACITY (GPD)	LIFT STATIONS	FORCE MAINS (LIN. FT.)	COLLECTION MAINS (LIN. FT.)	PLANT (OC LESS AD)
Mountain Pass (Pinal)	Not yet providing service to customers							
Picacho (Pinal)	147	See note below	Sequential Batch Reactor	250,000	2	2,836	68,640	$2,819,900
Pima Utility (Maricopa)	9,963	401,998,000	Sequential Batch Reactors	2,400,000	15	Included in collection mains	525,684	$11,701,191
SaddleBrooke (Pinal)	4,488	160,438,000	M.L.E.	1,240,000	9	20,617	258,873	$10,590,032
Santa Rosa (Pinal)	Not yet providing service to customers							
TOTAL	**14,598**	**562,436,000**	**N/A**	**3,640,250**	**26**	**23,453**	**853,197**	**$25,111,123**

[1] All water company data based on Annual Reports for the year ended December 31, 2006.
[2] All water company data based on Annual Reports for the year ended December 31, 2006.
Note: Wastewater treatment plant commenced full-time treatment in 2007.

EXHIBIT 2

ARIZONA WATER COMPANY CC&N EXTENSION
(DOCKET NO. W-01445A-03-0559)

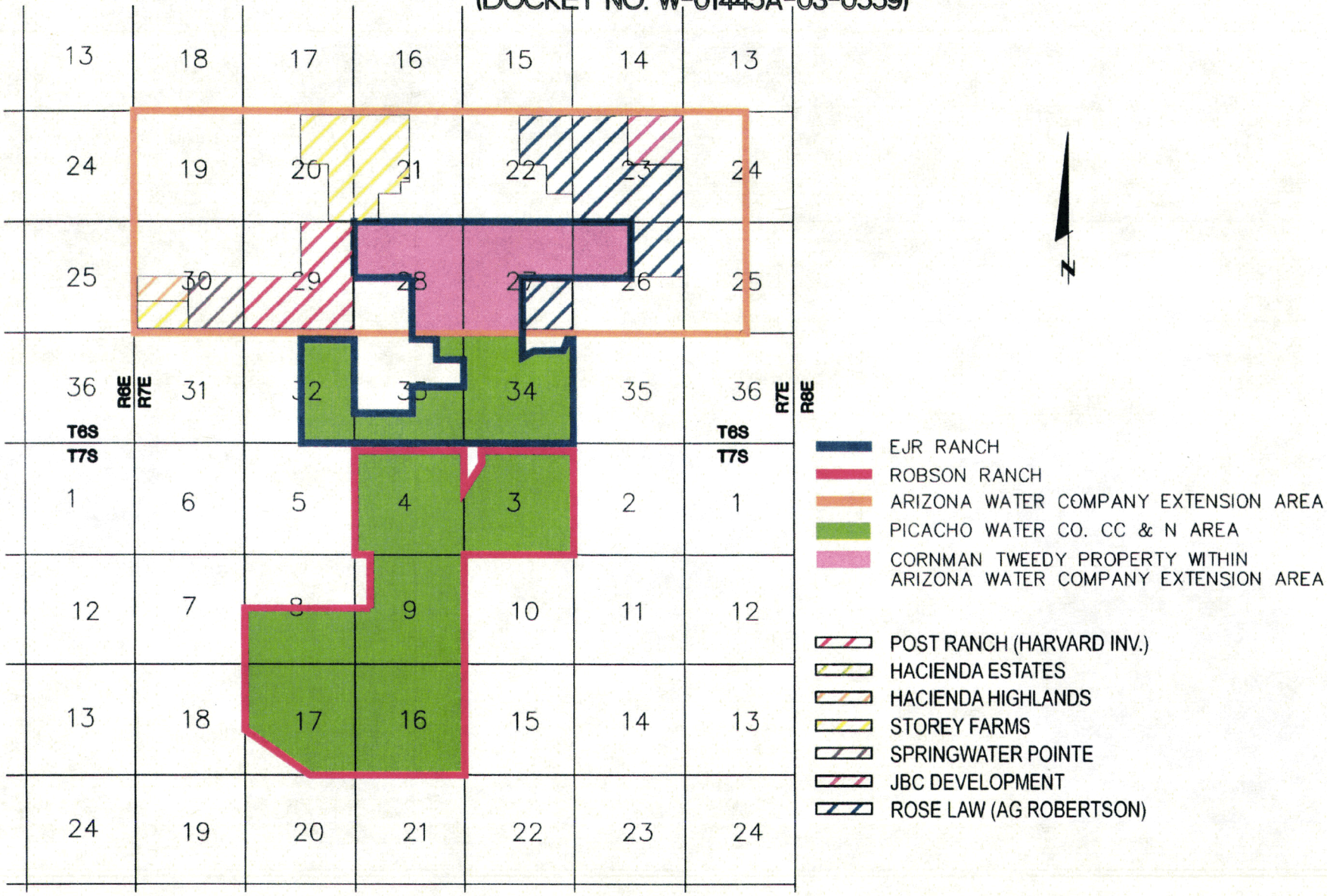
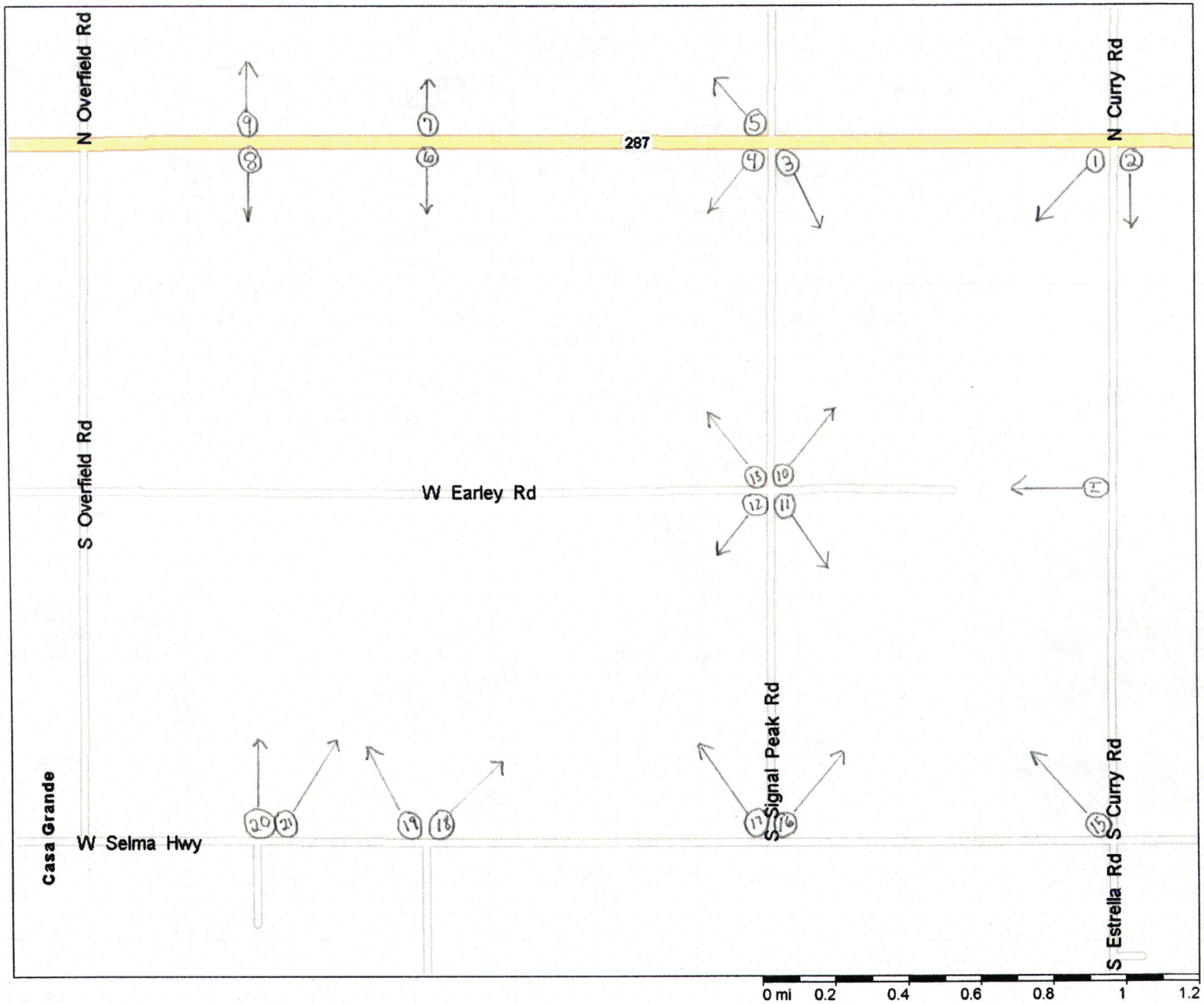


EXHIBIT 3

E.J.R. RANCH PICTURES

Picture No.	Location	Direction of View	GPS Coordinates
1	Curry Rd. and Florence Blvd.	Southwest	N32°52,776' W111°36,126'
2	Curry Rd. and Florence Blvd.	South	N32°52,776' W111°36,126'
3	Signal Peak and Florence Blvd.	Southeast	N32°52,768' W111°37,138'
4	Signal Peak and Florence Blvd.	Southwest	N32°52,768' W111°37,138'
5	Signal Peak and Florence Blvd.	Northwest	N32°52,768' W111°37,138'
6	1 Mi. West of Signal Peak on Florence Blvd.	South	N32°52,777' W111°38,654'
7	1 Mi. West of Signal Peak on Florence Blvd.	North	N32°52,777' W111°38,654'
8	1½Mi. West of Signal Peak on Florence Blvd.	South	N32°52,777' W111°38,208'
9	1½Mi. West of Signal Peak on Florence Blvd.	North	N32°52,777' W111°38,208'
10	Early Rd. and Signal Peak	Northeast	N32°51,907' W111°37,151'
11	Early Rd. and Signal Peak	Southeast	N32°51,907' W111°37,151'
12	Early Rd. and Signal Peak	Southwest	N32°51,907' W111°37,151'
13	Early Rd. and Signal Peak	Northwest	N32°51,907' W111°37,151'
14	Early Rd. and Curry Rd.	West	N32°51,974' W111°36,116'
15	Curry Rd. and Selma Highway	Northwest	N32°51,028' W111°36,133'
16	Signal Peak and Selma Highway	Northeast	N32°51,035' W111°37,161'
17	Signal Peak and Selma Highway	Northwest	N32°51,035' W111°37,161'
18	Toltec Buttes and Selma Highway	Northeast	N32°51,030' W111°38,208'
19	Toltec Buttes and Selma Highway	Northwest	N32°51,030' W111°38,208'
20	On Selma ½Mi. West of Toltec Buttes	North	N32°51,030' W111°38,600'
21	On Selma ½Mi. West of Toltec Buttes	Northeast	N32°51,030' W111°38,600'

Arizona, United States, North America



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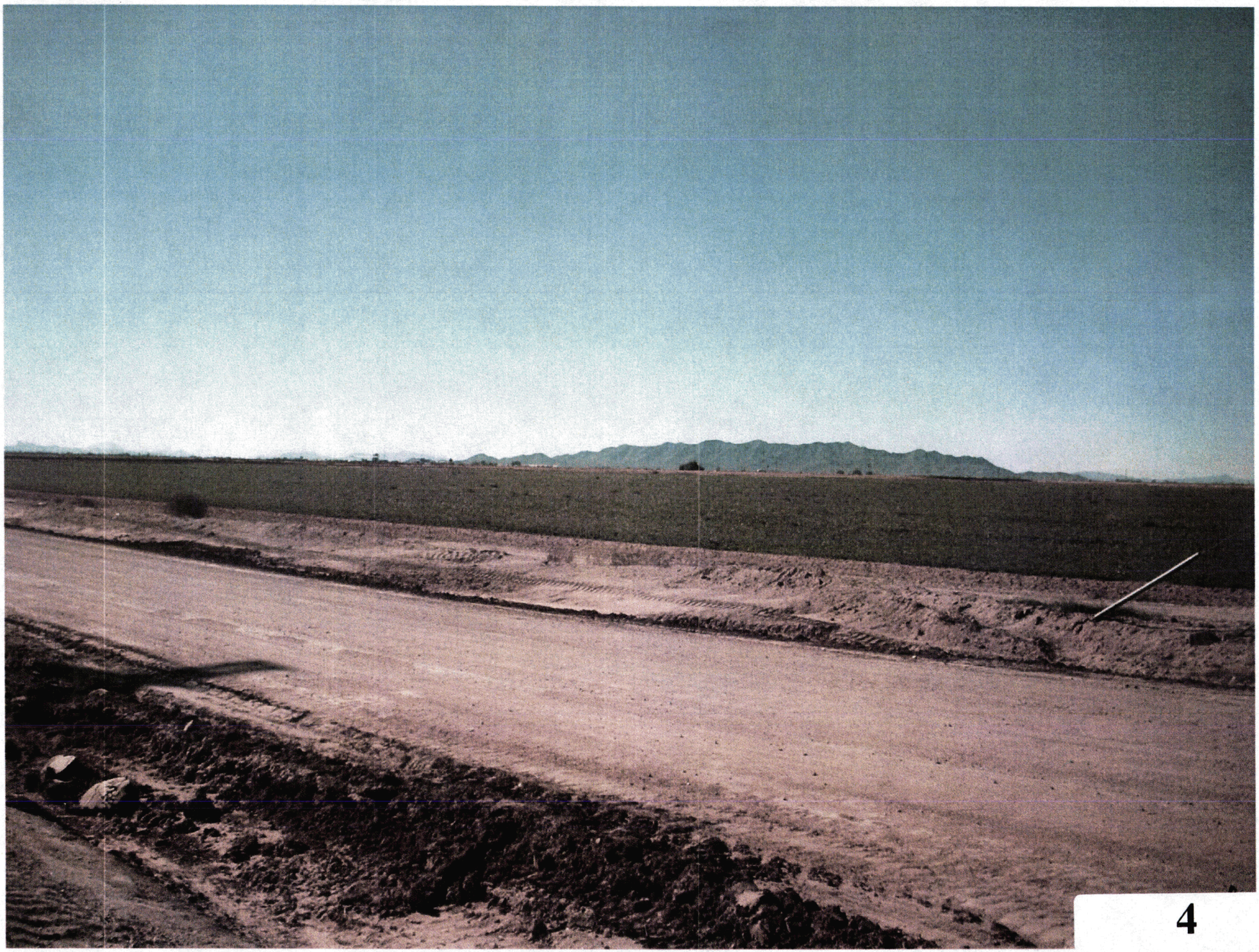

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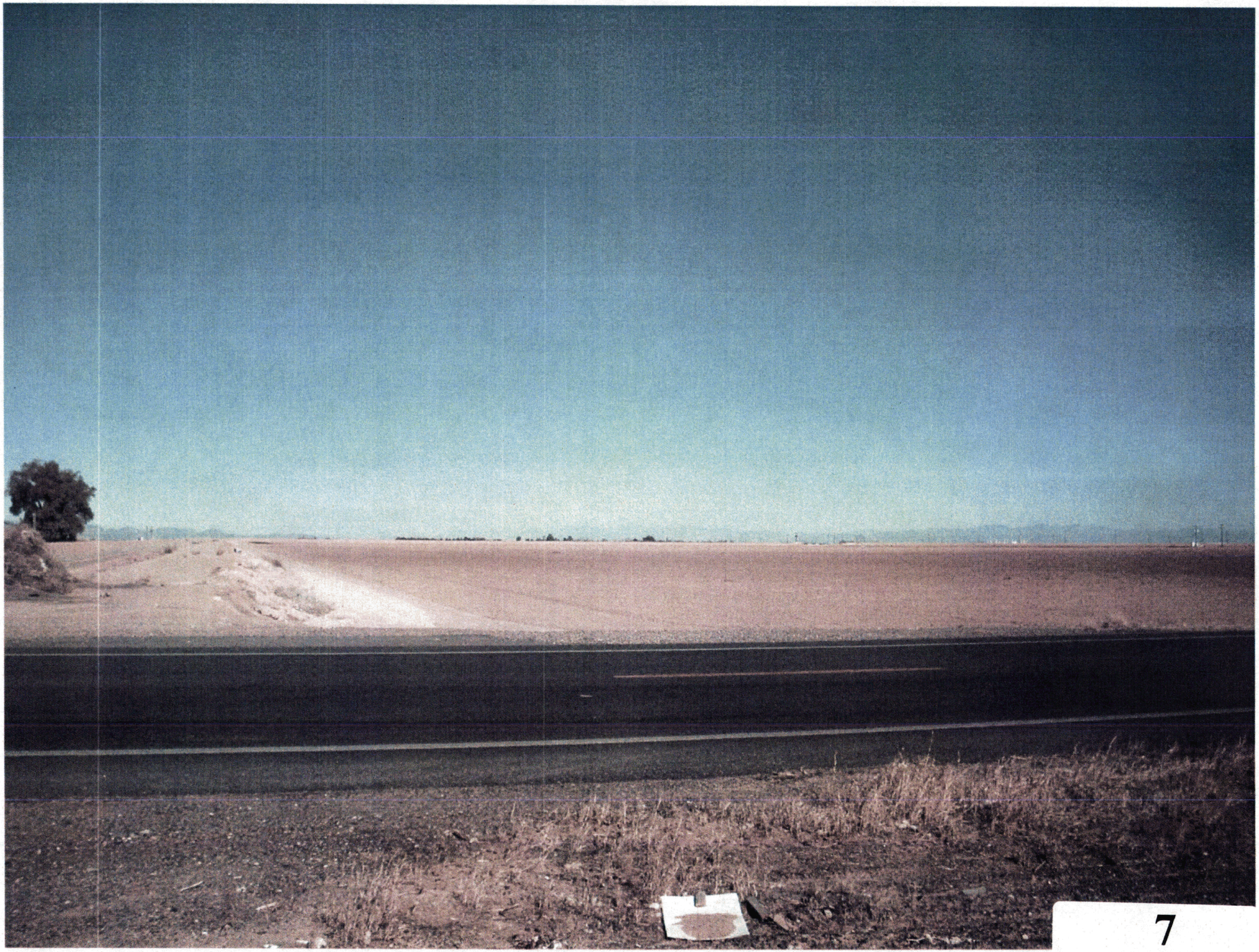

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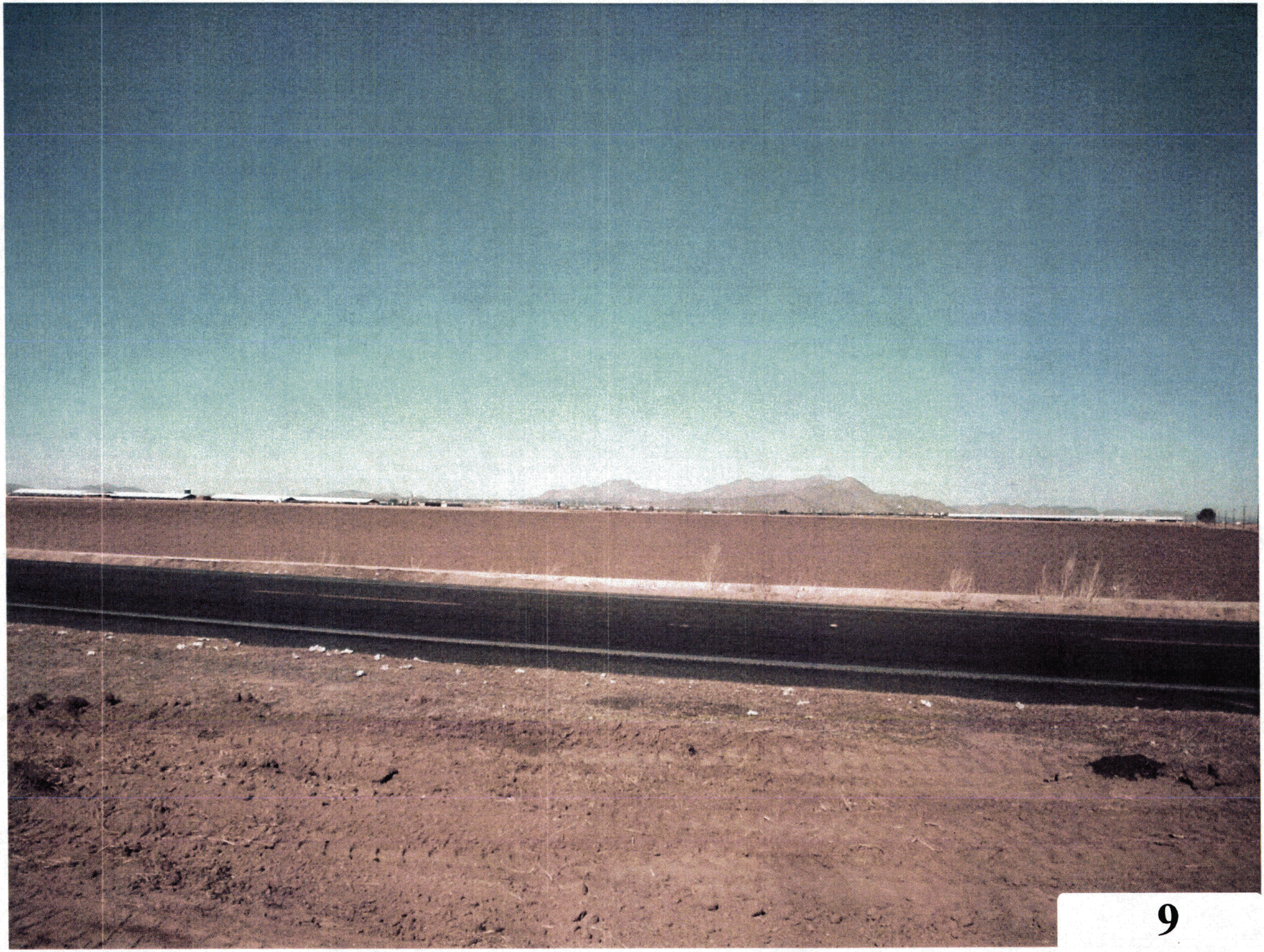

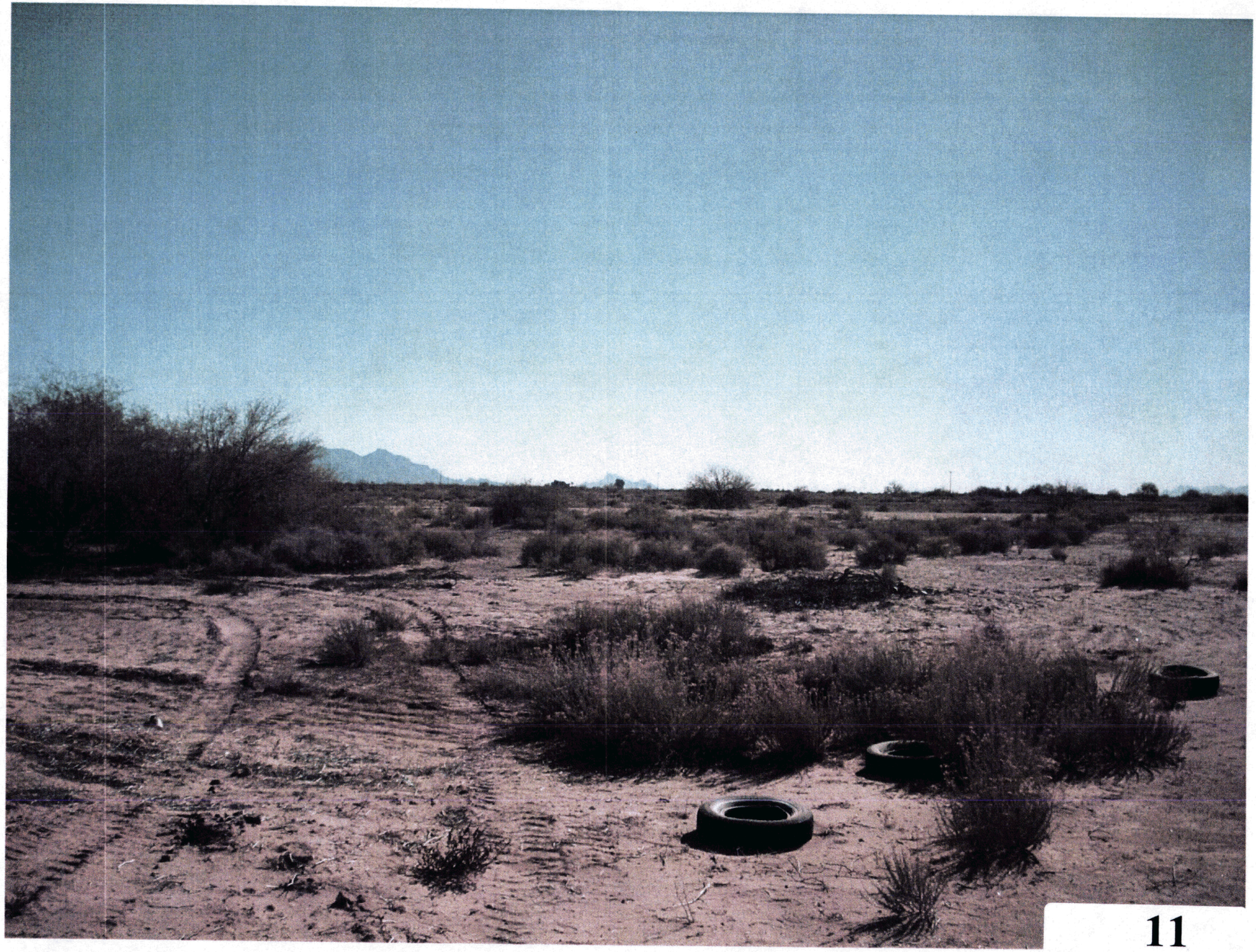

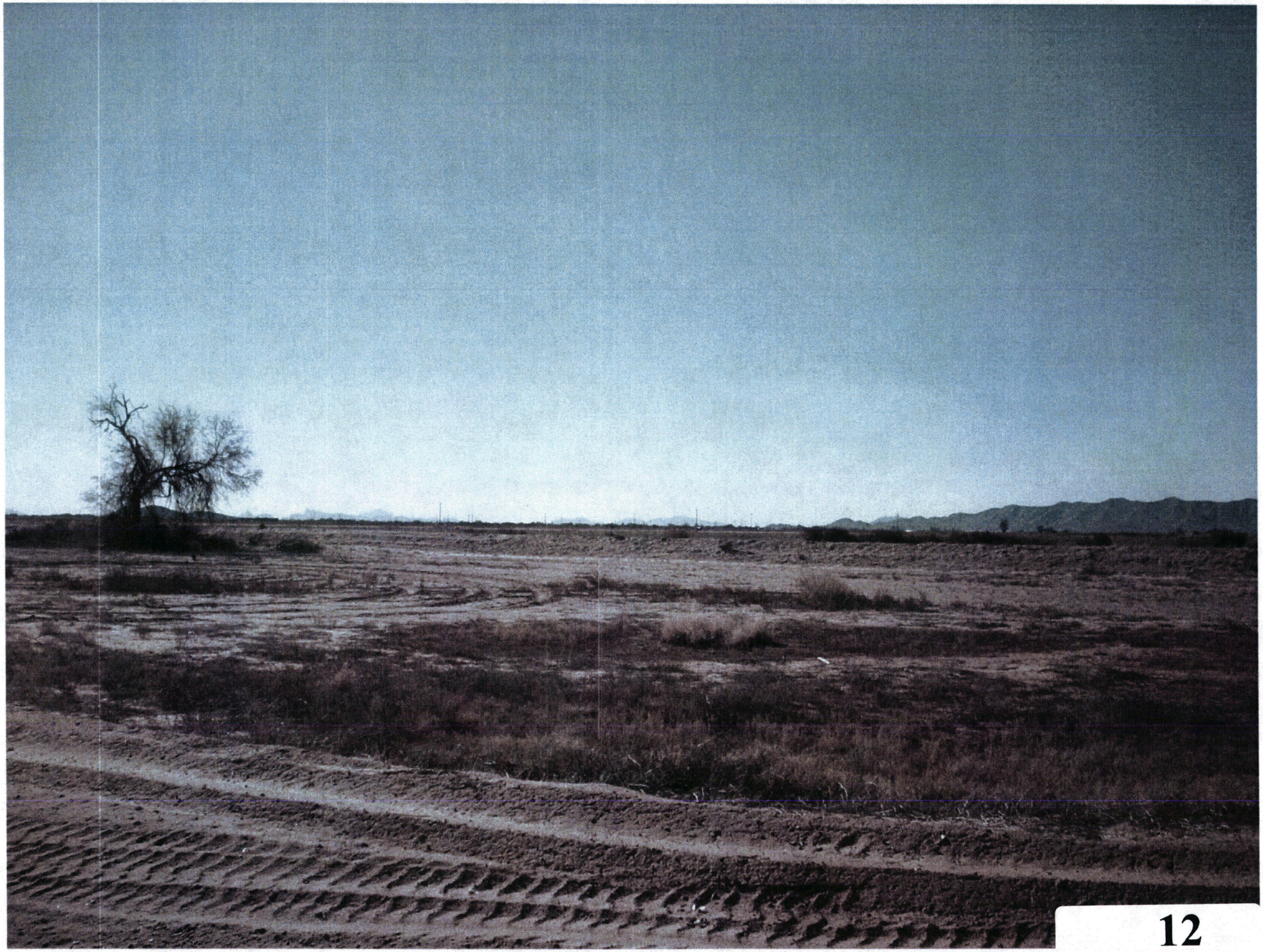

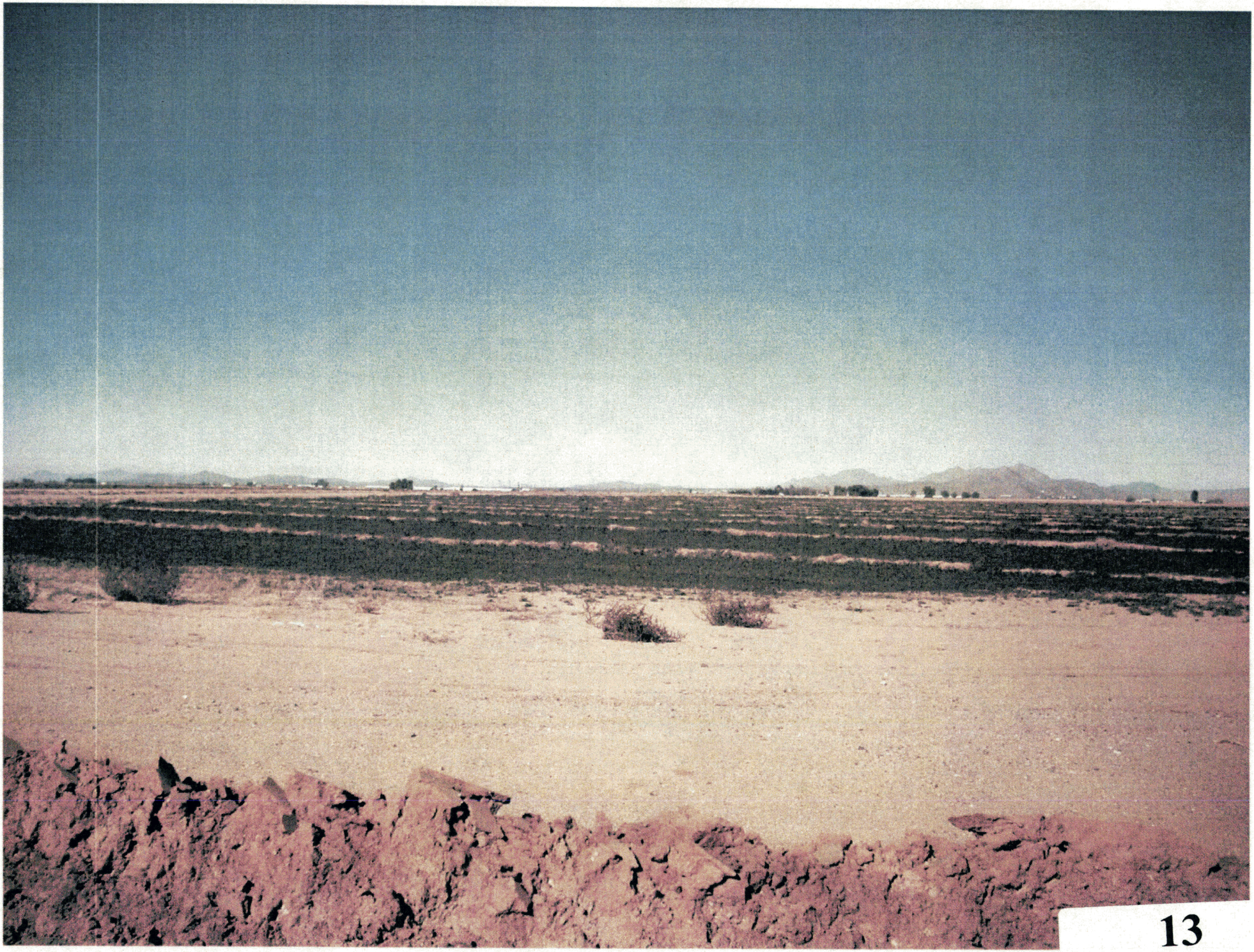

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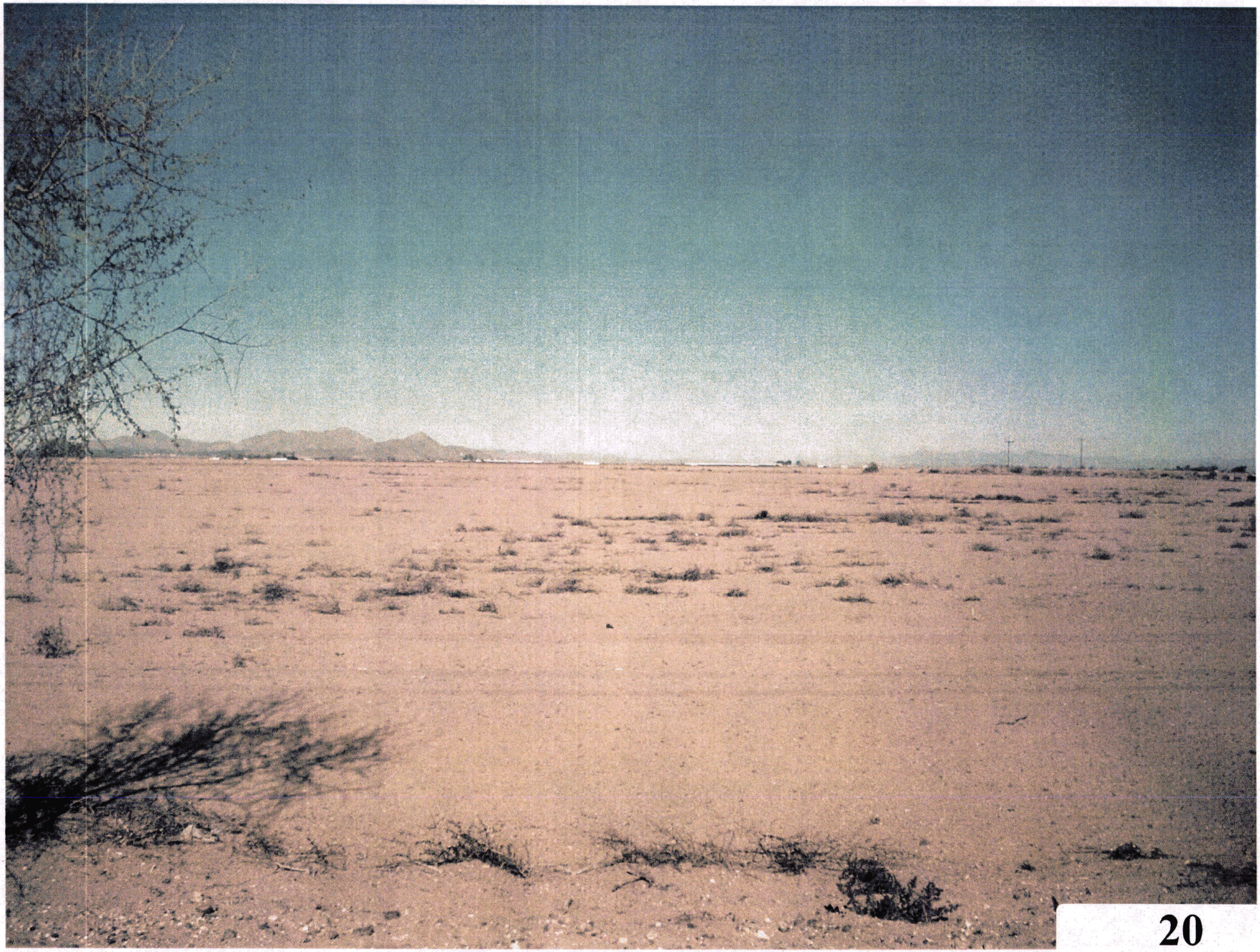

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON – Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE, PINAL COUNTY, ARIZONA	**DOCKET NO. W-01445A-03-0559**

REBUTTAL TESTIMONY AND EXHIBITS OF JIM POULOS IN THE REMAND PROCEEDING ON BEHALF OF INTERVENOR CORNMAN TWEEDY 560, L.L.C.

FEBRUARY 5, 2008

EXHIBIT
CT-103
ADMITTED

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Jim Poulos. I am Vice President of Cornman Tweedy 560, LLC ("Cornman Tweedy"), the intervenor in this case. I am also a Vice President or general manager of various land acquisition companies, land development companies, construction companies and public utilities owned or controlled by Edward J. Robson ("Robson"). My business address is 9532 East Riggs Road, Sun Lakes, Arizona 85248.

Q. HAVE YOU PREVIOUSLY PROVIDED PRE-FILED DIRECT TESTIMONY IN THIS REMAND PROCEEDING?

A. Yes. I submitted pre-filed direct testimony dated January 4, 2008.

Q. HAVE YOU REVIEWED THE PRE-FILED DIRECT TESTIMONY AND ACCOMPANYING EXHIBITS OF ARIZONA WATER COMPANY ("AWC") WILLIAM M. GARFIELD SUBMITTED JANUARY 4, 2008, IN THIS DOCKET?

A. Yes. I have read Mr. Garfield's direct testimony and reviewed the attached exhibits.

Q. AT PAGE 3 OF HIS DIRECT TESTIMONY, MR. GARFIELD STATES THAT "THE ONLY REMAINING ISSUE FOR THE COMMISSION TO DECIDE IN THIS PROCEEDING IS WHETHER ANY PARTY CAN PROVE BY CLEAR AND CONVINCING EVIDENCE THAT ARIZONA WATER COMPANY IS NO LONGER A FIT AND PROPER ENTITY TO PROVIDE WATER SERVICE IN THE CORNMAN TWEEDY PROPERTY IN THE COMPANY'S CCN AREA THAT IS NOW UNCONDITIONALLY PART OF ARIZONA WATER COMPANY'S CCN PURSUANT TO DECISION NO. 69722." DO YOU AGREE THAT THE SCOPE OF THIS REMAND PROCEEDING IS LIMITED TO WHETHER AWC IS "FIT AND PROPER"?

A. No. The Arizona Corporation Commission ("Commission") was very clear in Decision 69722 that the scope of this remand proceeding is broad, as set forth at page 4 of the decision:

> After considering the evidence in this matter, we are concerned that there may not be a current need or necessity for water service in the portions of the extension area that are owned by Cornman. We also recognize that Cornman does not wish to have its property included in Arizona Water's CC&N at this time. We believe that these issues bear further examination and that they may have some relevance to the best interests of the area ultimately to be served.
>
> ...[R]egarding the property that is owned by Cornman, we would like an opportunity to consider the overall best interests of the Cornman area and of the public. We will therefore reopen the record in this matter pursuant to A.R.S. § 40-252 and remand this case to the Hearing Division for further proceedings regarding whether Arizona Water should continue to hold a CC&N for the Cornman extension area at this time.
>
> While the matter currently before us presented relatively narrow issues, we view the proceeding on remand as broad in scope so that the Commission may develop a record to consider the overall public interest underlying service to the Cornman property that is included in the extension area granted by Decision No. 66893. By identifying these issues requiring further proceedings, we are not prejudging this matter in any way; instead, we merely desire an opportunity to consider the broader public interest implicated herein. (Decision 69722 at 4) (emphasis added).

Mr. Garfield's statement of the issue in his pre-filed testimony is nonsensical and attempts to improperly narrow the scope of this remand proceeding. The Commission just ruled in Decision 69722 that AWC is fit and proper to provide water service to the extension area. Decision 69722 at 20, Conclusion of Law 3. Thus, there is no reason the Commission would remand this case on that issue. Rather, the Commission remanded the case to develop a complete record around: (i) whether there is a current need and necessity for

water service at the property owned by Cornman Tweedy; and (ii) the reasons Cornman Tweedy does not want its property included in AWC's Certificate of Convenience and Necessity ("CC&N"). Further, the Commission ordered that this remand proceeding be "broad in scope so the Commission may develop a record to consider *the overall public interest underlying service to the Cornman property*." (Decision 69722 at 20, ¶104, lines 4-5) (emphasis added).

In my pre-filed direct testimony in this remand proceeding, I outlined the facts which demonstrate that there is no current need or necessity for water service at the property owned by Cornman Tweedy. In addition, my testimony and the pre-filed direct testimony of Dr. Fred Goldman and Mr. Paul Hendricks set forth the reasons why Cornman Tweedy does not wish to have its property included in AWC's CC&N. I will briefly summarize those reasons here for the Commission's convenience:

- There is no request for water service from Cornman Tweedy.
- Service by AWC would split the EJR Ranch property between two water providers—AWC and Picacho Water Company—which would lead to:
  - (i) A doubling up of water infrastructure construction thereby increasing construction costs for the developer and leading to higher rates for customers;
  - (ii) Increased design and engineering costs, water master plan modeling costs, and administration costs caused by dealing with two different water providers; and
  - (iii) Time delays and inefficiencies of dealing with two different water providers.
- Service by AWC would eliminate the opportunity for an integrated water and wastewater provider for the EJR Ranch property. Integrated providers provide important public

benefits including:

(i) Maximization of the use of reclaimed wastewater and conservation of groundwater supplies;

(ii) Increased efficiencies and flexibility in dealing with waste streams; and

(iii) Operational efficiencies and cost savings in operating integrated water and wastewater systems.

- Allowing AWC to serve the Cornman Tweedy property ignores the wishes of the landowner.
- Robson's relationship with AWC is often frustrating and costly.

Q. IS THE COMMISSION'S CONSIDERATION OF THE "NEED AND NECESSITY" FOR WATER SERVICE AN IMPORTANT FACTOR IN DETERMINING "THE OVERALL PUBLIC INTEREST UNDERLYING SERVICE TO THE CORNMAN PROPERTY"?

A. Yes. The showing of a "need and necessity" for service is an essential underpinning of a CC&N, and it is specifically identified in Decision 69722 as one of the considerations in this remand proceeding. The "need and necessity" must exist at the time a CC&N is granted or extended, and it must continue to exist if the CC&N is to remain in place. In the June 12, 2006, Staff Report in this docket, Assistant Director Steve Olea stated that "[t]he basic reason to require a time limit for the submission of both the developer's CAWS and the MXA is to help ensure that there is truly a necessity for the service being provided." Staff Report at 1 (June 12, 2006). Whether there is a need and necessity for water service at the property owned by Cornman Tweedy is squarely within the scope of this proceeding.

Q. IN ADDITION TO NEED AND NECESSITY, IS AN EXAMINATION OF THE REASONS WHY CORNMAN TWEEDY DOES NOT WISH TO

HAVE ITS PROPERTY INCLUDED IN THE CC&N OF AWC WITHIN THE SCOPE OF THIS REMAND PROCEEDING?

A. Yes. In Decision 69722, the Commission makes it clear that the reasons why Cornman Tweedy does not wish to have its property included in AWC's CC&N is within the "broad" scope of this remand proceeding. It is also clear that the issues raised by Cornman Tweedy in this proceeding are on the Commission's mind at this time. Just last month, the Commission issued Decision 70128 (Dockets Nos. RW-00000B-07-0051 and RSW-00000B-07-0051) which ordered that proposed amendments to Arizona Administrative Code ("A.A.C.") Rule R14-2-402 be forwarded to the Arizona Secretary of State for a Notice of Proposed Rulemaking (the "Rulemaking"). A copy of Decision 70128 is attached to this rebuttal testimony as Exhibit 1. Based upon my participation in the Rulemaking where I submitted comments and attended the workshop and open meetings, it is my understanding that the proposed revisions and additions were developed to address shortcomings in the existing rules regarding the grant or extension of CC&Ns. Specifically, the Commission proposed several additions which, in my opinion, are intended to ensure that applicants meet the requisite showing of "need and necessity" before new CC&Ns or extensions are granted and that the process takes into account the desires of the landowner affected by the application. For example, the Commission proposed that the following additional new information be included with CC&N applications:

- A copy of any requests for service for the area under application with the requested water service provider identified.
- A copy of the applicant's notice of the application to all the landowners in the area under application who did not request service.
- The written response to the notice from each landowner who did not request service.

- If a landowner did not respond to the notice of the application, the application shall include a description of the action taken by the applicant to obtain a written response from the land owner.

The initial showing of a need and necessity for service is obviously critical in the issuance of a CC&N, as evidenced by these additional items that must be submitted with CC&N applications under the revised rules. However, a continuing need and necessity for service is also critical, and something the Commission is evaluating in this remand proceeding, as evidenced by the language contained in Decision 69722. The proposed rule revisions and additions in the Rulemaking are clearly intended to help the Commission make determinations regarding the need and necessity for service.

In addition, I believe that the proposed revisions and additions to Rule R14-2-402 are intended to help the Commission determine whether the landowner desires service from the entity applying for a CC&N. I have discussed above the many reasons why Cornman Tweedy does not wish to have its property included in AWC's CC&N.

Q. DO YOU BELIEVE THE COMMISSION ADOPTED THE PROPOSED NEW REQUIREMENTS LISTED ABOVE IN RESPONSE TO THE PRACTICE BY SOME UTILITIES OF FILING FOR LARGE EXPANSIONS OF THEIR CC&NS WITHOUT AN UNDERLYING SHOWING OF A NEED AND NECESSITY FOR SERVICE?

A. Yes. I am aware of occasions where utility companies have sought substantial extensions of their CC&Ns with minimal underlying requests for service supporting the extensions. In this case, for example, AWC obtained a CC&N for more than 7,000 acres on the basis of two requests for service covering only 720 acres, or about 10% of the extension area. Similarly, in Docket W-01445A-06-0199, AWC filed an application seeking to extend its CC&N to include more than 69,000 acres in Pinal

County. However, AWC's application was supported by only five requests for service totaling less than 200 acres—a small fraction of 1% of the total area requested. The certification of lands without an underlying need and necessity for service leads to a variety of problems, including foreclosing of future options available to the Commission and lost opportunities for water and wastewater integration. In my pre-filed direct testimony and the pre-filed direct testimony of Dr. Fred Goldman and Mr. Paul Hendricks, we discuss the public interest issues that come into play, as summarized in my rebuttal testimony above, when lands are certificated without a need and necessity for service. I believe the Commission has recognized that this is a problem, and has acted to address the problem with the rule revisions and additions identified above.

Q. IS THE EVALUATION OF OPPORTUNITIES FOR INTEGRATION OF WATER AND WASTEWATER SERVICES WITHIN THE SCOPE OF THIS REMAND PROCEEDING UNDER DECISION 69722?

A. Yes. I believe the Commission must take into account the opportunity for integration of water and wastewater services in order to "consider the overall public interest underlying service to the Cornman property" as set forth in Decision 69722. There is no doubt that integration of water and wastewater services is very important to the Commission and an issue the Commission is addressing at this time. In the Rulemaking I discussed above, the Commission proposed and approved additions to Rule R14-2-402 which address integration of water and sewer operations. At the Open Meeting held January 15, 2008, Commissioner Mayes proposed two amendments to Rule R14-2-402 and Commission Gleason proposed one amendment, all three of which dealt with integration of water and wastewater service, encouraging the use of reclaimed wastewater and conserving groundwater. Each of the amendments passed on a 5-0 vote and were incorporated in Decision 70128.

In filing an application for a CC&N or extension, the Commission has proposed that a water company provide the following additional information:

- The name of the wastewater provider in the area under application along with a letter from the wastewater service provider to encourage water conservation, including promoting the use of reclaimed water.

- A description of how water will be provided for golf courses, ornamental lakes, other aesthetic water features, greenbelts, or parks within the area under application.

- Plans or description of water conservation measures. Such plans shall include, at a minimum, the following: (1) a description of the information about water conservation or water saving measures that the utility provides to the public and its customers; (2) a description of the sources of water that will be used to supply parks, recreation areas, golf courses, greenbelts, ornamental lakes, and other aesthetic features; (3) a description of plans for the use of reclaimed water; (4) a description of plans for the use of recharge wells; (5) a description of plans for the use of surface water; (6) a description of any other plans or programs in place to promote water conservation.

Each of these items goes directly or indirectly to the integration of water and wastewater service, and specifically, the beneficial use of effluent in an area. Robson pioneered the model in Arizona of integrating water and wastewater operations, which is embodied in items 3 and 4 above.

In addition to the amendments adopted in the Rulemaking, in an article entitled *Encouraging Conservation by Arizona's Private Water Companies: A New Era of Regulation by the Arizona Corporation Commission* published in the Arizona Law Review, 49 Ariz. L. Rev. 297 (2007), Commissioner Mayes discussed the Commission's preference for integrated water and wastewater providers, stating:

> In recent months, the Commission has issued decisions indicating a preference that new subdivisions be served, where possible, by integrated water and wastewater

> companies. These integrated utilities help to achieve economies of scale, encourage conservation efforts, and facilitate the use of effluent for golf course irrigation, ornamental lakes, an other water features. The concept of integrated wastewater and water companies was approved by the 1999 Commission Water Task Force, a working group comprised of Commission Staff, the Residential Utility Consumer Office ("RUCO"), ADEQ, ADWR, and water company stakeholders. Though the Task Force's policy proposals have never been formally adopted by the Commission, the integrated water and wastewater model has been explicitly favored in several recent decisions.
>
> ***
>
> Companies competing for the right to serve some of the state's fasted growing areas are advantaged when they present an integrated approach to the Commission, thus allowing Commissioners the opportunity to mandate the use of effluent from the moment the service area is created. (footnotes omitted).

A copy of Commissioner Mayes' article is attached as Exhibit 2. These statements by Commissioner Mayes are consistent with actions taken by the Commission in recent cases of competing water providers. Commissioner Mayes discussed one such case in her article:

> In *Woodruff*, the Commission was presented with a choice between two water companies that wanted to serve the same 3,200 acre development (called Sandia) in a fast growing area of Pinal County. The Commission's decision was heavily influenced by the question of whether the CC&N should be granted to an entity capable of utilizing effluent. Ultimately, the Commission awarded the CC&N to Woodruff Water and Sewer Companies over AWC. The Commission chose Woodruff despite the fact [that] AWC was a far more experienced water provider. The Commission favored Woodruff's planned use of effluent from its planned wastewater treatment facility to sustain the development's proposed golf course. During the CC&N hearing, Woodruff testified that its integrated approach to wastewater and water was designed to facilitate a 20-year build-out of the development, and that it would allow it to implement a water

> reuse program that it called "essential" to the project. Against this backdrop, the Commission concluded that "[t]he benefits of developing and operating integrated water and wastewater utilities in this instance outweigh the economies imputed to AWC's larger scale." (footnotes omitted).

From these statements and the proposed rule revisions in the Rulemaking, it is clear that the Commission is very interested in the public policy of integrated water and wastewater providers. An evaluation of the opportunity for integration of water and wastewater services in this remand proceeding is entirely consistent with "the overall public interest underlying service to the Cornman property" as set forth in Decision 69722.

Q. AT PAGE 5 OF HIS DIRECT TESTIMONY IN THE REMAND PROCEEDING, MR. GARFIELD DISCUSSES AWC'S CAP ALLOCATION OF 10,884 ACRE FEET, AND STATES THAT "THESE RENEWABLE SURFACE WATER SUPPLIES WILL BENEFIT THE COMPANY'S ENTIRE PINAL VALLEY CCN AREA, INCLUDING THE CORNMAN TWEEDY PROPERTY." HE FURTHER STATES THAT "NEITHER ROBSON, NOR ITS AFFILIATE, PICACHO WATER COMPANY, CAN SAY THE SAME, NOR HAVE THEY PROVIDED ANY PLANS FOR REGIONAL SURFACE WATER SUPPLY DEVELOPMENT, TREATMENT, AND DELIVERY." DOES THE ROBSON MODEL OF PROVIDING INTEGRATED WATER AND WASTEWATER OPERATIONS PRODUCE A RENEWABLE WATER RESOURCE?

A. Absolutely. Robson is the recognized pioneer in Arizona in the direct reuse and recharge of reclaimed wastewater, a renewable resource. As such, Robson strongly supports the Commission's preference for integrated water and wastewater services under a single provider and believes that integrated providers are best suited to maximize water and reclaimed water resources.

Allow me to demonstrate the efficiency of Robson's integrated model in generating and delivering usable reclaimed wastewater supplies. In developments where Robson-affiliated utilities are certificated to provide both water and wastewater service in Arizona, the combined projected pumping of service area water at full build-out is an estimated 28,400 acre-feet per year under existing CC&N boundaries. Within the same CC&N boundaries at full build-out, the Robson utilities will generate and deliver an estimated 12,600 acre-feet per year of reclaimed wastewater for direct reuse or recharge. For each acre-foot of service area water pumped by a Robson utility, an estimated 44% of that quantity will be directly reused or recharged, offsetting the need for additional groundwater pumping. By way of comparison, AWC's CAP allocation of 10,884 acre-feet (which is actually less than the 12,600 acre-feet of reclaimed wastewater that will be delivered by Robson utilities with a smaller combined CC&N area) represents only 9% of the 120,000 acre-feet of groundwater under AWC's updated Physical Availability Determination for its Pinal Valley Water System Planning Area attached as Exhibit WMG-15 to Mr. Garfield's Direct Testimony in this remand proceeding. Despite the benefits of integrated water and wastewater systems, AWC has steadfastly refused to provide wastewater service in the areas it serves.

Q. PLEASE SUMMARIZE WHAT CORNMAN TWEEDY IS ASKING THE COMMISSION TO DO IN THIS PROCEEDING?

A. Cornman Tweedy requests that the Commission exclude from AWC's CC&N that portion of the property owned by Cornman Tweedy that is located within the area described in Exhibit A to Decision 66893 for the reasons that are stated in my pre-filed direct testimony and the pre-filed direct testimony of Dr. Fred Goldman and Mr. Paul Hendricks.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, thank you.

EXHIBIT 1

BEFORE THE ARIZONA CORPORATION COMMISSION

MIKE GLEASON
Chairman
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
KRISTIN K. MAYES
Commissioner
GARY PIERCE
Commissioner

Arizona Corporation Commission
DOCKETED
JAN 23 2008
DOCKETED BY mn

IN THE MATTER OF RULEMAKING TO AMEND EXISTING RULES AND/OR ESTABLISH NEW RULES REGARDING THE COMMISSIONS REQUIREMENTS FOR APPLICATIONS REQUESTING APPROVAL TO OBTAIN A NEW CERTIFICATE OF CONVENIENCE AND NECESSITY OR EXTEND AN EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY FOR WATER AND SEWER UTILITIES

DOCKET NOS. RW-00000B-07-0051
RSW-00000A-07-0051

DECISION NO. 70128

ORDER

Open Meeting
January 15 and 16, 2008
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

1. At the January 17, 2007 Open Meeting, the Commission requested that the Hearing Division open a new docket for a rulemaking proceeding regarding Arizona Administrate Code Rules R14-2-402 and R14-2-602 ("Rules"), the applications for new Certificates of Convenience and Necessity ("CC&N") and extensions of CC&Ns for water and sewer utilities.

2. The proposed changes to the Rules require that additional information be included in the applications generally relating to need, technical issues and financial matters.

3. On March 6, 2007, the Utilities Division distributed the proposed Rule changes requested by Commissioners to approximately 400 interested parties and invited written comments. Eleven parties docketed written responses.

4. On April 25, 2007, a special Open Meeting was noticed regarding these dockets and on June 8, 2007, a meeting was held among interested parties, with Commissioners in attendance, to discuss the proposed Rule changes.

5. Some of the written comments and comments from the meeting have been incorporated into the proposed Rule changes.

6. Staff has recommended that the proposed changes to the Rules be forwarded to the Secretary of State for Notice of Proposed Rulemaking.

7. Staff further recommends that the Hearing Division schedule a public comment proceeding on the proposed changes to the Rules no earlier than thirty days after publication in the Arizona Register, but as soon as practicable thereafter, in Phoenix and/or Tucson, Arizona.

8. We will adopt Staff's recommendations regarding the proposed changes to the Rules, except that we will direct Staff to modify proposed R14-2-402(B)(2)(p) as follows:

> On the last line of page 4 of the proposed Rules attached to this Decision, after "application" INSERT "along with a letter from the wastewater service provider confirming the provision of such service and a description of how the applicant will work with the wastewater service provider to encourage water conservation, including promoting the use of reclaimed water."

CONCLUSIONS OF LAW

1. Pursuant to Article XV of the Arizona Constitution and A.R.S. Title 40 generally, the Commission has authority in this matter.

2. It is in the public interest to issue a Procedural Order in this matter as requested by Staff.

ORDER

IT IS THEREFORE ORDERED that the proposed changes to the Rules as modified herein be forwarded to the Secretary of State for Notice of Proposed Rulemaking.

IT IS FURTHER ORDERED that the Hearing Division schedule a public comment proceeding on the proposed changes to the Rules as modified herein no earlier than thirty days after publication in the Arizona Register, but as soon as practicable thereafter, in Phoenix and/or Tucson, Arizona.

IT IS FURTHER ORDERED that this Decision become effective immediately.

BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION

CHAIRMAN COMMISSIONER

COMMISSIONER COMMISSIONER COMMISSIONER

IN WITNESS WHEREOF, I DEAN S. MILLER, Interim Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this 23rd day of January, 2008

DEAN S. MILLER
Interim Executive Director

DISSENT: _____

DISSENT: _____

EGJ:LAJ:lhm\RM

SERVICE LIST FOR: RULEMAKING
DOCKET NOS. RW-00000B-07-0051 and RSW-00000A-07-0051

A. Petersen Water Company
PO Box 1270
Show Low, AZ 859021270

Abra Water Company, Inc.
PO Box 515
Paulden, AZ 86334

Adaman Mutual Water Company
16251 W Glendale Ave
Litchfield Park, AZ 85340

Aguila Water Services, Inc.
PO Box 1086
Sun City, AZ 85372

Ajo Improvement Company
PO Drawer 9
Ajo, AZ 85321

Alpine Water System, Inc.
PO Box 822
Alpine, AZ 85920

American Realty and Mortgage Co., Inc.
dba Hacienda Acres Water System
PO Box 232
Wittman, AZ 85361

Antelope Lakes Water Company
501 N Hwy 89
PO Box 350
Chino Valley, AZ 86323

Antelope Run Water Company
301 N. Garden Ave
Sierra Vista, AZ 85635

Antelope Water Company
35730 Antelope Dr
Wellton, AZ 85356

Anway Manville L.L.C. Water Company
7400 N. Oracle Rd., Ste. 236
Tucson, AZ 85704

Appaloosa Water Company
PO Box 3150
Chino Valley, AZ 86323

Arivaca Townsite Cooperative Water Company
PO Box 398
Arivaca, AZ 85601

Arizona Water Company
PO Box 29006
Phoenix, AZ 85038-9006

Arizona Windsong Realty, Inc.
PO Box 261
Sanders, AZ 86512

Arizona-American Water Company
19820 N. 7th St., Ste 201
Phoenix, AZ 85024

Arroyo Water Company, Inc.
HC 6, Box 1048 L
Payson, AZ 85541

Ash Creek Water Company
PO Box 825
Thatcher, AZ 85552

Ash Fork Development Association, Inc.
dba Ash Fork Water Service
PO Box 293
Ash Fork, AZ 86320

AVM-2005, LLC
15051 N Kierland Blvd, Ste 200
Scottsdale, AZ 85254

Avra Water Cooperative, Inc.
11821 W. Picture Rocks Rd.
Tucson, AZ 85743

Baca Float Water Company
PO Box 1536
Tubac, AZ 85646

Bachmann Springs Utility Company
PO Box 9
Tombstone, AZ 85638

Balterra Sewer Corp.
c/o Jay L. Shapiro
3003 N. Central Ave., Ste. 2600
Phoenix, AZ 85012

Beardsley Water Company, Inc..
c/o First National Management, Inc.
PO Box 1020
Apache Junction, AZ 852171020

Beaver Dam Water Company, Inc.
PO Box 550
Littlefield, AZ 86432

Beaver Valley Water Company
PO Box 421
Payson, AZ 85547

Bella Vista Water Company, Inc.
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85323

Bellemont Water Company, Inc.
PO Box 31176
Flagstaff, AZ 86003

Bensch Ranch Utilities, LLC
6825 E. Tennessee Ave., Ste 547
Denver, CO 80224

Bermuda Water Company
2335 Sanders Rd.
Northbrook, IL 60062

Berneil Water Company
PO Box 219
Tempe, AZ 85280-0219

Biasi Water Company, Inc.
PO Box 518
Beaver Dam, AZ 86432

Bidegain Water Company
PO Box 538
Kearny, AZ 85237

Big Park Water Company
45 Castle Rock Rd., Ste. 4
Sedona, AZ 86351

Black Mountain Sewer Corporation
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85392

Bob B. Watkins
dba East Slope Water Company
301 N. Garden Ave
Sierra Vista, AZ 85635

Bonita Creek Land & Home Owners Association
c/o Linda Kelley
HC7 Box 271R
Payson, AZ 85541

Boynton Canyon Enchantment Homeowners Association
525 Boynton Canyon Rd.
Sedona, AZ 86336

Bradshaw Water Company, Inc.
PO Box 12758
Prescott Valley, AZ 86304

Brooke Water LLC
PO Box 82218
Bakersfield, CA 93380

Caballeros Water Company, Inc.
1551 S. Vulture Mine Rd
Wickenburg, AZ 85390

Cactus-Stellar Limited
12625 W. Cactus Ridge
HCR #2 Box 469
Tucson, AZ 85735

Camp Verde Water System
PO Box 340
Camp Verde, AZ 86322

Carter's Water Company
1157 East Sunset Dr
Casa Grande, AZ 85222

Casa Grande South Water Company
117 E. Second St.
Casa Grande, AZ 85222

Casa Grande West Water Co., Inc.
117 E Second St.
Casa Grande, AZ 85222

Cayetano, Inc.
dba Lakewood Water Company
PO Box 733
Amado, AZ 85645

C-D Oasis Water Company
1665 10th St.
Douglas, AZ 85607

Cerbat Water Company
2409 Ricca Dr
Kingman, AZ 86401

Chaparral City Water Company
Attn: Accounts Payable - G. O.
630 E. Foothills Blvd.
San Dimas, CA 91773

Chaparral Water Company
2601 W. Dunlap, Ste 10
Phoenix, AZ 85021

Chino Meadows II Water Company
PO Box 350
Chino Valley, AZ 86323

Cibola Mutual Water Company
RR2, Box 77
Cibola, AZ 85328

Cienega Water Company, Inc.
PO Box 3518
Parker, AZ 85344

Circle City Water Company, L.L.C.
PO Box 82218
Bakersfield, CA 93380

Citrus Park Water Co., Inc.
9361 Citrus Circle SE
Tacna, AZ 85352

Clear Springs Utility Company, Inc.
PO Box 85160
Tucson, AZ 85754

Clearwater Utilities Company, Inc.
20441 W. Cheyenne
Buckeye, AZ 85326

Cloud Nine Water Company Inc.
96 Bel Aire Pl., Ste 140
Sierra Vista, AZ 85635

Coldwater Canyon Water Company
PO Box 637
Black Canyon City, AZ 85324

Community Water Company of Green Valley
1501 S. La Canada Dr.
Green Valley, AZ 85614

Cordes Lakes Water Company
PO Box 219
Tempe, AZ 85280

Coronado Utilities, Inc.
6825 E. Tennessee Ave., Ste. 547
Denver, CO 80224

CP Water Company
c/o Global Water
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Cross Creek Ranch Water Company
c/o HOAMCO
6586 Hwy 179, Ste., C-1
Sedona, AZ 86351

Crown King Water Company, Inc.
6428 W. Garden Dr.
Glendale, AZ 85304

Dairyland Water Co-Op
16707 E. Happy Rd.
Queen Creek, AZ 85242

Dateland Public Service
PO Box 3011
Dateland, AZ 85333

Dateland Water, LLC
3412 W 2nd Street
Anacortes, WA 98221

Dells Water Company
PO Box 870
Clarkdale, AZ 86324

Desert Valencia Water System
PO Box 1605
Idyllwild, CA 92549

Diablo Village Water Company
c/o Thim Utility Company
PO Box 13145
Tucson, AZ 85732

Diamond Valley Water Users Corporation
PO Box 13070
Prescott, AZ 86304-3070

Diversified Water Utilities, Inc.
4700 E. Thomas Rd., Ste. 203
Phoenix, AZ 850187703

Donald & Steven McAdams
dba McAdams Water Company
10434 230th St.
Delta, IA 52550

Doney Park Water
5290 E. Northgate Loop
Flagstaff, AZ 86004

Double R Water Distributors Inc.
1515 N Lake Havasu Ave., Ste 100
Lake Havasu City, AZ 86404

Dragoon Water Company
7459 E. Almeria Rd.
Scottsdale, AZ 85257

DS Water Company
PO Box 786
Desert Springs, AZ 86432

Eagletail Water Company, L.C.
PO Box 576
Tonopah, AZ 85354

Eden Water Company, Inc.
9488 E. Hot Springs Rd.
Eden, AZ 85535

Ehrenberg Improvement Association
dba Ehrenberg Water Co.
PO Box 50
Ehrenberg, AZ 85334

El Prado Water Company, Inc.
PO Box 5450
Yuma, AZ 85366

Elfrida Domestic Water Users Association
PO Box 356
Elfreda, AZ 85610

Empirita Water Company, L.L.C.
2090 N. Kolb Rd., Ste. 120
Tucson, AZ 85715

Entrada Del Oro Sewer Company
11811 N. Tatum Blvd., Ste. 1060
Phoenix, AZ 85028

F. Wayne Thompson
and Dorothy Thompson
dba West Village Water Company
c/o Allen Ginsberg
1120 W. University Ave., Ste. 200
Flagstaff, AZ 86001

Far West Water & Sewer, Inc.
13157 E. 44th St.
Yuma, AZ 85367

Farmers Water Company
PO Box 7
Sahuarita, AZ 85629

Fisher's Landing Water and Sewer Works, LLC
PO Box 72188
Yuma, AZ 85365

Flagstaff Ranch Water Company, Inc
PO Box 10775
Phoenix, AZ 85064

Fools Hollow Water Company
PO Box 484
Show Low, AZ 85902

Forest Highlands Water Company
657 Forest Highlands
Flagstaff, AZ 86001

Forrest G. & Alice W. Wilkerson
dba Verde Lee Water Company
PO Box 984
Clifton, AZ 85533

Fort Mohave Tribal Utilities Authority
8490 S. Highway 95
PO Box 5559
Mohave Valley, AZ 86440

Francesca Water Company, Inc.
PO Box 17991
Tucson, AZ 85731

Francisco Grande Utility Company
26000 Gila Bend Highway
Casa Grande, AZ 85222

Gadsden Water Company, Inc
PO Box 519
Somerton, AZ 85350

Global Water - Palo Verde Utilities Company
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Global Water - Santa Cruz
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Gold Canyon Sewer Company
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85323

Golden Corridor Water Company
c/o Arizona Water Co.
PO Box 29006
Phoenix, AZ 850389006

Golden Shores Water Co., Inc.
PO Box 37
Topock, AZ 86436

Goodman Water Company
6340 N. Campbell, Ste. 278
Tucson, AZ 85718

Graham County Utilities Inc - Water
PO Drawer B
Pima, AZ 85543

Grand Canyon Caverns and Inn, LLC
PO Box 180
Peach Springs, AZ 86434

Grandview Water Company, Inc.
11632 S. 194th Dr.
Buckeye, AZ 85326

Granite Dells Water Company
3025 N. Hwy 89
Prescott, AZ 86301

Granite Mountain Water Company Inc.
2465 Shane Dr.
Prescott, AZ 86305

Granite Oaks Water Users Association
PO Box 4947
Chino Valley, AZ 86323

Great Prairie Oasis
Sunland Water Company
PO Box 10450
Casa Grande, AZ 85230

Green Acres Water Company
PO Box 4995
Yuma, AZ 85366

Greenehaven Sewer Company, Inc.
PO Box 5122
Page, AZ 86040

Greenehaven Water Company Inc.
PO Box 5122
Page, AZ 86040

Groom Creek Water Users Association
4209 S. Adeline Dr.
Prescott, AZ 86303

H2O, Inc.
41502 N. Schnepf Rd.
Queen Creek, AZ 85242

Halcyon Acres Annex #2 Water Co. Inc.
8715 E. 20th St.
Tucson, AZ 85710

Halcyon Acres Water Users Association
PO Box 18448
Tucson, AZ 85731

Hassayampa Utilities Company, Inc.
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85028

Hatch Valley Water Company
PO Box 271
Peach Springs, AZ 86434

Heart Cab Co., Inc.
dba Sulger Water Company #2.
PO Box 580
Sierra Vista, AZ 85636

High Country Pines Water Company, Inc.
5555 N. 7th St., Ste. 134, PMB 342
Phoenix, AZ 85014

Hillcrest Water Company
915 E. Bethany Home Rd.
Phoenix, AZ 85014

Holiday Enterprises Incorporated
dba Holiday Water Company
PO Box 309
Tombstone, AZ 85638

Hopeville Water Company, Inc.
1415 S. Palo Verde Rd., Rt. 2
Buckeye, AZ 85326

Humboldt Water Systems, Inc.
PO Box 10593
Sedona, AZ 86339

ICR Water Users Association
PO Box 5669
Chino Valley, AZ 86323

Indiada Water Company, Inc.
301 N. Garden Ave
Sierra Vista, AZ 85635

J. D. Campbell
dba West End Water Company
9098 W. Pinnacle Peak Road
Peoria, AZ 85383

Jackson Spring Estates Home and Property Owners Association
4439 E. Hobart
Mesa, AZ 85205

Janice E. Worden and Lawrence A. Worden
dba Worden Water Company
15150 W. Ajo, Ste. 568
Tucson, AZ 85735

Jaren Associates #1
dba James P. Water Company
4455 E. Camelback Rd., Ste. 215-A
Phoenix, AZ 85018

Johnson Utilities L.L.C.
dba Johnson Utilities Company
5230 E. Shea Blvd., Ste. 200
Scottsdale, AZ 85254

Joshua Valley Utility Company
PO Box 80070
Phoenix, AZ 85060

Kacy J. Parker
dba Jake's Corner Water System
HC6 Box 1048 H
Payson, AZ 85541

Kacy Parker
dba Arroyo Water Co.
HC6 Box 1048 L
Payson, AZ 85541

Katherine Resort Water Company
6126 Chrismark Ave.
San Diego, CA 92120

Keaton Development Company
PO Box 905
Salome, AZ 85348

Kohl's Ranch Water Company
2111 E. Highland Ave., Ste 200
Phoenix, AZ 85016

Kraus Investment LC
dba Shangri-La Ranch
44444 N. Shangri La Lane
New River, AZ 85087

Kyllo Development Corporation
dba Bradshaw Mountain View Water Co
PO Box 10593
Sedona, AZ 86339

La Casita Water Company Inc.
PO Box 13208
Tucson, AZ 85732

Lago Del Oro Water Company
9532 E. Riggs Rd.
Sun Lakes, AZ 85248

Lagoon Estates Water Company
2600 N. 44th St., Ste. 203
Phoenix, AZ 85008

Lake Pleasant Sewer Company
2390 E. Camelback Rd., Ste. 310
Phoenix, AZ 85016

Lake Pleasant Water Company
2390 E. Camelback Rd., Ste. 310
Phoenix, AZ 85016

Lake Verde Water Company
PO Box 2777
Camp Verde, AZ 86322

Las Quintas Serenas Water Company
PO Box 68
Sahuarita, AZ 85629

Lazy C Water Service
PO Box 1
Tucson, AZ 85702

Litchfield Park Service Company
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85323

Litchfield Park Service Company - Sewer
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85323

Little Park Water Company
45 Castle Rock Rd #4
Sedona, AZ 86351

Livco Sewer Company
PO Box 659
Concho, AZ 85924

Livco Water Company
PO Box 659
Concho, AZ 85924

Loma Estates Water Co.
11620 Bella Sierra Trl
Prescott, AZ 86305

Loma Linda Estates, Inc.
dba Loma Linda Water Company
PO Box 967
Thatcher, AZ 85552

Lord Arizona Water Systems Inc.
2961 E. Cooley
Show Low, AZ 85901

Los Cerros Water Co., Inc.
4003 N. Flowing Wells Road
Tucson, AZ 85705

Lucky Hills Water Company
PO Box 309
Tombstone, AZ 85638

Lyn Lee Water
2321 W. Catalpa
Tucson, AZ 85741

Martinez Lake Sewer Company
10430 N. Martinez Lake Rd.
Yuma, AZ 85365

Meadow Water Company
PO Box 3937
Prescott, AZ 86302

Mescal Lakes Water Systems Inc.
PO Box 85160
Tucson, AZ 85754

MHC Operating Limited Partnership
dba The Sedona Venture Wastewater
Treatment Plant
c/o Manufactured Home Communities, Inc.
2 N. Riverside Plaza, Ste 800
Chicago, IL 60606

Michael W. Schultz & Pamela J. Schultz
dba Rincon Creek Water Company
14545 E Rincon Creek Ranch Rd
Tucson, AZ 85747

Michaels Ranch Water Users' Association
1 Michaels Ranch Rd
Sedona, AZ 86336

Mirabell Water Company, Inc.
1037 S. Alvernon, Ste. 250
Tucson, AZ 85711

Mobile Water Company
Attn: Mr. Garth Wieger
6720 N Scottsdale Rd, Ste 335
Scottsdale, AZ 85253

Mohawk Utility Company
36140 Antelope Dr.
Wellton, AZ 85356

Monte Vista Water Co., L.L.C.
4762 N. Rustler Place
Douglas, AZ 85607

Montezuma Rimrock Water Company, LLC
PO Box 10
Rimrock, AZ 86335

Morenci Water and Electric Company
PO Box 68
Morenci, AZ 85540

Mormon Lake Water Co.
PO Box 29041
Phoenix, AZ 85038

Morristown Water Company
PO Box 156
Morristown, AZ 85342

Mount Tipton Water Co., Inc.
PO Box 38
Dolan Springs, AZ 86441

Mountain Dell Water, Inc.
1341 W. Palmer Ave.
Flagstaff, AZ 86001

Mountain Glen Water Service
PO Box 897
Clay Springs, AZ 85923

Mountain Pass Utility Company
9532 E. Riggs Rd
Sun Lakes, AZ 85248

MWC, Inc.
PO Box 12776
Ft. Huachuca, AZ 85670

Naco Water Company, L.L.C.
PO Box 85160
Tucson, AZ 85754

Narvol D. Bales
dba Sunizona Water Company
5416 E. Hwy 181
Pearce, AZ 85625

Navajo Water Co., Inc.
PO Box 82218
Bakersfield, CA 93380

New River Utilities Company
7839 W Deer Valley Rd
Peoria, AZ 85382

North Mohave Valley Corporation
PO Box 22495
Bullhead City, AZ 86439-2495

Northern Sunrise Water Company
12725 W. Indian School Rd., Ste. D-101
Avondale, AZ 85323

Oak Creek Public Service, LLC
PO Box 103
Cornville, AZ 86325

Oak Creek Utility Corporation
PO Box 48
Cave Creek, AZ 85327

Oak Creek Water Co., No 1
90 Oak Creek Blvd
Sedona, AZ 86336

Oatman Water Company, L.L.C.
9184 N. 81st Street
Scottsdale, AZ 85258

Orange Grove Water Company
PO Box 889
Yuma, AZ 85366

Park Valley Water Company, Inc.
PO Box 487
Show Low, AZ 85902

Park Water Company, Inc.
PO Box 16173
Phoenix, AZ 85011

Parker Lakeview Estates Homeowners
Association Inc.
dba Parker Springs Water Company
HC 2, Box 193
Patagonia, AZ 85624

Payson Water Co., Inc.
PO Box 82218
Bakersfield, CA 93380

Peeples Valley Water Company
15811 N. 9th Ave.
Phoenix, AZ 85023

Peter O'Crotty
dba Despoblado Water Company
8815 N Verch Way
Tucson, AZ 85737

Picacho Peak Water Company
28784 Stonehenge Dr.
Chesterfield, MI 48047

Picacho Sewer Company
9532 E. Riggs Rd
Sun Lakes, AZ 85248

Picacho Water Company
9532 E. Riggs Rd.
Sun Lakes, AZ 85248

Picacho Water Improvement
PO Box 44
Picacho, AZ 85421

Pima Utility Company (Sewer)
9532 E. Riggs Rd.
Sun Lakes, AZ 85248

Pima Utility Company (Water)
9532 E. Riggs Rd.
Sun Lakes, AZ 85248-7411

Pine Meadows Utilities, LLC
6825 E Tennesse Ave., Ste 547
Denver, CO 80224

Pine Valley Water Company
480 Raintree Rd
Sedona, AZ 86351

Pine Water Co., Inc.
c/o Brooke Utilities, Inc.
PO Box 82218
Bakersfield, CA 93380

Pinecrest Water Company
PO Box 97
Nutrioso, AZ 85932

Pineview Water Co
5198 Cub Lake Rd.
Show Low, AZ 85901

Ponderosa Utility Corporation
3A Osage St
Flagstaff, AZ 86001

Pueblo Del Sol Water Company
4226 Avenida Cochise, Ste 13
Sierra Vista, AZ 85635

Puesta Del Sol Water Company
2732 W. Glendale Ave.
Phoenix, AZ 85051

Q Mountain Mobile Home Park
PO Box 4930
Quartzsite, AZ 85359

Q Mountain Water Inc.
12486 S. Foothills Blvd.
Yuma, AZ 85367

Quail Creek Water Company
9532 E. Riggs Rd.
Sun Lakes, AZ 85248

Queen Creek Water Company
22713 S. Ellsworth Rd., Bldg. A
Queen Creek, AZ 85242

Rainbow Parks, Inc.
dba Escapees at North Ranch
100 Rainbow Dr.
Livingston, TX 77351

Rancheros Bonitos Water Co., L.L.C.
14550 S. Avenue 4E
Yuma, AZ 85365

Rancho Del Conejo Community Water Co-Op, Inc.
13130 W. Rudasill Rd
Tucson, AZ 85743

Rancho Sahuarita Water Company L.L.C.
4549 E. Fort Lowell Rd.
Tucson, AZ 85712

Ray Water Company
414 N. Court
Tucson, AZ 85701

Red Rock Utilities, LLC
PO Box 70108
Tucson, AZ 85737

Ridgeview Utility Company
9532 E. Riggs Rd
Sun Lakes, AZ 85248

Rigby Water Company
PO Box 1020
Apache Junction, AZ 85217-1020

Rillito Water Users Association
PO Box 668
Rillito, AZ 85654

Rincon Ranch Estates Water Company
3750 South Old Spanish Trail
Tucson, AZ 85730

Rincon Water Company
HC #70 Box 3601
Sahuarita, AZ 85629

Rio Rico Utilities Inc.
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85392

Rio Verde Utilities
25609 Danny Lane, Ste 1
Rio Verde, AZ 85263

Roosevelt Lake Resort, Inc.
HCO 2, Box 901
Roosevelt, AZ 85545

Rose Valley Water Company
Gary Brasher
PO Box 1444
Green Valley, AZ 85622

Sabrosa Water Company
c/o Town of Cave Creek
One Arizona Center
400 E. Van Buren St., Ste. 800
Phoenix, AZ 85004

Saddlebrooke Utility Company
9532 E. Riggs Rd.
Sun Lakes, AZ 85248

Saguaro Water Company
4572 E. Camp Lowell Dr.
Tucson, AZ 85712

Sandario Water Company
PO Box 85160
Tucson, AZ 85754

Santa Rosa Utility Company
9532 E. Riggs Rd
Sun Lakes, AZ 85249

Santa Rosa Water Company
9532 E. Riggs Rd
Sun Lakes, AZ 85248

Seven Canyons Water Company
15333 N. Pima Rd., Ste. 305
Scottsdale, AZ 85260

Seven Canyons Water Treatment Company
15333 N. Pima Rd., Ste. 305
Scottsdale, AZ 85260

Shepard Water Company
10430 N. Martinez Lake Rd.
Yuma, AZ 85365

Sitgreaves Water Company
2961 E. Cooley
Show Low, AZ 85901

Sleepy Hollow Mobile Home Estates
6001 S. Palo Verde
Tucson, AZ 85706

Sonoita Valley Water Company
2102 N. Forbes, Ste. 107
Tucson, AZ 85745

South Rainbow Valley Water Coop.
27205 S. 170th Ave.
Buckeye, AZ 85326

Southern Sunrise Water Company
12725 W. Indian School Rd., Ste. D101
Avondale, AZ 85323

Southland Sanitation, Co.
2730 E. Broadway, Ste 135
Tucson, AZ 85716

Southland Utilities Company, Inc.
2730 E. Broadway, Ste 135
Tucson, AZ 85716

Spanish Trail Water Co.
2200 E. River Rd., Ste 115
Tucson, AZ 85718

Spring Branch Water Company, Inc.
1223 S. Clearview Ave., Ste. 103
Mesa, AZ 85209

St. David Springs, L.L.C.
1600 N. Kolb Rd., Ste. 118
Tucson, AZ 85715

Starlight Water Company, Inc.
PO Box 1842
Wenatchee, WA 98807

Sterling Water Company
2925 N. Manor Dr. E.
Phoenix, AZ 85014

Stoneman Lake Water Company, Inc.
7250 E. Gray St.
Mesa, AZ 85207

Strawberry Water Co., Inc.
PO Box 82218
Bakersfield, CA 93380

Strawberry Water Company
203A W. Airport Rd
Payson, AZ 85541

Sue Juan Water Company
10570 S. Nogales Hwy
Tucson, AZ 85706

Sun Leisure Estates Utilities Company, Inc.
c/o Crites & Associates
PO Box 5681
Yuma, AZ 85366

Sun Valley Farms-Unit VI Water Company
3698 E. Hash Knife Draw Rd
Queen Creek, AZ 85242

Sunrise Utilities, L.L.C.
PO Box 3630
Mesquite, NV 89024

Sunrise Vistas Utilities Company
PO Box 8555
Ft. Mohave, AZ 86427

Sunrise Water Company
9098 W. Pinnacle Peak Rd.
Peoria, AZ 85383

Sweetwater Creek Utilities, Inc.
6825 E. Tennessee Ave, Ste 547
Denver, CO 80224

Tacna Water Company
2993 S. Arizona Ave
Yuma, AZ 85365

Tall Pine Estates Water & Improvements
Association, Inc.
HC 31 Box 25
Mormon Lake, AZ 86038

The Burlington Northern and Santa Fe
Railway Company
dba Aubrey Water Company
PO Box 961050
Ft. Worth, TX 76161

The Links at Coyote Wash Utilities, LLC
6825 E. Tennessee Ave., Ste. 547
Denver, CO 80224

Thim Utility Co.
PO Box 13145
Tucson, AZ 85732

Thim Water Corporation
PO Box 13145
Tucson, AZ 85732

Tierra Buena Water Company
12540 W. Bethany Home
Litchfield Park, AZ 85340

Tierra Linda Homeowners Association, Inc.
6262 N. Swan Rd, Ste. 125
Tucson, AZ 85718

Tierra Mesa Estates Water Company, Inc.
PO Box 4893
Yuma, AZ 85366

Timber Knoll Homeowners Association, Inc.
dba T.K. Water Service
PO Box 200
Vernon, AZ 85940

Tonto Basin Water Co., Inc.
c/o Brooke Utilities, Inc.
PO Box 82218
Bakersfield, CA 93380

Tonto Creek Utility Co.
HC 2 Box 94-G
Payson, AZ 85541

Tonto Hills Utility Company
11802 E. Blue Wash Rd
Cave Creek, AZ 85331

Tonto Village Water Company, Inc.
dba Tonto Village Water Company
PO Box 9116
Mesa, AZ 85214

Tortolita Water Co., Inc.
3567 E. Sunrise Dr., Ste 119
Tucson, AZ 85718

Truxton Canyon Water Company, Inc.
2409 Ricca Dr
Kingman, AZ 86401

Tubac Water Company, Inc.
ATTN: John Crowley
1444 Wazee St., Ste. 350
Denver, CO 80202

Turner Ranches Water & Sanitation, Co.
PO Box 1020
Apache Junction, AZ 85217-1020

Tusayan Water Development Assoc., Inc.
c/o Quality Inn
PO Box 520
Grand Canyon, AZ 86023

Twin Hawks Utility, Inc.
PO Box 70022
Tucson, AZ 85737

Utility Source, L.L.C.
721 E. San Pedro
Gilbert, AZ 85234

Utility Systems, LLC
HC 2 Box 164-H
Payson, AZ 85541

Vail Water Company
1010 N. Finance Center Dr., Ste 200
Tucson, AZ 85710

Valencia Water Company Inc.
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Valle Verde Water Company
12 Garden View Dr.
Nogales, AZ 85621

Valley Pioneer's Water Company, Inc.
5998 W. Chino Dr.
Golden Valley, AZ 86413

Valley Utilities Water Co., Inc.
6808 N. Dysart Rd., Ste. 112
Glendale, AZ 85307

Valley View Water Company Inc.
10030 W. McDowell Rd., Ste. 150-402
Avondale, AZ 85392

Verde Lakes Water Corporation
2867 S. Verde Lakes Dr. #B
Camp Verde, AZ 86322

Verde Santa Fe Wastewater Co, Inc.
6825 E Tennessee Ave, Ste 547
Denver, CO 80224

Virgin Mountain Utilities Company
PO Box 668
Beaver Dam, AZ 85432

Viva Development Corporation
PO Box 12863
Tucson, AZ 85732

Voyager at White Mountain Lakes Water Company, Inc.
1993 Juniper Ridge Resort
Show Low, AZ 85901

Voyager Water Company
8701 S. Kolb Rd
Tucson, AZ 85706

Walden Meadows Community Co-Op
9325 Donegal Dr., Ste. A
Wilhoit, AZ 86332

Walnut Creek Water Company, Inc.
119 E. Andy Devine Ave.
Kingman, AZ 86401

WATCO, Inc.
PO Box 1270
Show Low, AZ 85902

Water Utility of Greater Buckeye, Inc.
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Water Utility of Greater Tonopah, Inc.
21410 N 19th Ave., Ste. 201
Phoenix, AZ 85027

Water Utility of Northern Scottsdale, Inc.
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

White Horse Ranch Owners Association, Inc.
PO Box 670
Dewey, AZ 863270660

White Mountain Water Company
PO Box 1760
Payson, AZ 85547

Why Utility Company, Inc.
PO Box 69
Ajo, AZ 85321

Wickenburg Ranch Water, L.L.C.
c/o M3 Builders
4222 East Camelback H100
Phoenix, AZ 86018

Wilhoit Water Company, Inc.
PO Box 870
Clarkdale, AZ 85324

William F. Lesko
Heckethorn Water Company
4400 E. Button Lane
Flagstaff, AZ 86001

William P. Farr
Salome Water Company
P.O. Box 550
Salome, AZ 85348

Willow Lakes Property Owners Assoc., Inc.
PO Box 875
Benson, AZ 85602

Willow Springs Utilities, L.L.C.
1600 E. Hanley Blvd., Ste. 128
Oro Valley, AZ 85737

Willow Valley Water Company, Inc.
21410 N. 19th Ave., Ste. 201
Phoenix, AZ 85027

Winchester Water Company, L.L.C.
7616 N. La Cholla Blvd.
Tucson, AZ 85741

Winslow West Water Company Inc.
PO Box 3339
Scottsdale, AZ 85271

Woodruff Utility Company, Inc.
2555 E. Camelback Rd., Ste. 700
Phoenix, AZ 85016

Woodruff Water Company, Inc.
2555 E. Camelback Rd., Ste. 700
Phoenix, AZ 85016

Woody's Enterprises, LTD
dba Ho-Tye Water Company
580 W. Wickenburg Way
Wickenburg, AZ 85390

Yarnell Water Improvement Association, Inc.
PO Box 727
Yarnell, AZ 85362

Yucca Water Association, Inc.
PO Box 575
Yucca, AZ 86438

Mr. Ernest G. Johnson
Director, Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Mr. Christopher C. Kempley
Chief Counsel
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND ASSOCIATIONS; SECURITIES REGULATIONS

CHAPTER 2. CORPORATIONS COMMISSION FIXED UTILITIES

ARTICLE 4. WATER UTILITIES

Section
R14-2-402. Certificate of Convenience and Necessity for water utilities~~; abandonments~~

ARTICLE 6. SEWER UTILITIES

Section
R14-2-602. Certificate of Convenience and Necessity for sewer utilities~~; additions/extensions; abandonments~~

ARTICLE 4. WATER UTILITIES

R14-2-402. Certificate of Convenience and Necessity for water utilities~~; abandonments~~

A. For purpose of this rule, "contiguous" is defined with its common, ordinary and approved meaning: In actual close contact; touching; bounded or traversed by.

~~A.~~B. Application for new Certificate of Convenience and Necessity <u>or extension of Certificate of Convenience and Necessity</u>

1. Any person or entity who desires to construct and/or operate a water utility will, prior to commencement of construction of utility facilities, file an application for a Certificate of Convenience and Necessity with the Arizona Corporation Commission.
2. ~~Six copies of each~~ Each application for a new Certificate of Convenience and Necessity <u>or extension of a Certificate of Convenience and Necessity</u> shall be submitted in a form <u>and number</u> prescribed by the Commission and shall include, at a minimum, the following information:

a. The proper name and correct address of the proposed utility company and its owner, if a sole proprietorship, each partner if a partnership, ~~or~~ the President and Secretary if a corporation, or its managers(s) and/or members of the L.L.C. (if management is reserved to the members) if an L.L.C.

b. A copy of the applicant's Articles of Partnership or Articles of Incorporation ~~for the applicant~~ and/or Bylaws if the utility is a non-profit organization or association or Articles of Organization if the utility is an L.L.C. for a new Certificate of Convenience and Necessity or the applicant's Certificate of Good Standing for an extension.

~~c. The type of plant, property, or facility proposed to be constructed.~~

~~d.~~c. A complete description of the facilities proposed to be constructed, including a preliminary engineering report with specifications in sufficient detail to properly describe the principal systems and components ~~which meet the requirements of the health department. Final and complete engineering specifications shall be supplied when they become available~~ (e.g. source, storage, transmission lines, distribution lines, etc.) in order to verify the costs submitted as part of R14-2-402(B)(2)(d) and to verify that the requirements of the Commission and the Arizona Department of Environmental Quality can be met.

d. The estimated total construction cost of the proposed off-site and on-site plant facilities, including documentation to support the estimates, and an explanation of how the construction will be financed, such as, but not limited to debt, equity, advances in aid of construction or contributions in aid of construction.

e. ~~The rates proposed to be charged for the service that will be rendered.~~ The financial condition of the applicant.

f. ~~The estimated total cost of the proposed construction.~~ The rates proposed to be charged for the service that will be rendered.

~~g. The manner of capitalization and method of financing for the project.~~

~~h. The financial condition of the applicant.~~

~~i.~~g. The estimated annual operating revenues and expenses that are expected to accrue from the proposed construction for the first five years of operation, including assumptions made to derive the estimates.

~~j.~~h. The estimated starting and completion date of the proposed construction. If construction is to be phased, the phases shall be described in detail.

i. A copy of any requests for service for the area under application with the requested water service provider identified.

~~k.~~j. Maps of the proposed service area identifying:

i. The boundaries of the area under application with the total acreage noted.

ii. Land ownership boundaries indicating the acreage of each parcel within the area under application if the area under application is comprised of two or more parcels that are owned by different parties.

iii. The owner of each parcel comprising the area under application.

iv. The corporate limits of any city or town that cross or are within five miles of the area under application.

v. The service territory of any public service corporation, municipality or district currently providing water or wastewater service within one mile of the area under application, the name of any such entity and type(s) of service(s) being provided.

vi. The location of any known water service connections within the area under application.

vii. The location of all proposed developments for the area under application.

viii. The proposed location of all principal systems and components described in R14-2-402(B)(2)(c).

ix. The location of all parcels for which a copy of a request for service has been provided per R14-2-402(B)(2)(i).

k. A copy of applicant's notice to the municipal manager or administrator of each entity in R14-2-402(B)(2)(j)(iv).

~~l. Appropriate city, county and/or state agency approvals.~~

l. A copy of the applicant's notice of the application to all the landowners in the area under application who did not request service.

~~m. The estimated number of customers to be served for each of the first five years of operation, including documentation to support the estimates.~~

m. The written response to the notice from each landowner who did not request service.

n. If a landowner did not respond to the notice of the application, the application shall include a description of the action taken by the applicant to obtain a written response from the land owner.

o. Appropriate city, county and/or state agency approvals.

p. The estimated number of customers to be served for each of the first five years of operation, including documentation to support the estimates.

q. The name of the wastewater service provider in the area under application along with a letter from the wastewater service provider confirming the provision of such service and a description of how the applicant will work with the wastewater service provider to encourage water conservation, including promoting the use of reclaimed water.

r. A description of how water will be provided for golf courses, ornamental lakes, other aesthetic water features, greenbelts, or parks within the area under application.

s. Plans or description of water conservation measures. Such plans shall include, at a minimum, the following: (1) a description of the information about water conservation or water saving measures that the utility provides to the public and its customers; (2) a description of the sources of water that will be used to supply parks, recreation areas, golf courses, greenbelts, ornamental lakes, and other aesthetic features; (3) a description of plans for the use of reclaimed water; (4) a description of plans for the use of recharge wells; (5) a description of plans for the use of surface water; (6) a description of any other plans or programs in place to promote water conservation.

t. Backflow prevention tariff, if not already on file.

u. Curtailment tariff, if not already on file.

v. Physical Availability Determination, Analysis of Adequate Water Supply, or Analysis of Assured Water Supply from the Arizona Department of Water Resources or, in the alternative, the status of the application.

w. For applications for extensions of Certificate of Convenience and Necessity, the applicant shall also submit:

i. A current compliance status report from the Arizona Department of Environmental Quality. This status report shall be dated no more than 30 days before the filing date of the application for extension.

ii. A water use data sheet for the existing system(s). A separate water use data sheet, identified by the Arizona Department of Environmental Quality Public Water System Identification Number, shall be submitted for each separate water system.

3. Upon the receipt of such application, the Commission staff of the Utilities Division shall review the application for compliance with the information requirements of this regulation; additional information, amendments and/or corrections to the application to bring the application into compliance with this regulation shall be governed by the Commission's rules of administrative and hearing requirements concerning incomplete applications.

4. Once the applicant has satisfied the information requirements of this regulation, as well as any additional information required by the staff of the Commission's Utilities Division, the Commission shall, as expeditiously as reasonably practicable, schedule hearings to consider such application.

~~B.~~C. Application for discontinuance or abandonment of utility service

1. Any utility proposing to discontinue or abandon utility service currently in use by the public shall prior to such action obtain authority therefore from the Commission.

2. The utility shall include in the application, studies of past, present and prospective customer use of the subject service, plant or facility as is necessary to support the application.

3. An application shall not be required to remove individual facilities where a customer has requested service discontinuance.

~~C.~~**D.** Additions~~/~~ or extensions of service contiguous to ~~outside~~ existing Certificates of Convenience and Necessity

1. Each utility which proposes to extend utility service to a ~~location~~ parcel not within its certificated service area, but located in a non-certificated area contiguous to its certificated service area, shall prior to the extension of service, notify the Commission of such service extension. Such notifications shall be in writing and shall be verified and shall set forth, at a minimum, the number of persons or entities proposed to be served by such service extension, their location in relation to the certificated area of the utility and a statement of the utility that the service extension is to a non-certificated ~~area~~ parcel which is contiguous to its certificated area. Where emergency service is required to be provided to a customer in a non-certificated area contiguous to the utility certificated area the utility shall advise the Commission simultaneously of such extension and the written notification shall set forth the nature and extent of the emergency.

~~2. For purpose of this rule the following definition of "contiguous" is: Contiguous— Common, ordinary and approved meaning. In actual close contact; touching; bounded or traversed by.~~

ARTICLE 6. SEWER UTILITIES

R14-2-602. Certificate of Convenience and Necessity for sewer utilities~~; additions/extensions; abandonments~~

A. For purpose of this rule, "contiguous" is defined with its common, ordinary and approved meaning: In actual close contact; touching; bounded or traversed by.

~~A.~~B. Application for new Certificate of Convenience and Necessity or extension of Certificate of Convenience and Necessity

1. Any person or entity who desires to construct and/or operate a sewer utility will, prior to commencement of construction of utility facilities, file an application for a Certificate of Convenience and Necessity with the Arizona Corporation Commission.
2. ~~Six copies of each~~ Each application for a new Certificate of Convenience and necessity or extension of a certificate of Convenience and Necessity shall be submitted in a form and number prescribed by the Commission and shall include, at a minimum, the following information:
   a. The proper name and correct address of the proposed utility company and its owner, if a sole proprietorship, each partner if a partnership, ~~or~~ the President and Secretary if a corporation~~.~~, or its managers(s) and/or members of the L.L.C. (if management is reserved to the members) if an L.L.C.
   b. A copy of the applicant's Articles of Co-Partnership or Articles of Incorporation ~~for the applicant~~ and/or Bylaws if the utility is a non-profit organization or association, or Articles of Organization if the utility is an L.L.C. for a new Certificate of

Convenience and Necessity or the applicant's Certificate of Good Standing for an extension.

~~c. The type of plant, property, or facility proposed to be constructed.~~

~~d.~~c. A complete description of the facilities proposed to be constructed, including a preliminary engineering report with specifications in sufficient detail to properly describe the principal systems and components ~~and final and complete engineering specifications when they become available~~ (e.g., collection mains, trunk lines, lift stations, treatment plants, effluent disposal areas, etc.) in order to verify the costs submitted as part of R14-2-602(B)(2)(e) and to verify that the requirements of the Commission and the Arizona Department of Environmental Quality can be met.

d. A copy of the Aquifer Protection Permit issued by the Arizona Department of Environmental Quality for the proposed area or, in the alternative, the status of the application for the Aquifer Protection Permit.

e. ~~The rates proposed to be charged for the service that will be rendered because of the proposed construction.~~ The estimated total construction cost of the proposed off-site and on-site plant facilities, including documentation to support the estimates, and an explanation of how the construction will be financed, such as, but not limited to debt, equity, advances in aid of construction or contributions in aid of construction.

f. ~~The estimated total cost of the proposed construction.~~

~~g. The manner of capitalization and method of financing for the project.~~

~~h.~~f. The financial condition of the applicant.

g. The rates proposed to be charged for the service that will be rendered.

~~i.~~h. The estimated annual operating revenues and expenses that are expected to accrue from the proposed construction for the first five years of operation, including assumptions made to derive the estimates.

~~j.~~i. The estimated starting and completion date of the proposed construction. If construction is to be phased, the phases shall be described in detail.

j. A copy of any request for service for the area under application with the requested wastewater service provider identified.

k. Maps of the proposed service area~~.~~ identifying:

i. The boundaries of the area under application with the total acreage noted.

ii. Land ownership boundaries indicating the acreage of each parcel within the area under application if the area under application is comprised of two or more parcels that are owned by different parties.

iii. The owner of each parcel comprising the area under application.

iv. The corporate limits of any city or town that cross or are within five miles of the area under application.

v. The service territory of any public service corporation, municipality or district currently providing water or wastewater service within one mile of the area under application, the name of any such entity and the type(s) of service(s) it is providing.

vi. The location of any known sewer service connections within the area under application.

vii. The location of all proposed developments for the area under application.

viii. The proposed location of all principal systems and components described in R14-2-602(B)(2)(c).

ix. The location of all parcels for which a copy of a request for service has been provided per R14-2-602(B)(2)(j).

~~l. Appropriate city, county and/or state agency approvals.~~

l. A copy of the applicant's notice to the municipal manager or administrator of each entity in R14-2-602(B)(2)(k)(iv) of the application to all the landowners in the area under application who did not request service.

~~m. Estimated number of customers to be served for the first five years of operation, including documentation to support the estimates.~~

m. The written response to the notice from each landowner in the area under application who did not request service.

n. Appropriate city, county and/or state agency approvals.

o. Estimated number of customers to be served for the first five years of operation, including documentation to support the estimates.

p. The name of the water service provider in the area under application.

q. A description of how effluent from the area under application will be reused, or if not reused, a description of the disposition of the effluent.

r. For applications for an extension of a Certificate of Convenience and Necessity, the applicant shall also submit.

i. A current compliance status report from the Arizona Department of Environmental Quality. This status report shall be dated no more than 30 days before the filing date of the application for extension.

ii. A wastewater flow data sheet for the existing system(s).

3. Upon the receipt of such application, the Commission staff shall review the application for compliance with the information requirements of this regulation; additional information, amendments and/or corrections to the application to bring the application into compliance with this regulation shall be governed by the Commission's rules of administrative and hearing requirements concerning incomplete applications.

4. Once the applicant has satisfied the information requirements of this regulation, the Commission shall, as expeditiously as reasonably practicable, schedule hearings to consider such application.

~~B.~~C. Additions/ or extensions of service contiguous to existing Certificates of Convenience and Necessity. Each utility which proposes to extend utility service to a ~~person~~ parcel not located within its certificated service area, but located in a non-certificated area contiguous to its certificated service area, shall, prior to the extension of service, notify the Commission of such service extension. Such notification shall be in writing and shall be verified and shall set forth, at a minimum, the number of persons or entities proposed to be served by such service extension, their location in relation to the certificated area of the utility and a statement of the utility that the service extension is to a non-certificated ~~area~~ parcel which is contiguous to its certificated area. Where emergency service is required to be provided to a customer in a non-certificated area contiguous to the utility certificated area, the utility shall advise the Commission simultaneously of such extension and the written notification shall set forth the nature and extent of the emergency.

~~C.~~D. Application for authority to abandon, sell, lease, transfer, or otherwise dispose of a utility. Any utility proposing to sell, lease, transfer, or otherwise dispose of the utility shall, prior to

such sale, lease, transfer, or other disposal, file an application for authority to do so including the following information:

1. The address of the applicant.
2. A description of the utility property proposed to be abandoned, sold, leased, transferred or otherwise disposed of.
3. The financial condition of the applicant.
4. The name of the purchaser, lessee or assignee.
5. The terms and conditions of the proposed abandonment, sale, lease, or assignment and copies of any agreement which has been or will be executed concerning the same.
6. The effect of the proposed transaction upon the service of the applicant.
7. The method by which the proposed transaction is to be financed.
8. The effect the proposed transaction will have on any other utility and, if so, in what respect.

~~D.~~E. Application for discontinuance or abandonment of utility service

1. Any utility proposing to discontinue or abandon any type of utility service currently in use by the public shall prior to such action obtain authority therefore from the Commission.
2. The utility shall include in the application, studies of past, present and prospective customer use of the subject service plant or facility as is necessary to support the application.
3. An application shall not be required to remove individual facilities where a customer has requested service discontinuance.

EXHIBIT 2

ENCOURAGING CONSERVATION BY ARIZONA'S PRIVATE WATER COMPANIES: A NEW ERA OF REGULATION BY THE ARIZONA CORPORATION COMMISSION

Kris Mayes*

I. THE ARIZONA CORPORATION COMMISSION: AN INTRODUCTION

A. Private Water Companies and Growth: Managing Complexity

The Arizona Corporation Commission ("Commission") has both constitutional and statutory authority to regulate Arizona's public service corporations, including the approximately 350 private water companies currently serving an estimated 400,000 customers in the state.[1] Article 15, section 2, of the Arizona Constitution specifically mandates that water companies are to be among those shepherded by the Commission.[2]

With as many as 12,000 people moving to Arizona each month—9,400 per month to Maricopa County alone—ensuring the long-term availability of water

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* Arizona Corporation Commissioner. This Article is a revised version of a paper originally presented at the Water Law and Policy Conference hosted by the University of Arizona James E. Rogers College of Law in Tucson, Arizona, on October 6–7, 2006. Articles from the Conference are collected in this symposium issue, Volume 49 Number 2, of the *Arizona Law Review*.

1. Interview with Commission Staff, including Steve Olea, Assistant Dir., Utils. Div., Ariz. Corp. Comm'n, in Phoenix, Ariz. (Oct. 2005).

2. The Arizona Consitution defines "public service corporations" as follows:

> All corporations other than municipal engaged in furnishing gas, oil or electricity for light fuel or power; or in furnishing water for irrigation, fire protection, or other public purposes; or in furnishing, for profit, hot or cold air or steam for heating or cooling purposes; or engaged in collecting transporting, treating, purifying and disposing of sewage through a system, for profit; or in transmitting messages or in furnishing public telegraph or telephone service, and all corporations other than municipal, operating as common carriers, shall be deemed public service corporations.

ARIZ. CONST. art. 15, § 2.

for all residents has become increasingly important.[3] The Commission uses a number of tools to encourage or mandate water conservation. These tools include the use of Orders Preliminary for water companies outside an Active Management Area to require that companies prove up adequate water supplies prior to receiving a Certificate of Convenience and Necessity ("CC&N"); a preference for integrated wastewater and water utilities in order to maximize the potential for the use of reclaimed water in common areas, golf courses, and ornamental water features; measures to encourage the consolidation of small water companies, particularly those in growing areas prone to shortages; curtailment tariffs, now required of all water companies; tiered water rates, which are also now established in rate cases; and the use, when necessary, of hook-up moratoriums.

However, as the state struggles to match water supplies with its booming population and ensure reliable water delivery to future generations, the Commission will need to expand its efforts at conservation into uncharted areas. This will likely include allowing for recovery in rates of the costs associated with specific conservation measures that are soon to be required by the Arizona Department of Water Resources ("ADWR"); pinpointing small distressed water companies that are suffering high water loss rates or otherwise providing substandard service and utilizing rate premiums or acquisition adjustments to encourage their consolidation into larger entities; and working more closely with executive branch agencies to facilitate the aggressive institution of conservation measures at all of the state's private water systems. The combination of a broad network of water companies under its watch and the growing demands on Arizona's water supplies requires creative oversight by the Commission. In the face of such complexity, the Commission should continue to use its plenary powers as the regulator of private water companies to mitigate the effects of growth on water supplies and to help ensure the long-term availability of Arizona's most precious resource.

B. A Brief History of the Commission's Broad Mandate

Established at statehood as a popularly elected branch of state government, the Commission was originally composed of three commissioners. It was expanded by popular vote to five commissioners in 2000. The Commission was intended by the state's founding fathers to be a bulwark for consumers against the power of the large corporations that dominated commerce at the turn of the century.[4]

In addressing various challenges to the Commission's authority, courts have largely upheld the Commission's jurisdiction over public service corporations. The courts most often note the Commission's broad powers as suggested by the language of the primary constitutional provision, article 15, section 3, of the Arizona Constitution:

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3. *See* Jon Kamman, *County Gained 313 People a Day Since 2000*, ARIZ. REPUBLIC, June 27, 2006, at B1.

4. *See* THE RECORDS OF THE CONSTITUTIONAL CONVENTION OF 1910, at 614, 970 (John S. Goff ed., 1991); Ariz. Corp. Comm'n v. Woods, 830 P.2d 807, 811–13 (Ariz. 1992) (detailing the constitutional origins of the Commission).

> The Corporation Commission shall have full power to, and shall, prescribe . . . just and reasonable rates and charges to be made and collected, by public service corporations within the State for service rendered therein, and make reasonable rules, regulations, and orders, by which such corporations shall be governed in the transaction of business within the State, and may prescribe the forms and contracts and the systems of keeping accounts to be used by such corporations in transacting such business, and make and enforce reasonable rules, regulations, and orders for the convenience, comfort, and safety, and the preservation of the health, of the employees and patrons of such corporations . . . .[5]

Two years after enactment of the constitution, the Arizona Supreme Court distinguished the Commission from other commissions nationally: "Article 15 of our Constitution is unique in that no other state has given its Commission, by whatever name called, so extensive power and jurisdiction."[6] The court called the Commission's responsibility for supervising public service corporations "one of the most vexatious as well as vital questions of government" and noted that it was created by the state's founding fathers "primarily for the interest of the consumer."[7] In short, the court ruled that the Arizona Legislature could not infringe on the Commission's exclusive powers to regulate public service corporations; it could only legislate to broaden its powers.

A later line of cases, beginning with *Arizona Corp. Commission v. Pacific Greyhound Lines*,[8] questioned the breadth of the Commission's authority and "apparently established"[9] the doctrine that the Commission's exclusive constitutional authority is limited to ratemaking. However, the Arizona Supreme Court, in *Arizona Corp. Commission v. State ex rel. Woods*, criticized the *Greyhound* court's narrow construction of the Commission's authority to regulate public service corporations.[10] In this decision, the court noted that *Pacific Greyhound's* interpretation of article 15, section 3 was unreasonably narrow in light of "the framers' vision of the Commission's role" as well as earlier case law.[11] The court, however, declined to overrule *Pacific Greyhound*, noting that even a restrictive interpretation of artice 15, section 3 extends the Commission's authority beyond simple ratemaking to actions that are required to complete its ratemaking responsibilities.[12] Constricting the scope of the Commission's authority, according to the *Woods* court, would frustrate the framers' intent in

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5. *E.g.*, *Woods*, 830 P.2d at 812; State v. Tucson Gas, Elec. Light & Power Co., 138 P. 781, 783–84 (Ariz. 1914).
6. *Tucson Gas*, 138 P. at 783.
7. *Id.* at 786.
8. 94 P.2d 443, 450 (Ariz. 1939); *see also* Rural/Metro Corp. v. Ariz. Corp. Comm'n, 629 P.2d 83, 85 (Ariz. 1981) (in banc) (finding that the legislature's ability to expand the Commission's authority is limited to the public service corporations delineated in article 15, section 2, of the Arizona Constitution).
9. *Woods*, 830 P.2d at 815 & n.8 (noting that the language in the *Greyhound* opinion is "less than clear").
10. *Woods*, 830 P.2d at 813–15, 818.
11. *Id.* at 813–15.
12. *Id.* at 815.

forming the Commission. Today, the Commission continues to issue decisions that are rooted in the broad language of the constitution and in the spirit of *Woods* and other early cases affirming its position as the exclusive regulator of public service corporations in Arizona.[13]

II. ORDERS PRELIMINARY

A. Recognizing the Problem

As existing private water companies seek to expand their boundaries to accommodate new customers and new water companies sprout up in rural Arizona and on the periphery of the state's urban centers, the Commission is facing new questions about how to license these companies. The Commission's practice of issuing conditional CC&Ns as the primary vehicle for approving new companies and expansions is evolving to meet the new challenges posed by growth, in particular its consequences for conservation and water supplies.[14]

For decades, the Commission issued conditional CC&Ns, granting the CC&N but imposing a series of requirements designed to be subsequently met by the water company.[15] Developers generally favor this form of CC&N because it allows them to proceed with construction and implementation of their project while the water company making the application for the CC&N works on fulfilling the conditions.[16] The fundamental difference between an Order Preliminary and a conditional CC&N is that under the conditional CC&N, developers may commence construction of homes and a water system designed to deliver services to residents, whereas under the Order Preliminary regime, a developer could not begin building either homes or the water system until he had met all of the conditions outlined in the Order Preliminary and then been granted a final CC&N by the Commission. As noted above, the Commission is beginning to question the usefulness of the conditional CC&N, at least in cases involving water companies

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13. Observers of the Commission have also argued for a continued expansive reading of the body's authority and reach. *E.g.*, Deborah Scott Engelby, Comment, *The Corporation Commission, Preserving Its Independence*, 20 ARIZ.S T. L.J. 241 (1988). Scott Engelby argues that *Rural/Metro* failed to take into account the constitution's framers' "intent to encompass the entire field of public utilities." *Id.* at 259. She contends that the Commission should be permitted to determine on a case-by-case basis which new technologies and forms of utilities should be brought under its regulatory umbrella. *Id.*

14. In the case of water companies, a CC&N is essentially a grant of authority by the Commission to do business as a monopoly water company. CC&Ns are provided for by statute. ARIZ. REV. STAT. ANN. § 40-281 (2006). Section 281 permits the Commission to issue a CC&N authorizing public service corporations to conduct business in Arizona; section 282(D) allows the Commission to issue Orders Preliminary authorizing public service corporations to conduct business in Arizona.

15. In some cases, water companies are given up to 24 months to fulfill the prescribed conditions.

16. Often the water company making the application for a new CC&N is owned by the developer of the subdivision or is affiliated with the developer. *See, e.g.*, Picacho Water Co., Decision No. 69174, Docket No. W-03528A-06-0313, at 3 n.2 (Ariz. Corp. Comm'n Dec. 5, 2006); Woodruff Water Co., Decision No. 68453, Docket No. W-01445A-04-0755, at 5 & n.1 (Ariz. Corp. Comm'n Feb. 2, 2006).

outside Active Management Areas ("AMAs").[17] To that end, Chairman Jeff Hatch-Miller issued a letter in February 2005 announcing that the Commission had opened a generic docket to consider replacing conditional CC&N's with Orders Preliminary.[18]

Orders Preliminary are a seldom-used form of CC&N authorized under statute:

> If a public service corporation desires to exercise a right or privilege under a franchise or permit which it contemplates securing, but which has not yet been granted to it, the corporation may apply to the commission for an order preliminary to the issue of the certificate. The commission may make an order declaring that it will thereafter, upon application, under rules it prescribes, issue the desired certificate, upon terms and conditions it designates, after the corporation has obtained the contemplated franchise or permit or may make an order issuing a certificate on the condition that the contemplated franchise or permit is obtained and on other terms and conditions it designates. If the commission makes an order preliminary to the issuance of the certificate, upon presentation to the commission of evidence that the franchise or permit has been secured by the corporation, the commission shall issue the certificate.[19]

In moving toward the issuance of Orders Preliminary outside AMAs, the Commission is attempting to avoid situations where it grants a CC&N that allows a water company to begin serving customers, but later discovers that the company has failed to meet the CC&N conditions. Some of the developer's conditions are critical to a public interest standard, including obtaining a Letter of Adequate Water Supply from ADWR or an Approval to Construct from the Arizona Department of Environmental Quality ("ADEQ").[20] The Commission was clearly

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17. *See generally* Ariz. Dep't of Water Res., Assured/Adequate Water, http://www.azwater.gov/WaterManagement_2005/Content/OAAWS/default.asp (last visited Mar. 9, 2007). The 1980 Groundwater Management Act created five Active Management Areas: Prescott, Pinal, Phoenix, Tucson and Santa Cruz. ARIZ. REV.S TAT. ANN.§ § 45-411, -411.03. Water conservation and recharge requirements are stricter within the state's AMAs; for example, inside an AMA, developers must comply with ADWR's Assured Water Program, which requires a demonstration that a water supply to the proposed development will be physically, legally, and continuously available for the next 100 years. This showing must be made before the developer records plats or sell parcels. Outside AMAs, developers must still determine whether there is a 100-year assured water supply, but may proceed with the sale of lots and the recording of plats as long as the developer has informed the buyer of the lack of an assured water supply.

18. *See* Letter from Jeff Hatch-Miller, Chairman, Ariz. Corp. Comm'n, to All Interested Parties (Feb. 14, 2005), *available at* http://www.azcc.gov//divisions/admin/about/Hatch-Miller-02-14-05.pdf.

19. ARIZ. REV. STAT. ANN. § 40-282(D).

20. Under normal circumstances, before any additions can be made to the infrastructure for a public water system, the company must first get an Approval to Construct from ADEQ. For a water company located inside an AMA, before the developer can get Department of Real Estate approval to sell lots, the developer must prove to ADWR

worried that with conditional CC&Ns, it could be conveying a property right, difficult to dislodge, before the water company and associated developers had achieved the necessary approvals from other state agencies.[21] Thus, in August 2006, after receiving only two comments during a year-long comment period,[22] the Commission directed Staff to begin using Orders Preliminary as a matter of standard practice when preparing recommendations on all new CC&N applications and CC&N extensions outside AMAs.

B. Historical Context

The Commission has utilized the Order Preliminary sparingly over the past three decades. For example, Orders Preliminary were issued in cases involving the Morristown Water Company and Johnson Utilities (Decision Nos. 41802 and 67586, respectively). In the Johnson Utilities case, the Commission granted an Order Preliminary requested by Johnson Utilities which was to be used as a vehicle to assume control over the assets and service territory of the beleaguered Arizona Utility Supply and Services, L.L.C. ("AUSS").[23] In the end, Johnson Utilities had to fulfill a number of conditions before a final CC&N for the territory previously served by AUSS would be transferred to Johnson.[24]

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that it has a 100-year assured supply of water. For developments outside an AMA developers just need a letter of adequacy *or* inadequacy to get permission from the Department of Real Estate to sell lots.

21. *See* Letter from Hatch-Miller to All Interested Parties, *supra* note 18, stating:

> In many instances, the utility will begin serving customers in the certificated area in question without meeting one or more of the conditions. As a result, the utility is serving customers without a valid CC&N, thereby operating without the necessary permits and possibly endangering the public. In other instances, the applicant will request several extensions of time to comply with the conditions, saddling both itself and Commission Staff with unnecessary work.

22. Constellation New Energy and Strategic Energy filed comments on March 30, 2005 and Arizona Water Company filed comments on May 18, 2005. The companies wrote in support of the Commission's continuing its practice of issuing conditional CC&Ns but preventing the applicant from serving customers within the CC&N until all conditions have been fulfilled and the applicants have received a confirmation letter from the Commission. Arizona Water Company filed comments on May 18, 2005, indicating support for the continued issuance of conditional CC&Ns, with the addition of language preventing the applicant from serving customers until all conditions have been fulfilled and the applicant has received a confirmation letter from the Commission.

23. Ariz. Util. Supply & Servs., L.L.C., Decision No. 67586, Docket No. SW-04002A-02-0837, at 13 (Ariz. Corp. Comm'n Feb. 15, 2005). AUSS was a wastewater utility that filed for bankruptcy protection and experienced difficulty operating two of its treatment plants; thus, this case essentially involved one utility coming to the rescue of another. *See id.* at 5–7.

24. *Id.* at 8–9. Among the conditions that had to be met by Johnson before a final CC&N would issue were the transfer of all AUSS's franchise rights with Pinal County to Johnson, the transfer of any governmental approvals needed by AUSS to Johnson Utilities, and a series of ADEQ requirements necessary to the operation of AUSS plants and transfer of the assets.

Conversely, in *Utility Source, L.L.C.*,[25] the Commission acknowledged the usefulness of Orders Preliminary but nonetheless denied the request.[26] In its application, the water company sought two concessions from the Commission: first, a conditional CC&N for a segment of homeowners that were already being served, but without a CC&N; and, second, an Order Preliminary for a future phase of the development.[27] The Commission ultimately granted a conditional CC&N for the portion of the development that was already being served, but it rejected the bid for an Order Preliminary because the water company had violated title 40, section 281 of the Arizona Revised Statutes by serving customers without a CC&N.[28] Consequently, the Commission ruled that the water company would have to apply separately for a CC&N extension for the future development.[29]

Perhaps the most compelling evidence of the need for Orders Preliminary comes from a case pending before the Commission out of Mohave County.[30] This application involves the effort of a Nevada developer to obtain a conditional CC&N for a 30,000 home development in an area outside Kingman, Arizona. The application was filed with the Commission on July 7, 2005, and subsequently received a hearing before an Administrative Law Judge. Four days prior to the Commission's scheduled vote on the Recommended Opinion and Order, the Company's attorneys filed a letter in the docket from the ADWR, which stated that the developer had not proven up adequate water supplies. Concerned about ADWR's findings and the prospect of voting on a CC&N application that had critical deficiencies, two Commissioners requested an additional evidentiary hearing as well as discovery. At the time of this writing, the Commission is conducting additional evidentiary hearings and discovery in the matter and has hosted one public comment session in Kingman to collect input from area residents. In this instance, the use of an Order Preliminary would allow the Commission to avoid a scenario in which it might approve a CC&N, only to discover later that the company failed to acquire adequate water supplies to serve the area.

While construction of a given subdivision may be delayed during the time it takes a water company to obtain the permits required by an Order Preliminary, the Commission will have upheld the public interest by ensuring that the water company in question actually has an adequate or assured water supply, an approval to construct, and the necessary county franchise permit prior to serving its customers, all factors that reduce the likelihood of forming a water company where none should be. The consequence of this policy for the internal operation of the Commission is that most, if not all, of the Recommended Opinion and Orders in cases involving new CC&N requests and CC&N extensions in areas outside AMAs will come to us in the form of an Order Preliminary. Thus, the

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25. Decision No. 67446, Docket No. WS-04235A-04-0073 (Ariz. Corp. Comm'n Jan. 4, 2005).
26. *Id.* at 10–11, 25.
27. *Id.* at 10.
28. *Id.* at 20, 23–25.
29. *Id.* at 25.
30. *See* Perkins Mountain Util. Co., Docket Nos. W-20380A-05-0490, SW-20379A-05-0489 (Ariz. Corp. Comm'n filed July 7, 2005).

recommended Order Preliminary would be approved or denied at a Commission Open Meeting, and, after the applicant water company meets all of the pre-conditions, it would return to the Commission for a final Order granting or denying a CC&N.

III. REQUIRING WATER RE-USE AT ARIZONA'S PRIVATE WATER COMPANIES

A. Toward a New Paradigm: Integrated Water and Wastewater Systems

In recent months, the Commission has issued decisions indicating a preference that new subdivisions be served, where possible, by integrated water and wastewater companies. These integrated utilities help to achieve economies of scale, encourage conservation efforts, and facilitate the use of effluent for golf course irrigation, ornamental lakes, and other water features.[31] The concept of integrated wastewater and water companies was approved by the 1999 Commission Water Task Force, a working group comprised of Commission Staff, the Residential Utility Consumer Office ("RUCO"), ADEQ, ADWR, and water company stakeholders. Though the Task Force's policy proposals have never been formally adopted by the Commission, the integrated water and wastewater model has been explicitly favored in several recent decisions. One of these cases involved a clash between the Arizona Water Company ("AWC"), a stand-alone water utility, and a competing entity that proposed to serve the area in question with an integrated water and wastewater operation.[32]

In *Woodruff*, the Commission was presented with a choice between two water companies that wanted to serve the same 3,200 acre development (called Sandia) in a fast growing area of Pinal County.[33] The Commission's decision was heavily influenced by the question of whether the CC&N should be granted to an entity capable of utilizing effluent. Ultimately, the Commission awarded the CC&N to Woodruff Water and Sewer Companies over AWC. The Commission chose Woodruff despite the fact the AWC was a far more experienced water provider.[34] The Commission favored Woodruff's planned use of effluent from its

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31. The following companies are integrated water and wastewater providers: Ajo Improvement Co., Baca Float Water Co., Bachmann Springs Utility Co., Clear Springs Utility Co., Cloud Nine Water Co., Far West Water and Sewer, Fisher's Landing Water and Sewer Works, Francisco Grande Utility Co., Johnson Utilities Co., MHC Operating Limited Partnership, Oak Creek Utility Co., Pima Utility Co., Rainbow Parks, Red Rock Utilities, Rio Rico Utilities, Rio Verde Utilities, Sunrise Utilities, Sunrise Vistas Utilities, Utility Source, Willow Springs Utilities, Litchfield Park Service Co., Santa Cruz Water Co., Picacho Water Co., Palo Verde Utilities, Santa Rosa Utilities, and Arizona-American Water. Arizona-American is the oldest integrated water–wastewater company in Arizona.

32. Woodruff Water Co., Decision No. 68453, Docket No. W-01445A-04-0755, at 5–6 (Ariz. Corp. Comm'n Feb. 2, 2006), *appeal filed*, 1CA-CV 07-0167 (Ariz. Ct. App. Mar. 9, 2007).

33. At build-out the Sandia development will serve an estimated 25,000 to 30,000 people. *Id.* at 7.

34. *Id.* at 5, 31. AWC is a water company serving more than 80,000 customers in eight Arizona counties. Woodruff is a water company founded by a developer with no prior experience operating water companies in Arizona, though the Company did put on evidence

planned wastewater treatment facility to sustain the development's proposed golf course.[35] During the CC&N hearing, Woodruff testified that its integrated approach to wastewater and water was designed to facilitate a 20-year build-out of the development, and that it would allow it to implement a water reuse program that it called "essential" to the project.[36] Against this backdrop, the Commission concluded that "[t]he benefits of developing and operating integrated water and wastewater utilities in this instance outweigh the economies imputed to AWC's larger scale."[37]

Companies competing for the right to serve some of the state's fastest growing areas are advantaged when they present an integrated approach to the Commission, thus allowing Commissioners the opportunity to mandate the use of effluent from the moment the service area is created.

B. Mandating Effluent for Use on Golf Courses and Ornamental Water Features

In recent decisions, the Commission has begun prohibiting water companies from selling groundwater for use on new golf courses or ornamental water features.[38] This effectively means that developers hoping to construct golf courses and ornamental water features within the service territories of water companies subject to this provision will either have to find the effluent for use on their golf courses, or wait to build the golf course until the development is

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that it had hired an individual with significant experience running a separate water and wastewater company serving master planned developments in Arizona. *Id.* at 5.

35. *See id.* at 29.

36. *See id.* at 8. During the Commission's Open Meeting on the matter, the company's attorney told the Commissioners that the developer, which was owned by the same individual as the proposed water company, had agreed to voluntarily postpone construction of two golf courses until such time as effluent was made available from build-out of second phase of the development. The Author believes *Woodruff* to be a critical case in the evolution of the Commission's decision making in this area. Woodruff was the first company to concede that it was possible to defer the construction of a golf course until it had adequate build-out of homes to provide the effluent needed for the golf course. Additionally, the Author of this Article offered an amendment to the Administrative Law Judge's Recommended Opinion and Order, which was approved, requiring Woodruff to file with the Commission within a year a report detailing the company's progress in the utilization of effluent on ornamental lakes, golf courses and other aesthetic features.

37. *Id.* at 29.

38. Commission orders now routinely contain the following language:

> In recent months, the Commission has become increasingly concerned about the prolonged drought in Central Arizona. Therefore, we believe [the company] should be required to conserve groundwater and that [the company] should be prohibited from selling groundwater for the purpose of irrigating any future golf courses within the certificated expansion areas or any ornamental lakes or water features located in the common areas of the proposed new developments within the certificated expansion areas.

E.g., Ariz. Water Co., Decision No. 69163, Docket No. W-01445A-06-0059, at 10 (Ariz. Corp. Comm'n Dec. 5, 2006).

sufficiently built out to provide the effluent.[39] Two water companies have objected to this provision, arguing that it veers into regulatory territory already occupied by ADWR. The opponents of the effluent provision assert that ADWR has promulgated rules under its Third Management Plan that allow the use of some groundwater on golf courses inside AMAs, and that therefore the Commission prohibition goes too far.[40] The Commission retained the language over the Company's objections in both instances.[41] The Commission should continue its recently established practice of prohibiting groundwater for use on golf courses and ornamental water features in order to achieve the state's conservation goals.

C. Aggressive Water Reuse by Newly Formed Water Companies: The Global Water Resources Example

While it has become commonplace for wastewater utilities to deliver effluent for use on golf courses, greenbelts, ornamental lakes, and other ornamental water features (and for the Commission to require these uses as a condition to a new CC&N) no Arizona water or wastewater company has yet provided effluent for outdoor or indoor residential use. One Arizona water company, however, has announced plans to begin the aggressive use of effluent at the home-site. Global Water Resources recently briefed Corporation Commissioners on the company's decision to take effluent to home-sites within the Belmont development in western Maricopa County, a 25,000 acre residential

39. To date, the language prohibiting the use of groundwater on new golf courses has been adopted in twelve cases: Empirita Water Co., Decision No. 69399, Docket No. W-03948A-06-0490, at 13 (Ariz. Corp. Comm'n Mar. 29, 2007); Ariz. Water Co., Decision No. 69386, Docket No. W-01445A-06-0317, at 14 (Ariz. Corp. Comm'n Mar. 22, 2007); Lucky Hills Water Co., Decision No. 69381, Docket No. W-01961A-06-0037, at 8 (Ariz. Corp. Comm'n Mar. 22, 2007); Green Acres Water, L.L.C., Decision No. 69256, Docket No. W-20430A-05-0839, at 18 (Ariz. Corp. Comm'n Jan. 19, 2007); Beaver Dam Water Co., Decision No. 69243, Docket No. W-03067A-06-0117, at 7 (Ariz. Corp. Comm'n Jan. 19, 2007); Diablo Village Water Co., Decision No. 69206, Docket No. W-02309A-05-0501, at 11 (Ariz. Corp. Comm'n Dec. 21, 2006); Picacho Water Co., Decision No. 69174, Docket No. W-03528A-06-0313, at 7 (Ariz. Corp. Comm'n Dec. 5, 2006); Ariz. Water Co., Decision No. 69163, Docket No. W-01445A-06-0059, at 10 (Ariz. Corp. Comm'n Dec. 5, 2006); Willow Springs Utils., L.L.C., Decision No. 68963, Docket No. WS-20432A-05-0874, at 16 (Ariz. Corp. Comm'n Sept. 21, 2006); Johnson Utils. Co., Decision No. 68961, Docket No. WS-02987A-05-0695, at 7 (Ariz. Corp. Comm'n Sept. 21, 2006); Diversified Water Utils., Inc., Decision No. 68960, Docket No. W-02859A-04-0844, at 6 (Ariz. Corp. Comm'n Sept. 21, 2006); Ariz. Water Co., Decision No. 68919, Docket No. W-01445A-05-0701, at 7 (Ariz. Corp. Comm'n Aug. 29, 2006).

40. *See* Arizona Water Company's Exceptions to Administrative Law Judge's Recommended Order at 5, Ariz. Water Co., Decision No. 69163, Docket No. W-01445A-06-0059 (filed Oct. 12, 2006); Exceptions of Picacho Water Company to Administrative Law Judge's Recommended Opinion and Order, Picacho Water Co., Decision No. 69174, Docket No. W-03528A-06-0313 (filed Nov. 16, 2006).

41. *See* Picacho Water Co., Decision No. 69174, at 7; Ariz. Water Co., Decision No. 69163, at 10.

subdivision.[42] This subdivision will receive water from the Water Utility of Greater Tonopah and wastewater service from Hassayampa Utilities, both owned by Global.[43]

Global is proposing using reclaimed water for all outside uses at home sites within the Belmont community. Assuming the average home usage is 0.4 acre-feet ("AF") of water, 0.16 AF for outside uses and 0.24 AF for indoor uses, the home would send 0.16 AF of discharge to treatment.[44] Under Global's Belmont proposal, the 0.16 AF of discharge would go to treatment and then be used as treated effluent to supply the outside water needs for homes within the development.[45] Basic water reclamation would result in a decrease in annual water consumption by 30%, but with the aggressive use of water reclamation annual water consumption is reduced by 40% at Belmont.[46] The neighborhood would not discharge any water, compared with a typical neighborhood, which discharges 117,288,000 gallons of water a year.[47] When the plan is complete, it is estimated that Belmont will be the largest master planned community with fully integrated water reclamation planning in Arizona.[48] The Commission should begin a process designed to examine whether provisioning of effluent for use at home sites should eventually become a requirement in future CC&N approvals, particularly in cases involving large, well-capitalized utilities.

D. Arizona Department of Water Resources' Modified Non-Per Capita Program: Expecting Conservation at all Water Companies

The Commission is likely entering an era of mandating conservation measures at Arizona's regulated water companies. This is in part because ADWR is currently engaged in a stakeholder process that will culminate in the amendment of the agency's Third Management Plan, and with that amendment will come new conservation requirements for water companies.

The Third Management Plan is designed to implement the safe yield requirement established pursuant to the 1980 Groundwater Management Act. It is believed that the newly amended rules governing safe yield will require water systems, including the private water companies regulated by the Commission, to implement water conservation measures, called Best Management Practices ("BMPs"), geared toward achieving the state's safe yield target.[49] Larger water companies will likely be asked to implement more BMPs than smaller companies,

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42. *See* Briefing to Commissioners, Trevor T. Hill, Global Water Resources LLC, Minimizing Water Use/Maximizing Water Reuse in Development (Apr. 2, 2007) (on file with author).

43. *Id.*

44. *Id.*

45. *Id.*

46. *Id.* For a typical section of land with 2,250 units, the neighborhood that consumed 293,220,000 gallons of water before reclamation and reuse would now use 175,932,000 gallons of water per year.

47. *Id.*

48. *Id.*

49. *See* Ariz. Dep't of Water Res., Program Framework: Modified Non–Per Capita Conservation Program (Oct. 5, 2006) (on file with author).

but all companies will be permitted to choose from a list of approximately 25 BMPs.[50] Among the list of BMPs currently under discussion are the installation or promotion of low-flush toilets or low-pressure shower heads and conservation advertising.[51] In order to meet the requirements, companies will have to show that they have implemented the BMPs, but will not be required to show that the measures have resulted in a prescribed amount of conservation.[52]

Water companies have long argued that they cannot implement conservation programs because they are unable to obtain rate relief from the Commission for their conservation efforts.[53] This is a fundamental misperception on the part of the companies. The Commission has never been asked for rate recovery of these programs, and Commission Staff have made it clear that they would be receptive to filings from Companies seeking to recover (in rates) the costs of implementing conservation programs, particularly those designed to satisfy ADWR's new rulemaking.[54] The Commission should continue to make it clear that it is ready to facilitate conservation efforts by water companies, especially those programs that are necessary to meet ADWR's new rules, and that the Commission is prepared to do this even before ADWR finalizes its rulemaking. Moreover, the Commission should notify water companies that they can file tariff applications with the Commission that are designed to implement conservation programs. For example, these tariffs could be designed to allow water companies to carry out conservation measures in the same way municipalities do. Such water company tariffs could condition service on the installation of low-flow toilets, low-flow shower heads, or minimal or zero usage of groundwater for outdoor irrigation. The Commission could adopt these tariffs as part of rate cases, CC&N applications or CC&N extensions.

IV. ENCOURAGING CONSOLIDATION OF DISTRESSED WATER COMPANIES AS A MEANS OF ACHIEVING WATER CONSERVATION AND REUSE

Implementation of conservation programs is generally a low priority for the state's troubled water companies. Most of these utilities lack the resources and the management experience to make conservation a priority. The only long-term hope for the advancement of conservation measures at these companies is their consolidation into other larger utilities.

In the 1999 Water Task Force Report to the Commission, Commission Staff and industry stakeholders issued a number of recommendations aimed at

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50. *See id.* Under the Draft Program, water companies with up to 5,000 service connections would be required to implement a basic water conservation education program plus one other BMP; companies with between 5,001 and 30,000 service connections would be required to implement the education program plus five BMPs; and companies with more than 30,000 service connections would be required to implement the education program plus ten BMPs.

51. *See id.*

52. *See id.*

53. Interview with Commission Staff, *supra* note 1.

54. *Id.*

encouraging the consolidation of smaller water companies (Class D and E companies with Class A or B or C utilities).[55] Pursuant to section R14-2-103 of the Arizona Administrative Code, the Commission classifies public service corporations into five categories based upon the public service corporation's annual operating revenue. For water and sewer companies, the breakdown is as follows: Class A: Annual Operating Revenue exceeding $5,000,000; Class B: Annual Operating Revenue from $1,000,000 to $5,000,000; Class C: Annual Operating Revenue from $250,000 to $999,999; Class D: Annual Operating Revenue from $50,000 to $249,999; Class E: Annual Operating Revenue less than $50,000. Though each Task Force representative agreed that incentives should be used by the Commission to achieve the goal of consolidating distressed water companies, the group could not come to consensus on which incentives are best.[56] Among the consolidation incentives promoted by Staff as part of the Task Force report were rate premiums for larger water companies that acquire smaller companies, and the development of a policy or rule setting forth the Commission's parameters for acquisition adjustments—premiums on the purchase price of troubled water companies.[57] The use of an acquisition adjustment represents a fairly radical deviation from normal ratemaking processes, as it involves a decision by the Commission to allow rate base to reflect a purchase price for a company's assets that is higher than the book value of that company. Under ordinary circumstances, rates are set using the book value of a company's assets at the time they are placed in service.

Staff recommended that acquisition adjustments be used under a specific set of conditions, including where the acquisition would not be deleterious to the acquiring company; where it was in the public interest; where the purchase price was judged to be fair and reasonable; where the recovery period for the resulting acquisition adjustment was set for a definitive period of time; and where the acquisition would have a positive effect on the service of the acquired company.[58] RUCO opposed the idea of acquisition adjustments, and industry representatives argued for California's policy allowing the use of fair market value in setting acquisition adjustments.[59]

Alternatively, Staff and RUCO agreed that rate premiums on the Company's authorized rate of return could be a valuable tool in the effort to encourage consolidation. Under this proposal, acquisitions would be spurred when an acquiring company realized it would be able to recover the costs of folding in a troubled company, and could do so without the regulatory lag created by the normal ratemaking process at the Commission.[60] According to RUCO, rate premiums are preferable to acquisition adjustments because they permit the

55. *See* WATER TASK FORCE, ARIZ. CORP. COMM'N, INTERIM REPORT OF THE ARIZONA CORPORATION COMMISSION'S WATER TASK FORCE 7–11 (1999) (Docket No. W-00000C-98-0153) (on file with author).

56. *Id.* at 8.

57. *Id.*

58. *Id.*

59. *Id.* at 8–9.

60. *Id.* at 9.

Commission to maintain control over the amount of the incentive allowed.[61] Rate premiums, unlike acquisition adjustments, can be limited to a set number of years, or a specific period of time, such as the length of time between rate cases.[62]

To date, rate premiums and acquisition adjustments have not been formally blessed by the Commission via either a rulemaking or policy statement. Since the Water Task Force report was issued, the Commission has only approved one acquisition adjustment, in a case involving the acquisition by a Class A utility of a small distressed company in southeastern Arizona.[63] In that case, which involved the Commission's approval of the purchase of the severely hobbled and disastrously managed McLain water systems in Cochise County, the Commission approved a $696,000 purchase price[64] of the companies by Algonquin Water Resources of America, a multinational income fund that owns five water and wastewater companies in Arizona (excluding the McLain systems).[65] The price represented a significant inflation of the estimated book value of the companies,[66] which were believed to be in such poor shape that they represented a threat to the health and safety of the companies' customers.[67] The Commission did not refer to the purchase price as an acquisition adjustment, but that is essentially what it was, as the purchase price was substantially greater than the book value of the company. Moreover, the large purchase premium was being used by the Commission to establish a positive rate base and encourage the purchase by Algonquin.[68] The Commission acknowledged the extraordinary nature of the acquisition price and of the Commission's role in setting it, but felt it was the only hope for stimulating a purchase and rehabilitation of the companies.[69]

Acquisition adjustments and rate premiums hold promise for use when the Commission desires to encourage the consolidation of small, troubled water companies. Strengthening the two dozen or so small water companies that currently find themselves on the financial ropes would dramatically improve the opportunities for implementing water conservation measures at those companies. The Commission should first endeavor to identify those water companies it believes are the likeliest targets for consolidation. A model for this has been developed in California, where the California Public Utilities Commission ("CPUC") has identified in its 2005 Water Action Plan the goal of providing incentives for the acquisition and operation of small water companies by larger

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61. *Id.*.

62. *Id.*.

63. *See* Miracle Valley Water Co., Decision No. 68412, Docket No. W-01646A-05-0506, at 12 (Ariz. Corp. Comm'n Jan. 23, 2006).

64. *Id.* at 12.

65. *See* N. Sunrise Water Co., Decision No. 68826, Docket No. W-20453A-06-0247, at 4–5 (Ariz. Corp. Comm'n June 29, 2006).

66. *See* Minutes of the Commission Open Meeting (June 27, 2006) (on file with author). The meeting included a discussion by Commissioners regarding the dilapidated condition of the water systems; ultimately, the Commission established a purchase price that was tailored to covering the amount of taxes owed by the water companies to the State of Arizona and Cochise County, rather than to the actual value of the systems.

67. *Id.* at 8.

68. *Id.* at 9–10.

69. *Id.*

private or municipal water companies.[70] CPUC's Water Action Plan did not identify specific companies for acquisition; rather, the report identified the goal of providing incentives. CPUC Staff, working with other government agencies, has since identified thirty systems (serving 10,500 customers) that would be in a position to qualify for acquisition by larger systems.[71] The Arizona Commission should similarly establish a list of troubled water systems considered candidates for consolidation and then establish a policy statement informing the water company community that acquisition adjustments and rate premiums will be considered to encourage the consolidation of these identified systems where the conditions laid out by Staff in the 1999 Water Task Force are met.[72]

V. CORRALLING WATER LOSS: CONSERVING WATER BY KEEPING IT IN THE PIPELINE

An increasing number of Arizona's private water companies are suffering from water loss—losses that occur between the point of origin (i.e., either at a well site if groundwater is used, or the Central Arizona Canal if CAP water is used) and the point of use by customers. In determining the amount of acceptable water loss, the Commission generally follows the recommendation of the American Water Works Association that loss greater than 15% is per se unacceptable, and loss below 10% is acceptable. The Commission monitors and enforces this standard in two ways. First, each company must include as part of its annual report to the Commission an accounting of the number of gallons pumped and the number of gallons sold, which, when analyzed, offers a glimpse of the amount of water each company is losing during the distribution process. Second, each company's water loss is reviewed by Commission Staff when the company is before the Commission for a rate case or request for a CC&N extension. The Commission derives its authority to regulate water loss from its authority to establish rates that are just and reasonable.[73]

The Commission has routinely required companies that are experiencing higher than acceptable levels of water loss to report back to the Commission with a plan to reduce loss to below the 10% standard or to explain why doing so is not

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70. CAL. PUB. UTILS. COMM'N, WATER ACTION PLAN 7 (2005), *available at* http://www.cpuc.ca.gov/static/hottopics/3water/water_action_plan_final_12_27_05.pdf.

71. Memorandum from Michael Miller, Utils. Eng'r, Cal. Pub. Utils. Comm'n, et al. to John Bohn, Comm'r, Cal. Pub. Utils. Comm'n 1 (Oct. 23, 2006) (on file with author).

72. *See* WATER TASK FORCE,*s upra* note 55, at 8.

73. Specifically, title 40, section 250(C) of the 2006 Arizona Revised Statutes provides:

> [T]he commission shall by order establish the rates, fares, tolls, rentals, charges, classifications, contracts, practices, rules or regulations proposed, in whole or in part, or establish others in lieu thereof, which it finds just and reasonable, and which, if not suspended, shall, on the expiration of thirty days from the time of filing the order, or in such lesser time as the commission grants, become effective and be established, subject to the power of the commission to alter or modify the order.

possible. For instance, in *Livco Water Co.*,[74] Livco Water was found to have a 17.2% water loss. The Commission required Livco to file a water loss mitigation report with the Commission within 15 months of the effective date of the decision. Furthermore, the Commission ruled that Livco's water loss could not exceed 15%.[75]

In the most recent rate case involving the Pine Water Company, a utility chronically beset by water shortages in the summertime, the Commission rejected a provision in the proposed Settlement Agreement that would have allowed the company to file a water loss plan designed to reduce its 12.6% water loss rate.[76] The Commission did not find the proposed water loss provision aggressive enough under the circumstances, stating:

> Arizona is in a severe drought. Water is a precious resource and is in particularly limited supply in the Pine area. It is unacceptable that a utility would request that its customers pay the costs of a speculative chance for additional water but could determine that reducing existing water loss to within acceptable levels is not "practical." Pine Water's detailed water loss plan shall only address ways to reduce water loss to less than ten percent.[77]

In other words, the Commission was mandating that the Company find a way to get its water loss beneath the 10% standard. The Commission further ordered its Staff to return to it with recommended actions if not satisfied by the Company's plan for remediation of the water loss problem.[78] Subsequent to this decision, Pine Water filed a detailed report looking at water supplies not only for their certificated area, but for the entire Payson area.

The Commission has also determined that some companies simply cannot come into total compliance with the water loss standard without undertaking unreasonable capital expenditures. In Decision No. 66849, the Commission determined that it would not be reasonable to require the Arizona Water Company to improve its water loss rates to below 10% on its Superior water system. The Commission found that doing so would necessitate the replacement of an above-ground pipeline that traveled significant distances and experienced evaporative losses as a result of warm temperatures.[79]

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74. Decision No. 68751, Docket No. W-02121A-05-0820, at 6 (Ariz. Corp. Comm'n June 5, 2006).

75. *See id.* at 6, 17.

76. Pine Water Co., Decision No. 67166, Docket No. W-03512A-03-0279, at 5–6, 15–16 (Ariz. Corp. Comm'n Aug. 10, 2004). Pursuant to the Settlement Agreement, if the Company found that reducing the 12.6% rate was infeasible or impractical, it could present its arguments against further reductions to the Commission. The Settlement Agreement also required the Company to file quarterly reports describing in detail the sources of the Company's water, quantity of water, and gallons of water pumped, whether from the Company's wells or well water obtained via well-sharing agreements, from water hauling or through the pipeline known as Project Magnolia.

77. *Id.* at 11.

78. *Id.* at 15–16.

79. *See* Ariz. Water Co., Decision No. 66849, Docket No. W-01445A-02-0619, at 41 (Ariz. Corp. Comm'n Mar. 19, 2004).

The Commission's approach to addressing water loss suffers from its passivity. The Commission cannot know whether a company is posting high water losses unless the company comes forward and files for a rate increase or for an expansion of its territory. A random review of one water company's annual reports illustrates that there are companies that remain out of compliance with the water loss requirement in the intervening years between rate cases. For instance, Ehrenberg Water is experiencing an 11% water loss rate and has not been in for a rate case since November, 1996. Golden Shores Water is experiencing a 16% water loss rate and has not been before the Commission since August, 1999.

The Commission's method of addressing water loss also suffers from a lack of auditing of the water loss reports. For instance, the 2003 annual report of the Beardsley Water Company (serving portions of the West Valley) claimed that it had sold five million gallons more than it pumped in 2003, suggesting a next-to-impossible net water *gain*.[80] Yet in its 2004 rate case, the Beardsley Water Company was found to have a system-wide water loss of between 2% and 3%.[81]

Water losses are also tracked by ADWR through the agency's Annual Water Withdrawal and Use reports, required of all water companies serving within AMAs. But these reports also go largely without audit, and appear to be often unreliable. Using the West End Water Company as an example, the Company's ADWR Annual Water Withdrawal and Use Report for 2002 declared that the Company had withdrawn 137.07 acre-feet, and delivered 126.38 acre-feet to its users, or a water loss rate of 7.8%.[82] This contrasts with the 2002 Annual Report, filed with the Commission, in which West End Water stated that it sold 87.01 acre-feet of water, but pumped 136.18 acre-feet, for a loss rate of approximately 36%.[83]

Staunching water losses at Arizona's water companies will require a multi-pronged effort. First, the Commission should continue on its current course requiring companies to engage in water loss mitigation planning whenever those companies come in for rate cases or CC&N extensions. Second, the Commission should consider financial incentives for companies that engage in water loss mitigation, potentially including a surcharge mechanism designed to allow for more timely recovery of costs associated with infrastructure improvements that are aimed at preventing water loss. Such a surcharge has been advocated by a coalition

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80. BEARDSLEY WATER CO., ANNUAL REPORT 11 (2003), *available at* http://www.azcc.gov//divisions/util/Annual%20Reports/2003/Beardsley%20Water%20Company.pdf.

81. *See* ARIZ. CORP. COMM'N, STAFF REPORT: BEARDSLEY WATER COMPANY, DOCKET NO. W-02074A-04-0358: APPLICATION FOR A PERMANENT RATE INCREASE, at attachment A, at 6 (2004).

82. WEST END WATER CO., ANNUAL WATER WITHDRAWAL AND USE REPORT: PROVIDER SUMMARY 2002 (2003).

83. WEST END WATER CO., ANNUAL REPORT (2002), *available at* http://www.azcc.gov/divisions/util/Annual%20Reports/2002/West%20End%20Water%20Company.pdf.

of Arizona water companies[84] and has been implemented in other states, including Pennsylvania, Delaware, Ohio, and Illinois.[85]

VI. ENCOURAGING CONSERVATION THROUGH TIERED WATER RATES AND CURTAILMENT TARIFFS

Tiered water rates and curtailment tariffs have become the de facto norm for all new water company applications, rate cases, and CC&N extensions. Beginning in 2001, Commission Staff began recommending in each water utility rate case that the Commission adopt a tiered water rate structure in order to properly price water and encourage conservation. The tiered rates are tailored specifically to each water company.

Recent Commission decisions demonstrate the use of tiered rates. In *Chaparral City Water Co.*,[86] the Commission implemented the following rate schedule:[87]

Commodity Rates (per 1,000 Gallons), based upon the size of the meter going to the customer.

¾" Residential Meter	
1,000–3,000 Gallons:	$1.68
3,001–9,000 Gallons:	$2.52
Over 9,000 Gallons:	$3.03
¾" Commercial & Industrial Meter	
1,000–9,000 Gallons:	$2.52
Over 9,000 Gallons:	$3.03
2" Meter (Residential, Commercial & Industrial)	
From 1,000–100,000 Gallons:	$2.52
Over 100,000 Gallons:	$3.03

The Commission decision in Arizona Water Company's Eastern Group System[88] adopted the following rates for the Company's Bisbee system:

84. *See* INVESTOR OWNED WATER UTILS. OF ARIZ., RECOMMENDATIONS TO THE ARIZONA CORPORATION COMMISSION'S WATER TASK FORCE 10 (2005) (on file with author). The IOWUA white paper called on the Commission to implement a number of reforms geared toward allowing companies greater financial recovery. Among those proposals was the DSIC surcharge mechanism to permit water companies to recover funds from ratepayers between rate cases for "qualifying system improvement projects," including expenditures made by the company for "projects that reduce water losses, enhance water quality,[and] improve fire protection and long-term system viability." *Id.* at 5.

85. *Id.* at 4–5.

86. Decision No. 68176, Docket No. W-02113A-04-0616 (Ariz. Corp. Comm'n Sept. 30, 2005).

87. *Id.* at 41–42.

88. Ariz. Water Co., Decision No. 66849, Docket No. W-01445A-02-0619 (Ariz. Corp. Comm'n Mar. 19, 2004)

0 to 10,000 gallons	$2.594
10,001 to 25,000 gallons	$3.242
Over 25,000 gallons	$3.89 [89]

The rates for the Company's Apache Junction System:

0 to 10,000 gallons	$1.9688
10,001 to 25,000 gallons	$2.4610
Over 25,000 gallons	$2.9532[90]

Between 2001 and 2004, the Commission began implementing curtailment plans for water companies as they filed applications at the Commission for rate cases and CC&N extensions. In May 2004, the Commission took steps to encourage every water company in Arizona to adopt a water curtailment tariff, regardless of whether they intended to come in for a rate case or CC&N extension in the near future. Originally designed to address emergencies such as a lightning strike to a well, the Commission realized that curtailment tariffs could also be used by water companies to require customers to conserve during a water shortage or severe drought conditions. Today, each water company that comes before the Commission for a rate case or CC&N extension must propose a curtailment tariff as a part of its case. If it fails to do so, Commission Staff proposes the tariff.

The Pine and Bella Vista Water Companies, serving Pine and Sierra Vista respectively, have used curtailment tariffs with regularity to address seasonal water shortages.[91] At the Pine Water Company, customers have become accustomed to a curtailment regime that allows the Company to prohibit certain water uses at Stages 3, 4, and 5, dependent on water production and storage levels at the time.[92]

The Pine curtailment tariff operates as follows:

Stage 1 (green): Water storage level is at least 90% of total capacity; no curtailment or notice required.

Stage 2 (blue): Water storage level is less than 90%, but at least 75% of capacity for at least 48 consecutive hours. Voluntary conservation measures may be employed by customers to reduce water consumption by 10%. Outside watering on weekends and holidays is curtailed. The Company is required to notify customers by changing sign postings, emailing, and posting a sign in the Pine Post Office.

Stage 3 (yellow): Water storage level is less than 75%, but at least 65% of its capacity for 24 consecutive hours. Mandatory conservation measures must be employed by customers to reduce water consumption by 25%. Outdoor watering is

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89. *Id.* at 48.

90. *Id.*

91. *See, e.g.*, Teresa McQuerrey, *Water Saving Mandated by State*, PAYSON ROUNDUP, July 15, 2005, *available at* http://www.paysonroundup.com/section/localnews/story/19739; *see also* Bella Vista Water Co., Decision No. 67505, Docket No. W-02465A-04-0692 (Ariz. Corp. Comm'n Jan. 20, 2005).

92. *See* Pine Water Co., Decision No. 65914, Docket No. W-03512A-03-0104 (Ariz. Corp. Comm'n May 16, 2003).

completely curtailed, with the exception of livestock. The Company is required to notify customers by changing sign postings, emailing, and posting a sign in the Pine Post Office.

Stage 4 (orange): Water storage or production is less than 65%, but at least 55% of capacity for 24 consecutive hours. Mandatory water restrictions are put into place and customers can be disconnected for not complying.

Stage 5 (red): Water storage or production is less than 55% of capacity for 12 consecutive hours. Similar to Stage 4, mandatory water restrictions are put into place.[93]

Customers are notified of the Stages via a bill stuffer and the posting of the Stage colors on flags throughout the service territory.[94]

The Bella Vista Water Company implemented a similar curtailment tariff, but found that some customers violated the mandatory curtailment measures. Bella Vista claimed it had few ways to force customers to abide by the curtailment stages and wanted to impose a presumptive violation of the advanced stages of the tariff. Under the Company's proposal to amend the tariff on its Southern system, customers using more than 600 gallons per day or 18,000 gallons per month during Stages 4 and 5 (when outdoor uses were prohibited) were presumed to be using water for those prohibited purposes.[95] The curtailment tariff approved by the Commission in *Bella Vista Water Co.* permits the Company to shut customers off with prescribed notice requirements, if they are issued a presumptive violation.[96] However, concerned about the effect the presumptive violation and ensuing shut-offs would have on customers, the Commission required the Company to follow strict notification guidelines aimed at providing the maximum amount of notice to customers.[97] Specifically, the Commission altered Bella Vista's curtailment notice proposal to require the Company to give presumptive violators two business days' notification that they are believed to be in violation of the tariff prior to shutting the customer's water off.[98] Customers, during those two days, may present evidence to the Company that their water usage was higher than the allowed 600 gallons per day as a result of permitted water uses.[99] The customer, pursuant to normal Commission rules, could also lodge a complaint against the Company at the Commission, which would be addressed by the Commission's Consumer Services Section.[100] The Commission also mandated that when taking special meter readings designed to demonstrate whether the customer was in violation, the Company must notify the customer of the reading and not charge the customer for it.[101]

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93. *Id.*
94. *Id.*
95. *See* Bella Vista Water Co., Decision No. 67505, Docket No. W-02465A-04-0692, at 2.
96. *Id.* at exhibit A.
97. *See id.*
98. *Id.* at 4.
99. *Id.*
100. *Id.* at exhibit A.
101. *Id.* at 4.

VII. FORCED CONSERVATION THROUGH HOOK-UP MORATORIUMS WHEN ALL ELSE HAS FAILED

In recent years, the Commission has been among the few Arizona governmental entities to implement a comprehensive hook-up moratorium on a water system, a draconian but sometimes necessary method of conserving water supplies and staunching a downward spiral by a water company. On two recent occasions the Commission imposed a comprehensive moratorium either to address chronic water shortages caused by drought conditions, or to prevent the exacerbation of problems caused by the failure of the water company to invest in the water system's infrastructure, which had led to repeated outages on the system. In these instances, the Commission took the extraordinary step of preventing further connections to the water system, a de facto prohibition on development in the area in one case, and a severe restriction on growth in the other.[102]

A. Pine Water Company

Since 1989, the water-shortage-prone Pine Water Company has operated under some form of hook-up restriction.[103] In 1989, the Commission established a total moratorium on new hook-ups. It allowed 10 connections per month beginning in 1990, lowered the limitation to one per month in 1996, and raised it again to 25 hook-ups per month in December 2002.[104] The company was required in a subsequent decision to present the Commission with semi-annual reports on the status of its water supply, and Staff was directed to use that information in drafting a recommendation for the Commission regarding the need for continuation or alteration of the 25 per month hook-up restriction.[105] On November 19, 2004, Staff filed a compliance report recommending the Commission adopt a complete prohibition on new connections to the Pine Water Company, citing the Company's reliance on a pipeline importing water from the Strawberry Water Company into Pine, as well as summertime water hauling, to meet the summertime demands of

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102. The Commission recently addressed a third proposed hook-up moratorium in *Desert Hills Water Co., Decision No. 68780*, Docket No. W-02124A-06-0379 (Ariz. Corp. Comm'n June 19, 2006). In this case, the Commission was presented with a well-capitalized water company that had failed to invest in adequate water infrastructure to serve a growing population in north Phoenix, resulting in numerous outages and water quality complaints. Staff recommended the Order to Show Cause, which would require, among other remedies, a hook-up moratorium until the issues facing the company are resolved. During the pendency of the case, however, the Company was purchased by the nearby Town of Cave Creek. Both the proposed purchase and the Order to Show Cause are currently pending before the Commission.

103. Pine, Arizona sits atop fragmented rock formations that rely on rain and snow melt for groundwater collections. Groundwater is the main source of water for the Pine Water Company. *See* Pine Water Co., Decision No. 67823, Docket No. W-03512A-03-0279, at 3 (Ariz. Corp. Comm'n May 5, 2005).

104. *See* MARLIN SCOTT, JR., ARIZ. CORP. COMM'N, COMPLIANCE STAFF REPORT FOR PINE WATER COMPANY PER DECISION NO. 67166, at 1 (2004) (Docket No. W-03512A-03-0279) (on file with author); *see also* Pine Water Co., Decision No. 64400, Docket No. W-03512A-01-0764, at 8 (Ariz. Corp. Comm'n Jan. 31, 2002).

105. *See* Pine Water Co., Decision No. 65435, Docket No. W-03512A-01-0764, at 2 (Ariz. Corp. Comm'n Dec. 9, 2002).

the existing water system, and the potential long-term detriments of the pipeline to the Strawberry system.[106] In its most recent action on the Pine Water Company, the Commission again lowered the allowable per month hook-ups for the company to two residential connections per month, imposed a complete moratorium on new commercial hook-ups, and prohibited any additional main extension agreements.[107] The Commission also imposed a May 2006 deadline for the parties to the case to arrive at a permanent solution to the company's water supply woes or face an automatic moratorium on all new residential hook-ups.[108] As of the writing of this Article, the Company has implemented the comprehensive moratorium.

B. McLain Water Companies

In July 2005, the customers of the McLain water systems experienced one of the longest water outages in Arizona history. The outage left the 265 customers of the Horseshoe Ranch and Cochise Water Companies without water for 16 days and caused Commissioners to ask Governor Janet Napolitano to declare an unprecedented state of emergency in the water system's service territory in order to free up funds that are available to the Governor for natural disaster recovery and other emergencies.[109] Ultimately, the Governor tapped funding from her Health Crisis Fund to provide a $12,500 loan for a new well pump that resolved the short-term crisis. The outage was the latest in a string of incidents involving the dilapidated water system, which two years before had been placed under interim management[110] by the Commission due to its previous owner's failure to make necessary improvements and repairs.[111] As a result of the recent outages and compliance problems on the McLain system, the Commission took the extraordinary step of imposing a total moratorium on new connections to the

106. *See* SCOTT, *supra* note 104, at 3.

107. Pine Water Co., Decision No. 67823, at 13.

108. *See id.* at 3 (discussing the Pine hook-up moratorium history).

109. The Author contacted Governor Napolitano's staff to ask for the assistance midway through the event. At the time, the systems were under interim management and were embroiled in a bankruptcy action and had no funding available to enable them to resolve the problem in a timely fashion.

110. *See* McLain, Decision No. 66241, Docket No. W-0146A-03-0601, at 2, 10 (Ariz. Corp. Comm'n Sept. 16, 2003).

111. The McLain water systems have been under heightened Commission scrutiny for years. Commission Staff and ADEQ officials believe the systems never had a chance, as they were constructed using sub-standard materials, had insufficient storage capacity, and suffered many other deficiencies. The Company's founder, Johnny McLain, Sr., filed bankruptcy seven times in the history of the companies. Commission Staff believe that he did so in order to skirt Commission and ADEQ jurisdiction and oversight on numerous occasions. The Commission ultimately voted to approve a purchase price for the Companies and approve Algonquin Water Resources as the new owner. Judge Eileen Hollowell of the U.S. Bankruptcy Court for the District of Arizona gave Algonquin until September 18, 2006 to finalize the purchase, which included entering into a consent decree with ADEQ regarding a schedule for coming into ADEQ compliance. Judge Hollowell allowed for additional time for closure of the sale, and as of the writing of this Article, Algonquin was within days of closing on the purchase of the Companies, and had taken over as interim manager of the systems.

system.[112] In order for the moratorium to be lifted, the new owners must prove that a series of prescribed improvements be made at each water company. The improvements must be certified by the Commission Staff.[113]

VIII. COMMENTS ON THE NEED FOR GREATER COORDINATION BETWEEN STATE AGENCIES, COUNTIES, AND THE COMMISSION

The Commission can do much to require conservation by Arizona's 350 private water utilities through its ratemaking process.[114] However, the discussion above regarding ADWR's ongoing rulemaking, and the Commission's role in ensuring that water companies carry out ADWR's requirements, highlights the need for heightened engagement between the executive branch and the Commission. In order to maximize the ability of each branch of government to effectuate conservation goals, the Commission, ADWR, and ADEQ should institute a process that will lead to greater information sharing regarding water company conservation efforts. This could include monthly meetings between high-level Staff at each agency and the Commission, and should include increased discussions with elected officials. It could also include increased sharing of regulatory compliance filings by water companies between executive branch agencies and the Commission. For instance, the Author recently requested that ADWR send copies to the Commission of all Letters of Adequacy that the agency issues to developers or other entities. Under normal Commission practice, developers seeking to form a water company within an AMA may file a Certificate of Assured Water Supply up to 24 months after a CC&N is issued, while those seeking to form a water company outside an AMA may file a Letter of Adequacy as late as the hearing process.[115] Receiving ADWR's determinations with regard to water adequacy directly from the agency and upon issuance, rather than on the developer's timetable, will give the Commission greater information, and perhaps most importantly, more time to incorporate ADWR's determinations into the Commission's analysis of whether to approve a proposed water company.

IX. CONCLUSION

From the earliest days of statehood, the Commission has been called upon by virtue of its constitutionally-driven, exclusive jurisdiction over public service corporations to meet the evolving challenges faced by private water utilities. As Arizona's seemingly unbounded growth continues, the Commission will increasingly be faced with questions of how to encourage and require conservation

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112. Miracle Valley Water Co., Decision No. 68272, Docket No. W-01646A-05-0509, at 13 (Ariz. Corp. Comm'n Nov. 8, 2005).

113. *See* N. Sunrise Water Co., Decision No. 68826, Docket No. W-20453A-06-0247, at 24 (Ariz. Corp. Comm'n June 29, 2006).

114. See discussion *supra* Part I regarding the Commission's broad constitutional and statutory authority.

115. See the preceding discussion of the Commission's decision to begin utilizing the Order Preliminary for water company applications outside AMAs. While this would prevent a developer from filing a Letter of Adequacy after the CC&N is granted, it would still permit a developer to hold on to a Letter of Adequacy (or inadequacy) until the date of a Commission hearing.

by water companies. The Commission has already established a record of encouraging and mandating conservation by water companies through tiered water rates, mandated use of effluent, required water loss improvements and the use of Orders Preliminary outside AMAs. The Commission should build on these efforts by expanding its use of acquisition adjustments, as well as using rate premiums to encourage the consolidation of small water companies, thereby improving the opportunities for conservation at small water utilities. The Commission should also emphasize its receptiveness to rate recovery applications that include spending by companies on prudent and necessary conservation programs, and establish its willingness to consider tariff filings by companies that implement mandatory water conservation by consumers. Finally, the Commission should forge a more regularized relationship with executive branch agencies that will facilitate greater information sharing and maximize the effectiveness of conservation efforts of water companies.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON – Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

EXHIBIT
CF-104
ADMITTED

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE, PINAL COUNTY, ARIZONA

DOCKET NO. W-01445A-03-0559

DIRECT TESTIMONY OF PAUL S. HENDRICKS

IN THE REMAND PROCEEDING

ON BEHALF OF INTERVENOR

CORNMAN TWEEDY 560, L.L.C.

JANUARY 4, 2008

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Paul Hendricks. I am a Board Member of the Central Arizona Water Conservation District ("CAWCD") and also a member of EUSI, LLC, which provides operational consulting services for water and wastewater utilities. My business address is 19002 N 21st Avenue, Phoenix, Arizona, 85027.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I have an undergraduate degree in environmental science from John Wesley College, and a Masters Degree in public administration from Central Michigan University. I am a certified operator for water and wastewater systems. I have nearly 38 years of business experience, most of which has involved developing, planning, permitting, constructing, operating and managing water and wastewater systems. I have managed systems as large as the City of Phoenix and as small as a system for a shopping center. A more detailed recitation of my background and experience is attached as Exhibit 1 which I hereby incorporate as part of my direct testimony.

Q. DO YOU CONSIDER YOURSELF TO BE AN EXPERT IN MATTERS RELATING TO THE OPERATION OF WATER AND WASTEWATER SYSTEMS?

A. Based upon my 38 years of experience as described above an in Exhibit 1, I consider myself to be an expert in my field.

Q. PLEASE DESCRIBE EUSI, LLC'S BUSINESS.

A. EUSI, LLC ("EUSI") is a Phoenix-based company specializing in professional environmental utility consulting, management and operational services. EUSI is a company that has been providing services in this capacity for over 20 years to meet the needs of growing water and wastewater utility systems.

In 1985, the principal of EUSI recognized that there would be a significant increase in the number and complexity of utility facilities throughout the country. After a careful review of the environmental regulations, a business plan was formulated to meet the environmental regulation, operational, maintenance, and organizational requirements of new and existing facilities. Under the current regulations, certified and registered professionals are required to meet the environmental mandates which have been adopted. EUSI has an available and experienced staff for evaluation and strategic planning for utilities, design, financing, rate studies, construction, start-up, environmental compliance, odor assessment and mitigation, laboratory services and operational services. In addition, EUSI has agreements with professionals who provide services including engineering, aquatic biology, water quality assessment, odor assessment and mitigation, laboratory work, electrical and electronic, mechanical maintenance, public participation consulting, lake management and construction management. These agreement give EUSI access to more than 200 professionals to ensure effective project development, program management, construction administration, management services, environmental compliance and inspection, start-up and operation of the facilities which are under contract with EUSI. EUSI also provides computerized supervisory and data acquisition systems, as well as operation and maintenance record management services. These services ensure accurate and timely control of water and wastewater systems and provide reports which meet the requirements of the regulatory agencies.

EUSI performs work for clients in the areas of design review, operations manuals, system evaluation and troubleshooting, start-up assistance and start-up training. EUSI has reviewed the designs for water and wastewater facilities including effluent reuse plants in several communities throughout the southwest. Personnel associated with EUSI have operated water projects and wastewater

treatment facilities with capacities ranging from 10,000 to 153,000,000 gallons per day. These facilities range in complexity from basic reservoir operations to advanced treatment facilities with total effluent reuse, energy recovery, reverse osmosis and computerized control. EUSI provides state certified laboratory services for our clients and performs the necessary compliance analysis for the facilities that are operated under contract.

Q. PLEASE IDENTIFY SOME OF THE CLIENTS FOR WHICH EUSI HAS PROVIDED SERVICES.

A. EUSI has provided services to the following clients: Boulders Carefree Sewer Corporation, Salt River Pima-Maricopa Indian Community, Smith and Loveless, Inc., Taliesin West, Estes Development Company, Lake Havasu City, Loral Defense Corporation, City of Avondale, City of Surprise, City of Glendale, City of El Mirage, City of Prescott, City of Goodyear, Cave Creek Sewer Company, Cave Creek Water Company, City of Buckeye, Town of Sedona, Town of Florence, Surprise Sewer Company, Flagstaff Ranch, City of Tempe, Robson Communities, Sunny Boy Water Company, Cave Creek Water Company, Arizona-American Water Company, Goldman and Associates, Franzoy Corey Engineers, John Carollo Engineers, Fountain Hills Sanitation District, Arizona Department of Environmental Quality, Entrada Del Oro Sewer Company, State of Arizona Lewis Prison Complex, State of Arizona Kartchner Cavern Parks, Del Webb/Pulte Homes, Johnson Utilities Company, Pivotal Development, Lyle Anderson Development Company, Arizona Department of Administration at the Grand Canyon Airport and the Mirador apartment lift-station.

Additionally, our personnel have performed several facility evaluations for major facilities throughout the United States.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE ARIZONA CORPORATION COMMISSION?

A. No. This is my first time testifying before the Commission.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS REMAND PROCEEDING?

A. In Decision 69722, the Commission ordered further proceedings on remand to determine whether AWC should continue to hold a CC&N for the Cornman Tweedy Property. The Commission ordered that the proceedings "be broad in scope so that the Commission may develop a record to consider the overall public interest underlying service to the Cornman property." (Decision 69722 at p. 20, ¶ 104). In the direct testimony of Mr. Poulos, he identified five public policy issues that should be addressed in this case. One of those issues is whether integrated water and wastewater systems and providers better serve the public interest. The purpose of my direct testimony is to discuss the operational benefits and cost savings that integrated water and wastewater systems provide.

Q. MR. HENDRICKS, PLEASE DESCRIBE THE OPERATIONAL BENEFITS THAT INTEGRATED WATER AND WASTEWATER SYSTEMS PROVIDE AS COMPARED TO STAND-ALONE SYSTEMS?

A. There are several very important benefits which I describe below.

- **INTEGRATION ENABLES THE WATER PROVIDER TO ASSIST THE SEWER PROVIDER IN COLLECTING PAST DUE BALANCES.**

There are no provisions in the sanitary sewer design for shut-off valves or meters. A stand-alone sewer provider does not know how much sewage is coming from a particular customer without the water meter records. In addition the only way to shut off sewer service for an unpaid account is to dig up the sewer line and physically disconnect the customer from the system. However, this does not stop a customer from using water, as the water supply has not been shut off. If the customer continues to use water in the house when the sewer has been disconnected, this will result in a serious health hazard. The sewer drains

will back up into the residence or commercial building and spill raw sewage onto the floor or out into the street and neighboring property. The raw sewage can then come in contact with humans and wildlife. Most areas drain to a storm sewer or retention area, which can cause contamination of groundwater and "discharges" to the "Waters of the United States." There are significant fines of up to $25,000 per day for such discharges.

I have personal experience with the difficulty of collecting delinquent debts by a stand-alone sewer company. Arizona Water Company ("AWC"), which does not operate integrated water and wastewater systems, will not shut off water service to customers of Entrada del Oro who do not pay sewer bills. EUSI provides contract operation and maintenance services for this system. The owner of this system has requested that AWC shut off water service if a sewer customer is not paying his or her sewer bill. AWC has advised that it cannot shut off water service to a water customer who does not pay a sewer bill. If enough sewer customers are delinquent in paying their sewer bills, the stand-alone sewer company will face financial jeopardy.

- **INTEGRATION PROMOTES THE PUBLIC POLICY OF MANAGING GROUNDWATER, A PRECIOUS RESOURCE.**

If there is an integrated water and wastewater system, the effluent will be recharged thus reducing the amount of precious groundwater needed for new development. AWC, for example, does not have access to effluent and must provide new water to meet the needs of the ratepayers. The CAGRD is responsible for replenishing groundwater for new development. The goal of sustainability in the Plan of Operation for the CAGRD includes reclaimed wastewater recharge. Without reclaimed wastewater recharge, the CAGRD Plan of Operations is not viable. If separate water companies are allowed to expand their service areas rather than expansion by integrated systems, which can use effluent for recharge and replenishment of the groundwater, added demands are

placed on limited groundwater supplies. The Arizona Department of Water Resources ("ADWR") understands this issue and has set limits on the amounts of groundwater mining in the Pinal AMA. The use of reclaimed wastewater limits the amount of groundwater pumped and, therefore, reduces the replenishment obligation of the CAGRD, which helps with the long-term sustainability of the Plan of Operations.

A non-integrated sewer provider may not construct reuse lines to areas served by unaffiliated water providers because there is no certainty that reclaimed wastewater will be sold where potable water is available. This forces companies like AWC to pump groundwater to provide potable water for irrigation. This is an unnecessary competition for groundwater which should be used for potable purposes and therefore discouraged.

An integrated provider can control the customers' use of reclaimed wastewater for non-potable uses. Storage and recovery credits from the recharge of effluent by the sewer provider are available to the water provider in an integrated operation.

- **INTEGRATION PROVIDES GREATER FLEXIBILITY IN DESIGNING TREATMENT SYSTEMS AND ADDRESSING WASTE STREAMS WHICH PROMOTES MORE COST-EFFECTIVE COMPLIANCE WITH ENVIRONMENTAL STANDARDS.**

Copper - At SaddleBrooke, for example, the water was aggressive in nature and had copper levels that exceeded the effluent standards for the wastewater treatment plant. Copper removal at the wastewater plant is very expensive. Because of the integrated system, the water utility was able to feed a low cost stabilizing chemical into the water system that controlled the levels of copper entering the wastewater system. As a result, the sewer company ratepayers did not have the burden of costly treatment at the wastewater plant to

meet regulatory requirements. This resolution is not possible with a separate water and sewer company.

Fluoride - The treatment of groundwater that has high fluoride levels is most economically performed for groundwater with high fluoride using a reverse osmosis treatment process. This produces a waste stream that has to be processed in a separate wastewater treatment system such as an evaporation pond or other capital and operation and maintenance intensive brine management systems. The residuals from this process are then taken to a landfill. In an integrated system this waste stream can, in many cases, be discharged to the sewer system and more economically treated at the wastewater treatment plant. This avoids the capital, operation, and maintenance costs associated with a duplicate wastewater treatment plant. The net result of this is a lower cost to the rate payer. AWC would have to plan, design, permit, capitalize, operate and maintain a separate waste treatment system for any waste stream produced by a groundwater treatment system used to achieve potable standards.

Total Dissolved Solids ("TDS") - The treatment of groundwater that has high (TDS) levels is most economically performed for groundwater with high TDS using a Reverse Osmosis treatment process. This produces a waste stream that has to be processed in a separate wastewater treatment system such as an evaporation pond or other capital intensive brine management systems. The residuals from this process are then taken to a landfill. In an integrated system this waste stream can, in many cases, be discharged to the sewer system and more economically treated at the wastewater treatment plant. This avoids the capital, operation, and maintenance costs associated with a duplicate wastewater treatment plant. The net result of this is a lower cost to the rate payer. AWC would have to plan, design, permit, capitalize, operate and maintain a separate

waste treatment system for any waste stream produced by a groundwater treatment system used to achieve potable standards.

- **INTEGRATION PROVIDES ENHANCED SECURITY.**

Intrusion - Integrated systems have the benefit of economies of scale when it comes to security issues. The integrated system only requires one Supervisory Control and Data Acquisition ("SCADA") system for both the water and wastewater systems. This SCADA master is a very expensive component of a modern utility. In an integrated system, these costs are shared between the water and sewer companies. In a non-integrated system, there are duplicate costs for capital, operation and maintenance of the SCADA systems.

Response - Integrated systems have the benefit of economies of scale when it comes to responding to issues that may arise. The integrated system will have shared personnel who are cross-trained, on-site and available to respond to incidents. The integrated system will have personnel who work at the wastewater treatment plant each day, where a separate water company is not required to have daily checks on a water system of this size. Even with a modern SCADA system, the response time from a remote operator is likely to be much longer and results in greater risks to the safety and security of the public water supply. In a non-integrated system, there are duplicate costs for personnel, capital, operation and maintenance of the security systems.

Emergency Response - Integrated systems have the benefit of economies of scale when it comes to emergencies. The integrated system will have shared personnel who are cross-trained, on-site and available to respond to incidents. The equipment for excavating and repairing water distribution systems and sewer collection system components can be used for both systems. Without an integrated system, all personnel, equipment and support facilities are duplicated. This duplication not only costs the ratepayers more, but it can also lead to less

capabilities in a separate system, as the economies of scale and rate base in a separate system do not enable the utility to have as much emergency equipment and personnel available to respond when the emergency arises. The response time for emergencies from a separate water system will likely be longer from a remote operator. This results in greater risks to the safety and reliability of the public water supply. If a main breaks and is not responded to immediately, there are added risks of unsafe water due to contamination and low water pressure. During this period, there is also a greater risk of inadequate fire protection. If the water emergency is not resolved in a timely manner, the system damage is magnified and can cost substantially more to repair. These costs are passed onto the ratepayer. In a non-integrated system, there are duplicate costs for personnel, capital, operation and maintenance of the emergency response equipment systems.

- **INTEGRATION IMPROVES CUSTOMER CONVENIENCE BY PROVIDING "ONE-STOP SHOPPING".**

Improved Customer Service - Integrated systems have the benefit of economies of scale when it comes to customer services. The integrated system will have shared personnel who are cross-trained, on-site and available to respond to customer service requests and system incidents. The personnel and equipment for supporting water systems and sewer systems are similar and can be used for both systems. Without an integrated system, all personnel, equipment and support facilities are duplicated. This duplication not only costs the ratepayers more, but it can also lead to less capabilities in a separate system as the economies of scale and rate base in a separate system do not enable the utility to have as much equipment and personnel available to respond when the need arises. The response time for customer requests from a separate water system will likely be longer. This is likely to result in greater risks to the safety and reliability of the public water supply. If a customer has a service line break, and is not

responded to immediately, there are added risks of unsafe water due to contamination and low water pressure. If the water emergency is not resolved in a timely manner, the system damage is magnified and can cost substantially more to repair. These costs are passed on to the ratepayers.

Service Establishment, Termination and Blue Staking - Integrated systems have the benefit of economies of scale when it comes to service establishment, termination, and Blue Staking. The integrated system will have shared personnel who are cross-trained, on-site and available to provide a high level of service to the ratepayer. The equipment and personnel for service establishment, termination and Blue Staking can be used for both systems. Without an integrated system, all personnel, equipment and support facilities are duplicated. This duplication not only costs the ratepayers more, but it can also lead to less capabilities in a separate system as the economies of scale and rate base in a separate system do not enable the utility to have as much capacity to serve the needs of the ratepayer. The response time for service establishment, termination and Blue Staking from a separate water system will likely be from a remote operator. This is likely to be much longer response time which results in greater costs. The law requires a utility to Blue Stake a utility system if there is any planned excavation on the area. With separate systems, each utility company will send a separate truck and personnel to mark the utility. In an integrated system, the sewer and water lines are Blue Staked at the same time. This reduces costs to the ratepayer and provides a higher level of certainty for the location the utility lines. If the marking is not done in time and accurately, there is a potential for damage to the system which can interrupt service to the ratepayers and lead to costly repairs of the system. In a non-integrated system, there are duplicate costs for personnel, capital, operation and maintenance of the service establishment, termination and Blue Staking functions.

- **<u>INTEGRATION AND CONSOLIDATION CREATE EFFICIENCES</u>.**

The duplication of water storage, booster stations, as well as separate sites for treatment equipment, as discussed in Dr. Goldman's testimony, should the groundwater require well head treatment to meet potable standards, will increase cost to the ratepayer. In an integrated system, these facilities as well as facilities for the sewer company, can be located on the same site, thereby further reducing the cost of land and associated support facilities such as electrical services.

In some cases, the groundwater is better in one area than another area. In an integrated system that is larger, the best groundwater can be developed for the service area. In addition to this, an integrated system can manage aquifer water storage and withdrawal to enhance water quality and reduce the potential for costly well head treatment.

Q. IN YOUR OPINION, ARE THERE COST BENEFITS OF AN INTEGRATED WATER AND WASTEWATER SYSTEM OVER STAND-ALONE SYSTEMS?

A. Yes. They are as follows:

- **<u>INTEGRATED SYSTEMS SAVE MONEY IN THE DESIGN AND CONSTRUCTION PHASES</u>.**

As discussed in more detail in the Direct Testimony of Dr. Goldman, efficiencies of coordinated construction of water and sewer systems for integrated systems has the benefit of economies of scale when it comes to planning, permitting, designing, constructing and commissioning new facilities. The engineering and construction of new water lines can be done at the same time as the sewer lines in an integrated system. All of these functions are duplicated in separate systems. With separate systems, the roadway removal and replacement is done twice along with separate engineering and construction. It is common to spend 25-35% of the project cost on professional fees and overhead. This duplication not only costs the ratepayers more, but it can also lead to less capabilities in a separate system as the economies of scale and rate base in a

separate system do not enable the utility to have as much capacity to serve the needs of the system.

- **INTEGRATED SYSTEMS ARE LESS EXPENSIVE TO OPERATE.**

Cost of Operation - An integrated system provides the opportunity to consolidate purchasing of chemicals and delivery of commodities used by the utility. With separate systems, there is no opportunity to consolidate purchasing. This duplication increases costs to the ratepayer. Training of personnel in an integrated system is more efficient than in a separate system. This savings not only reduces cost to the ratepayer, but creates a safer work environment for the employees. With safer work practices through more effective training, the risk of damage to system components and to ratepayers' private property is reduced. In an integrated system, the personnel performing routine operation and maintenance work can perform this work on both the water system and sewer systems simultaneously. In many cases these systems can be co-located which further reduces ratepayer costs.

Shared Employees, Shared Certified Operators and Superintendents - Integrated systems have the benefit of economies of scale when it comes to qualified operation and maintenance personnel. The integrated system will have personnel certified in both water and wastewater. A superintendent can cost more than $100,000 per year. In an integrated system, these costs are shared between the water ratepayer and the sewer ratepayer. In a separate system, there is a superintendent for each system. The integrated system will have personnel at all levels which are dual certified. With the high cost of labor and benefits, an integrated system can save hundreds of thousands of dollars in salaries and benefits through integrated system staffing. The integrated system will be large enough to have locally based personnel thereby reducing travel costs and response time.

Shared Office Space, Vehicles and Equipment - Integration improves utilization of equipment and support systems. Integrated systems have the benefit of economies of scale. The integrated system will use the same office and support staff for both the water and sewer systems. The equipment for excavating and repairing water distribution systems and sewer collection system components can be used for both systems. Without an integrated system, all personnel, equipment, and support facilities are duplicated. This duplication not only costs the ratepayers more, but it can also lead to less capabilities in a separate system as the economies of scale and rate base in a separate system do not enable the utility to have as much equipment and personnel to serve the ratepayer. The response time for customer services from a separate water system will likely be longer from a remote operator. If a main breaks and is not responded to immediately, there are added risks of unsafe water due to contamination and low water pressure. During this period there is risk of inadequate fire protection. In a non-integrated system, there are duplicate costs for personnel, capital, operation and maintenance.

Reduced Treatment Costs Through Integrated Design and Operation - Integration can reduce treatment costs when there is a requirement for well head treatment to meet the potable standards for drinking water. Some treatment systems that are used to treat a groundwater supply that have high arsenic, fluoride, or TDS produce a waste stream that has to be processed in a separate wastewater treatment system and then taken to a landfill. In an integrated system this waste stream can, in many cases, be discharged to the sewer system and more economically treated at the wastewater treatment plant. This avoids the capital, operation and maintenance costs associated with a duplicate wastewater treatment plant. The net result of this is a lower cost to the ratepayer.

AWC would have to plan, design, permit, capitalize, operate and maintain a separate waste treatment system for any waste stream produced by a groundwater treatment system used to achieve potable standards. The opportunity to co-locate and co-operate treatment systems for potable and sanitary purposes will reduce the overall costs to the ratepayers. Integrated systems have the benefit of economies of scale when it comes to treatment systems. The integrated system will have more personnel who are locally based to support the treatment systems. The sewer company is already required to have personnel on site on a daily basis. In an integrated system that needs potable water treatment, the potable treatment system can be operated with the same personnel as the sewer treatment systems. The nature of the equipment for the water system and sewer system components is similar. Without an integrated system. all personnel, equipment, and support facilities are duplicated. This duplication not only costs the ratepayers more, but it can also lead to less capabilities in a separate system as the economies of scale and rate base in a separate system do not enable the utility to have as much equipment and personnel available to respond to operational issues.. The response time for operational issues from a separate water system will likely be longer from a remote operator. This is likely to result in greater risks to the safety and reliability of the public water supply when the treatment systems are not functioning properly. During this period, there is risk of inadequately treated water being delivered to the public. If the issue is not resolved in a timely manner, the system can shut down or cause damage that is magnified over time and can cost substantially more to repair. These costs are passed onto the ratepayer. In a non-integrated system, there are duplicate costs for personnel, capital, operation, and maintenance of the systems.

Q. MR. HENDRICKS, WHAT WOULD YOUR EXPERT OPINION BE GIVEN A CHOICE BETWEEN A PROVIDER THAT HAS AN INTEGRATED WATER AND WASTEWATER SYSTEM AND TWO SEPARATE WATER AND WASTEWATER PROVIDERS THAT EACH OWN AND OPERATE THEIR OWN SYSTEMS?

A. Based upon my experience and involvement with respect to both integrated and stand-alone water and wastewater systems, as well as for the reasons described in my testimony above, given a choice, an integrated water and wastewater provider is always preferable to two separate stand-alone providers and should be encouraged whenever possible.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, thank you.

EXHIBIT 1

RESUME

Paul S. Hendricks
19002 North 21st Avenue
Phoenix, Arizona 85027
Ph 623-582-8560
Fax 623-581-0929

CAREER OBJECTIVE: Manage Environmental Programs

PERSONAL DATA: Born January 3, 1949, Married, 4 children, excellent health, Christian, numerous hobbies, pilot.

EDUCATIONAL BACKGROUND:

1980: Central Michigan University
Masters Degree
Business Administration

1978: John Wesley College
Bachelors Degree
Environmental Science

PROFESSIONAL EXPERIENCE:

June 1993 EUSI, Consultant

Develop rate study and costs of system operation for water and wastewater systems.

Consult on water well design and development.

Review operation of new wells and booster stations.

Assessment of water and wastewater utility operations.

Evaluate project performance as compared to schedules and project budget.

Review engineering designs and prepare start up plans and budgets for water and wastewater facilities.

Represent cities on utility management and expansion and review engineering designs, monitor startup plans for Water & Wastewater Facilities.

Perform facility inspections and make recommendations on fiscal management and operational and maintenance changes that improve permit compliance and reduce costs.

Prepare sludge disposal plans and secure State and County permits for operation.

Staff and train personnel at Water Reclamation Facilities including two contracts for project and equipment start up at the City of Los Angeles, Hyperion treatment plant.

Prepare multi-year services contracts for system management.

Set up and certify an Environmental Laboratory.

Perform cost estimating for various contracts and construction projects.

Maintain marketing and business development for the firm.

Advise elected officials on environmental matters and facilitate public meetings to build community consensus.

Meet with State and County Regulatory Agencies regarding facility reporting and compliance.

Evaluate equipment and new products to improve facility performance and improve service to our clients.

Consult for U.S.A.I.D. in Europe on environmental problems, rates, strategic planning, industrial waste control and infrastructure issues.

Coordinate and direct work as consultant for ADEQ on water quality issues.

April 1984: City of Phoenix
Superintendent Water & Wastewater Department

Direct the operation of major utility facilities and programs.

Develop and administer $23 million operating budget, define cost centers and develop rate analysis data for submittal to Council.

Develop improved programs for the 190 MGD treatment facilities.

Coordinate strategic planning and design activities with the Engineering Department for the $130 million capitol improvement program.

Conduct hiring and address all Union and personnel matters.

Make presentations to public interest groups and prepare City Council reports.

Initiate major planning and implementation programs for energy recovery projects.

Establish a personnel safety program designed to improve moral and effectiveness throughout the operating unit.

Plan the establishment of a Training Center for the operating divisions.

Demonstrate independent judgment as project manager for the Phoenix Wastewater to Potable Water Feasibility Study.

Direct a Phoenix Groundwater Recharge and Recovery Study.

Provide leadership and direction to Department personnel resulting in significant productivity improvements of over $900,000 in annual savings.

Responsible for the operation of all reuse facilities defined in the Phoenix 50 yr. Water Resources Plan.

Directed the development and implementation of the Computer Master Plan for wastewater operations.

Initiated and administer land application of sludge program, administer industrial waste and process control laboratories.

1978-84 City of Mount Clemens

Director of Public Works

Responsible for all Public Works activities, which included water and wastewater operations, streets and parks, solid waste, and fleet management

Negotiated Water Service Contract and presented major programs to City Council for approval.

Administer and develop the departmental budgets for all public service activities, include the development of cost center budgeting for the rate and fee structure.

Present annual budget programs to City Council for approval.

Install a computerized meter reading system and developed a computerized water rate model for the utility system.

Perform cost analysis and develop impact statements on private contract services.

Negotiated labor contracts with seven labor unions.

Provide fleet services for the Police and Fire Departments to insure that response time and mutual aid agreements met the performance standards of the City Council.

1974-78 City of Port Huron
Water & Wastewater Department

Coordinate an $18.5 million federal grant project to provide new community utility facilities.

Prepared staffing plans and received City Council approval to initiate a new organizational structure for the department.

Administer sludge disposal program, which included dewatering, and processing system design.

Establish industrial waste control program and work with several industrials to reduce the amounts of oil and metal waste discharges to

the City system, while recovering the cost of service provided.

PROFESSIONAL AFFILIATIONS:

Board of Directors, Central Arizona Water Conservation District

Chairman for the City of Phoenix City Manager's Innovation Team.

Arizona Director for the Water Environment Federation

Served on the Board of Directors for the Grosse Point-Clinton Refuse Authority.

Past President Arizona Water and Pollution Control Association

Past President Arizona Water Environment Federation

Past Chairman Arizona Section American Water Works Association

PROFESSIONAL LICENSE REGISTRATION:

State of Michigan
Class "F1" Water
Class "A" Wastewater

State of Arizona
Class "4" Water
Class "4" Wastewater
Class "4" Water Distribution
Class "4" Wastewater Collection

Qualified for Arizona Professional Registration

AWARDS:

City Manager's Award for Significant Innovation

Nominated for the Charles Walter Nichols Award of the American Public Works Association

Selected for National Water Environment Federation Hatfield and Bedell Awards

State of Arizona Operator of the Year

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON – Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE, PINAL COUNTY, ARIZONA	**DOCKET NO. W-01445A-03-0559**

DIRECT TESTIMONY OF FRED E. GOLDMAN, PH.D, P.E., IN THE REMAND PROCEEDING ON BEHALF OF INTERVENOR CORNMAN TWEEDY 560, L.L.C.

JANUARY 4, 2008

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION

A. My name is Fred E. Goldman. I am Vice President of Kennedy/Jenks Consultants. Kennedy/Jenks is based in San Francisco, California. I am located at our office at Suite 1150, 3003 North Central Avenue, Phoenix, Arizona 85003. I am a Professional Civil Engineer. The majority of my work is in water and wastewater management systems.

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL BACKGROUND.

A. I have three degrees from Arizona State University. I have a Bachelors of Science in Engineering, a Masters of Science in Civil Engineering and a Ph.D. in Civil Engineering. My Ph.D. research was in the optimal operation of water distribution systems. I have been a Registered Civil Engineer in the State of Arizona since 1978 and served on the State Board of Technical Registration from 2000 to 2003. I am a member of the Adjunct Faculty at Arizona State University and have taught Unit Operations in Water and Wastewater, a senior level course, three times. I have served for ten years on the Civil Engineering Exam Committee of the National Council of Examiners for Engineers and Surveyors, preparing the national exam given to all registered civil engineers.

Q. **PLEASE DESCRIBE YOUR EXPERIENCE IN DESIGNING AND EVALUATING WATER SUPPLY AND DISTRIBUTION SYSTEMS**

A. I have designed many wells, water storage tanks, booster pump systems and water distribution systems in Arizona. I have also modeled many water systems and have been involved in many projects performing value engineering for system optimization. I recently supervised the study and evaluation of five water companies in Western Maricopa County for Global Water Company. The work included evaluating the water supply and water distribution systems and included

modeling the water distribution systems. My modeling team is currently completing for the City of Phoenix, the Carver Mountain Master Plan for Water and Sewer Facilities for the six square mile Laveen Area north of South Mountain.

Q. HAVE YOU PERFORMED ENGINEERING DESIGN AND MODELING WORK FOR ANY OF THE ROBSON COMPANIES?

A. Yes. For Sun Lakes, I developed the overall wastewater management plan including the planning for the wastewater treatment plant, the design of the recharge and recovery wells and the permitting of the storage facility, recharge wells and recovery wells. For SaddleBrooke Utility Company, I designed the biological treatment facility for the wastewater treatment plant, assisted with the overall wastewater and effluent management program, assisted on copper discharge issues for the wastewater treatment plant and dealt with corrosion of copper piping in the water supply system.

Q. DO YOU ALSO HAVE SPECIFIC EXPERIENCE IN THE DESIGNING OF INTERGRATED WATER AND WASTEWATER SYSTEMS?

A. Yes. The most recent examples are for the City of Phoenix and the Carver Mountain Master Plan for Water and Sewer Facilities for the six square mile Laveen Area north of South Mountain mentioned above, as well as for the Town of Marana. In addition, my wastewater work for Pima Utilities required a thorough understanding of the integration of the water and wastewater systems.

Q. DO YOU CONSIDER YOURSELF TO BE AN EXPERT IN THE FIELD OF ENGINEERING DESIGN AND MODELING FOR WATER AND WASTEWATER SYSTEMS?

A. Yes I do.

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Q. HAVE YOU EVER TESTIFIED IN PROCEEDINGS BEFORE THE ARIZONA CORPORATION COMMISSION?

A. Yes. I have previously testified in Arizona Corporation Commission ("Commission") rate proceedings for Pima Utility Company and Saddlebrooke Utility Company.

Q. WHAT IS YOUR UNDERSTANDING OF THE PURPOSE OF THIS REMAND PROCEEDING BEFORE THE COMMISSION?

A. It is my understanding that the purpose of this proceeding is to determine whether property owned by Cornman Tweedy 560, L.L.C. (the "Cornman Property") which was recently included in the Certificate of Convenience and Necessity ("CC&N") of Arizona Water Company ("AWC") should be deleted from the CC&N as Cornman Tweedy 560, L.L.C. does not wish to have its property included in AWC's CC&N. It is also my understanding that in furtherance of making such a determination, the Commission is looking to broadly examine the overall public interest issues underlying service to the Cornman Property

Q. BASED UPON THIS UNDERSTANDING THAT YOU JUST DESCRIBED, WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to identify and address various public policy and cost issues that arise from an engineering and design standpoint by splitting the water service to EJR Ranch between two different water providers. When and if the Cornman Property is developed and there is a need for water service, Cornman would prefer that Picacho Water Company ("Picacho Water") would have the opportunity to apply for a CC&N to provide the water service. Picacho Sewer Company ("Picacho Sewer") already holds the CC&N for the Cornman Property and all of EJR Ranch (which the Cornman Property is within.) If the Cornman Property is not deleted from the AWC CC&N, Picacho Water will not have an

opportunity to serve the Cornman Property which will result in EJR Ranch being split between two different water providers.

Q. PLEASE PROVIDE YOUR OPINION ON WHETHER PICACHO WATER OR AWC SHOULD ULTIMATELY SERVICE THE CORNMAN PROPERTY.

A. I believe that it will be better for the future ratepayers if the Cornman Property is served by the Picacho Water. Picacho Water and Picacho Sewer will be able to provide not only integrated water and wastewater service, but will be able to do so more efficiently and with a higher level of reliability than AWC.

Q. **HOW CAN PICACHO WATER SERVE WATER MORE EFFICIENTLY?**

A. Picacho Water CC&N includes approximately 4,600 acres in Pinal County. The Cornman Property is about 1,138 and is adjacent to and immediately north of Picacho Water's existing CC&N. (*See* attached Exhibit A.). Based upon my review of AWC's Pinal Valley Water System Master Plan, if AWC services the area, it will need to build an independent water supply system that is isolated from its other systems while Picacho Water can integrate the water system for the Cornman Property system into the rest of its system. This will provide substantial savings in the number of wells required, the volume of water storage required and the size of the water booster pump system. All these elements will result in an installed water supply infrastructure that will be considerably less expensive to build if the Cornman Property is served by the Picacho Water. The servicing of the Cornman Property by AWC will result in substantial and unnecessary infrastructure costs which will translate into higher rates for the ratepayer.

Q. PLEASE EXPLAIN HOW PICACHO WATER PLANS TO SERVICE THE CORNMAN PROPERTY.

Picacho Water has developed a conceptual water supply plan for all of EJR Ranch which includes the Cornman Property. Exhibit B, which is attached, shows how

the plan is to divide EJR Ranch into two service areas divided by Selma Highway into the North and South service area. Each service area will have a centralized water plant where storage and booster pump facilities will be located. Wells will be located throughout the North and South service areas and will deliver raw water to the storage tanks where it will be chlorinated. The booster pump system will pump water into the distribution system.

Q. HOW WILL YOU COMPARE SERVING THE CORNMAN PROPERTY BY PICACHO WATER OR BY AWC?

A. I will project the infrastructure required to service the area North of Selma Highway with service to the Cornman Property area first by Picacho Water and second by the AWC Company. I will then compare the projections to understand the difference in physical plant requirements.

Q. PLEASE CONSIDER THE NUMBER OF WELLS FIRST. HOW MANY WELLS WILL PICACHO WATER NEED TO PROVIDE SERVICE TO THE NORTH SERVICE AREA?

A. Exhibit C, which is attached, shows the current planned location for the potable wells to service the Picacho Water service area and the Cornman Property. Based on an average well yield of 1,250 gpm, the North Service Area requires three wells plus one backup well. Five potable wells are located north of Selma Highway and only one is located north of Early Road inside the Cornman Property. The wells located near Selma Highway will be piped to provide water to either Water Plant No. 1 or Water Plant No. 2.

Q. HOW DID YOU DETERMINE THE 1,250 AVERAGE WELL YIELD?

A. The 1,250 average well yield is based upon a review of the existing wells in the surrounding area.

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Q. WHY HAVE YOU PROPOSED ONE WELL NORTH OF EARLY ROAD?

A. Because most of the Cornman Property is within the San Carlos Irrigation Project ("SCIP") and new wells within SCIP are prohibited. Therefore, there are only limited parcels where a new well can be located.

Q. HOW MANY WELLS WILL PICACHO WATER NEED IF IT SERVICES THE NORTH SERVICE AREA WITHOUT THE CORNMAN PROPERTY?

A. Based on the average well yield of 1,250 gpm, Picacho Water will need two wells and one backup, or a total of three wells.

Q. HOW MANY WELLS WILL AWC NEED TO SERVICE THE CORNMAN PROPERTY?

A. Based on the same well yield, AWC will need two wells and one backup.

Q. HOW MANY ADDITIONAL WELLS WILL BE DRILLED IF AWC WAS TO PROVIDE THE SERVICE TO THE CORNMAN PROPERTY AND WHAT WILL SUCH ADDITIONAL WELLS COST?

A. Two extra wells will need to be drilled if the Cornman Property is serviced AWC. Estimating $1.2 million for a fully equipped new well, the extra cost to the ratepayers would be approximately $2,400,000 for the extra wells.

Q. ARE THERE OTHER FACTORS THAT WILL MAKE PUMPING AND THE SUPPLY OF WATER FROM WELLS MORE EXPENSIVE IF AWC SERVICES THE CORNMAN PROPERTY?

A. Yes. There are at least two factors that will make groundwater supply more expensive if AWC serves the Cornman Property. One important factor to consider, as noted above, is that wells cannot be drilled on any land within the SCIP. This is because the property owners who joined SCIP gave up their rights to drill wells on their property. Except for a 160-acre parcel, all the Cornman Property is in SCIP. The closest land that is outside of SCIP is ¼ mile north of Florence Highway.

AWC would likely have to locate its wells at least ¼ mile away from the Cornman Property and install extra transmission pipe to deliver water to the storage tank.

Another important consideration is the volume of groundwater that will need to be pumped. Picacho Sewer planned to deliver reclaimed water to irrigate landscaped properties within the Cornman Property. To conserve groundwater, the integrated Picacho utilities would require landscaped areas to be irrigated with the reclaimed water. It is likely that AWC would sell groundwater for landscaping if it provides water service to the Cornman Property. Picacho Sewer would not install the infrastructure to deliver reclaimed water unless it was sure it would have customers. I would expect that AWC will pump more groundwater than Picacho Water since it will need to compensate for the lost reclaimed water supply.

The additional cost of connecting a well 1/4 quarter mile offsite to the storage tank would be approximately $130,000. In addition, the additional pumping cost of delivering ground water as opposed to reclaimed wastewater would be approximately $16,000 per year if the groundwater is at 400 foot depth below the ground surface, and, of course, the loss of 535 acre-feet of groundwater per year.

Q. HOW WILL WATER STORAGE BE IMPACTED?

A. There is likely to be commercial property in EJR Ranch north and south of Early Road. If EJR Ranch is served by one provider, the fire flow requirement for all of EJR Ranch will be 2,625 gpm for four hours or a volume of 630,000 gallons. If, however, EJR Ranch is split between two providers, the fire flow storage requirement would be duplicated resulting in an additional cost of approximately $400,000.

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Q. WOULD YOU EXPLAIN IF THE REQUIRED BOOSTER PUMP CAPACITY WILL BE IMPACTED IF THERE IS MORE THAN ONE PROVIDER?

A. Yes. By splitting EJR Ranch between two providers, the required booster pump capacity for the fire flow will also need to be doubled resulting in an additional cost of approximately $250,000 which includes the extra electrical service and the extra standby power.

Q. PLEASE ADDRESS HOW THE PICACHO SEWER PROGRAM OF RECLAIMED WATER MANAGEMENT USING ASR WELLS ENHANCES THE PRESERVATION OF GROUNDWATER RESOURCES AND MEETS PINAL COUNTY AND STATE OF ARIZONA WATER RESOURCES GOALS.

A. Picacho Water and Sewer and Pima Utility Company in Sun Lakes have overlapping principals and management. In 1997, Pima Utility Company installed the first Aquifer Storage and Recovery ("ASR") wells in Arizona which I designed. During the summer, all the reclaimed water in Sun Lakes is for irrigation, but during the winter and parts of the fall and spring, reclaimed water production exceeds the demand in Sun Lakes. The excess reclaimed water was recharged directly into the aquifer using the ASR wells. Recovery wells were identified that were hydrologically connected with the ASR wells and, together with the ASR wells, supplied groundwater, classified as recovered reclaimed water during the summer months when demands exceed the supply. The aquifer is used as a storage reservoir. I would note, however, that deposits to the aquifer exceed withdrawals so there is a net increase in the reclaimed water recharged to the aquifer. The ASR wells continue to operate successfully in Sun Lakes.

Picacho Water and Picacho Sewer plan to manage reclaimed water produced by the wastewater treatment plant in the same manner by supplementing reclaimed

water with recovered water recharged during the winter and parts of the summer and spring. This method of reclaimed water management meets the goals of Pinal County and the Arizona Department of Water Resources ("ADWR") to protect and preserve valuable and limited groundwater resources. Recently the legislature enacted modifications to the enabling law for Active Management Areas (SB 1557 – 48th Legislature – First Session) which substitutes adoption of "Conservation Measures" by water providers for the old "gallons per capita per day goals" approach. There is no doubt that maximizing the direct reuse and recharge of reclaimed water instead of pumping groundwater is consistent with the public policy underlying the legislation.

Q. PLEASE EXPLAIN HOW ASR WELLS AND RECOVERY WELLS ARE RELATED.

A. For a recovery well to "recover" recharged reclaimed water, it must be hydrologically connected to the recovery well. ADWR defines "hydrologically connected" to be one mile unless a hydrogeologic study can demonstrate hydrologic connection.

Q. WILL THERE BE COST SAVINGS IN THE DESIGN PHASE IF PICACHO WATER SERVICES THE CORNMAN PROPERTY?

A. Yes. If, the Picacho Water serves the Cornman Property, Picacho Water will be able to develop Water Plant No. 2 (*see* Exhibit 2) to serve all of the North Service Area. If AWC serves the Cornman Property, this will result in the construction of one water plant by AWC to serve the Cornman property and the construction of a separate water plant to serve the south half of the North Service Area. This construction of two water plants versus one will mean additional costs because of the duplication of wells, storage tanks, booster pumps, treatment facilities and transmission piping. I conservatively estimate these extra design costs to be on the order of $200,000.

Q. WILL THERE BE SAVINGS IN CONSTRUCTION COSTS IF PICACHO WATER SERVICES THE CORNMAN PROPERTY?

A. Yes. As also noted in my testimony above, if AWC services the Cornman Property, there will be a need to construct one extra water plant which includes storage tanks and booster pumps which is a very significant extra construction cost. The extra land for the duplicative facilities will cost approximately $500,000.

Q. ARE THERE ANY SYSTEM RELIABILITY ISSUES THAT CONCERN YOU?

A. Yes. It is my opinion that that the water system serving the Cornman Property area will be more reliable if served by the Picacho Water. If served by Arizona Water, the Cornman Property will be an "island facility" because it is located three miles from AWC's existing facilities. Although AWC has plans to service its Pinal Service Area in an integrated water system, that system will not be completed for many years. On the other hand, Picacho Water would have two water plants on line when the Cornman Property begins development.

Also, I would note that the EJR Ranch and Robson Ranch properties are very flat. There is only 77 ft. of elevation difference from Florence Highway at the north end to the southern extreme. This means that the entire area could be serviced by one pressure zone. Either water plant could provide water to the entire area through looped distribution lines. This duplication of facilities provides a level of reliability that cannot be matched by AWC until some time in the far future.

Q. WILL THE DESIGN OF WATER AND SEWER FACILITIES IN THE CORNMAN PROPERTY BE MORE EFFICIENT IF PICACHO WATER PROVIDES THE WATER SERVICE?

A. Yes. Design is more efficient if Picacho Water serves the Cornman Property. Picacho Water and Picacho Sewer use the same engineering company for utility

design throughout Robson Ranch and EJR Ranch. If AWC serves the Cornman Property, AWC's engineers will need to review all the water designs. Besides the double effort in having a second review, there is likely to be extra work in the original design because the companies are likely to have different standards. I have come across this problem in work carried out in Buckeye where a private water company reviewed plans and required modifications. I have also reviewed plans prepared by a developer's engineer on behalf of a utility and had to require many modifications to the original design. The extra engineering translates into an extra cost. I would estimate that extra cost to be approximately $100,000 for an infrastructure as large as required for the Cornman Property. Also, AWC can take many months to do their reviews that can delay projects. These extra costs have to be adsorbed by the developers and ultimately paid by the homeowner in the cost of their home.

Q. DR. GOLDMAN, WOULD YOU PLEASE SUMMARIZE YOUR TESTIMONY?

A. Although AWC could technically serve the disputed area with an "island facility", that facility, when compared to service by Picacho Water, will result in approximately $4 million of extra costs for the ratepayer at a lower level of reliability and would preclude the use of Water Conservation Measures available to Picacho Water.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT A

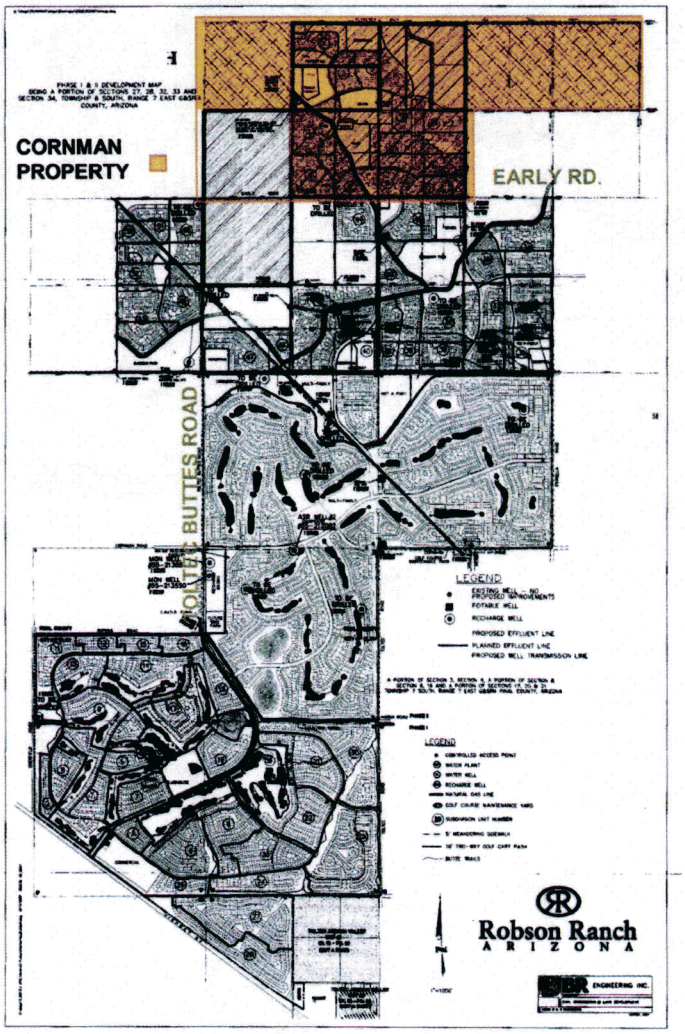

EXHIBIT A – CORNMAN PROPERTY LOCATION

EXHIBIT B

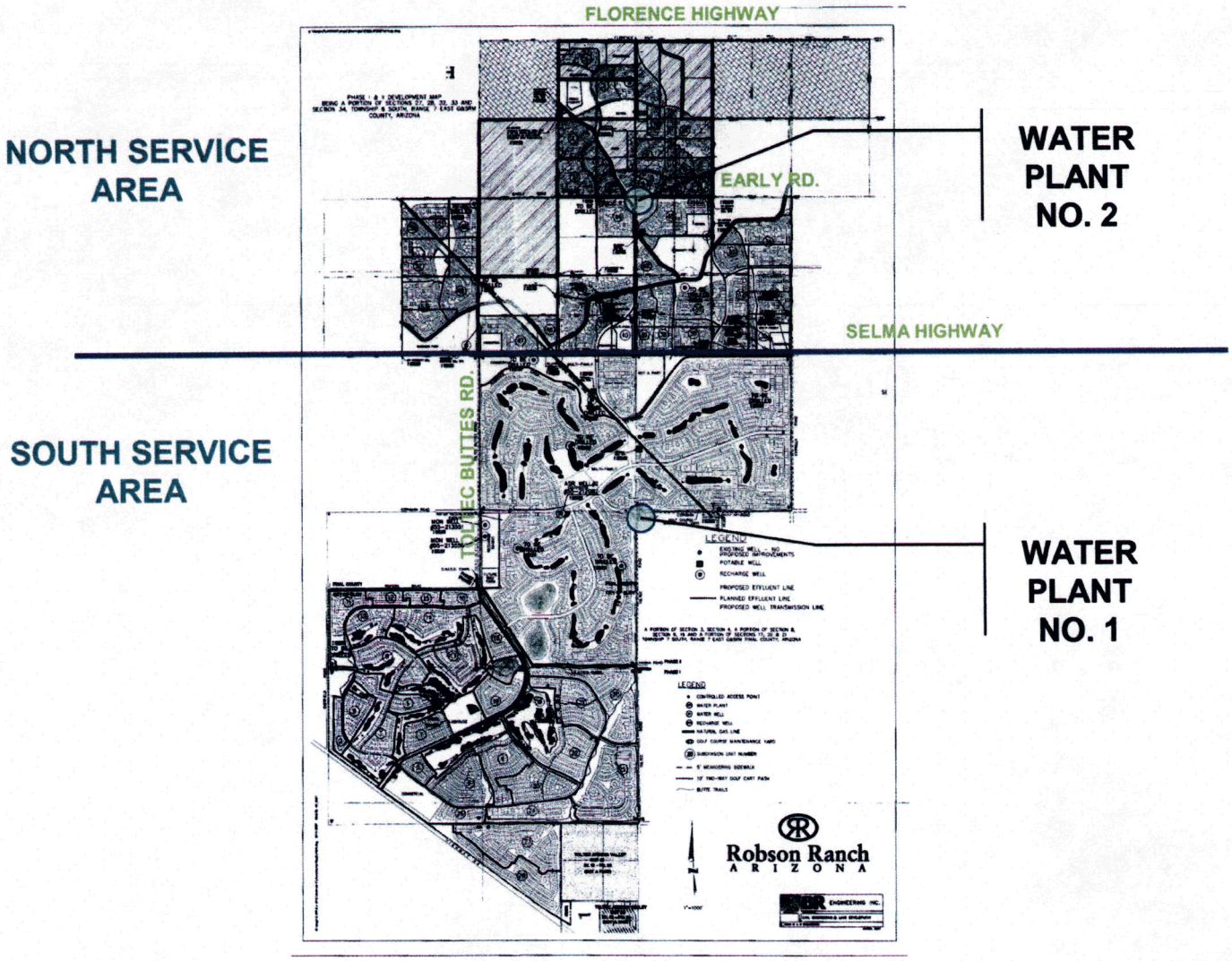

EXHIBIT B – PICACHO WATER SERVICE AREAS

EXHIBIT C

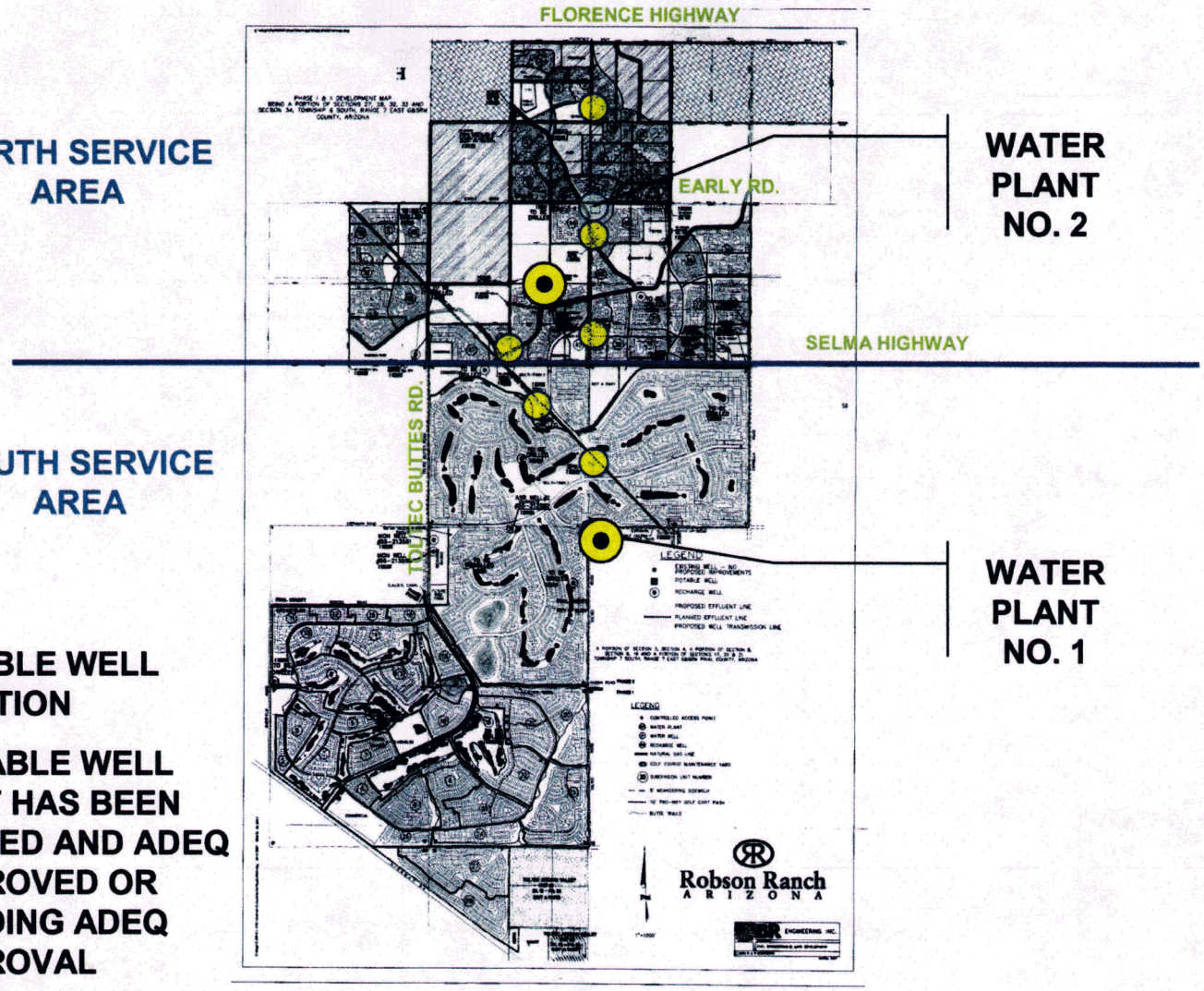

EXHIBIT C – PICACHO POTABLE WATER WELLS

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON – Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE, PINAL COUNTY, ARIZONA	**DOCKET NO. W-01445A-03-0559**

REBUTTAL TESTIMONY OF FRED GOLDMAN, Ph.D, P.E.

IN THE

REMAND PROCEEDING

ON BEHALF OF INTERVENOR

CORNMAN TWEEDY 560, L.L.C.

FEBRUARY 5, 2008

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Fred Goldman, Ph.D, P.E. I am Vice President of Kennedy Jenks, a consulting engineering firm. My business address is 3003 North Central Avenue, Suite 1150, Phoenix, Arizona 85012.

Q. HAVE YOU PREVIOUSLY PROVIDED PRE-FILED DIRECT TESTIMONY IN THIS REMAND PROCEEDING?

A. Yes. I submitted pre-filed direct testimony dated January 4, 2008. I incorporate in this rebuttal testimony my pre-filed direct testimony.

Q. HAVE YOU REVIEWED THE PRE-FILED DIRECT TESTIMONY AND ACCOMPANYING EXHIBITS OF WILLIAM M. GARFIELD SUBMITTED JANUARY 4, 2008, IN THIS DOCKET?

A. Yes. I have read the testimony and reviewed the exhibits.

Q. IN THE PRE-FILED DIRECT TESTIMONY OF WILLIAM M. GARFIELD IN THIS REMAND PROCEEDING AT PAGE 6, LINES 2-5, MR. GARFIELD STATES "IF THE CORNMAN TWEEDY PROPERTY WAS DELETED FROM THE COMPANY'S CCN AREA, THE RELIABILITY AND EFFICIENCY OF WATER SERVICE TO THE AREA WOULD SUFFER AND WOULD BE MORE COSTLY, DUPLICATION OF FACILITIES WOULD RESULT, AND THE COST-EFFECTIVE BENEFITS OF REGIONAL PLANNING FOR WATER WOULD BE MATERIALLY DIMINISHED." DO YOU AGREE WITH THIS STATEMENT?

A. No. Arizona Water Company ("AWC") has approximately 128,640 acres (201 sections times 640 acres) in its existing certificated territory shown on its "Pinal Valley Water System Master Plan" attached as Exhibit WMG-17 to Mr. Garfield's testimony. This certificated acreage does not include thousands of additional acres in applications for extensions of AWC's CC&N pending before

the Arizona Corporation Commission. The approximately 1,138-acre portion of the Cornman Tweedy property located within AWC's CC&N amounts to less than 1% of AWC's existing certificated territory shown on the Pinal Valley Water System Master Plan. It is inconceivable that eliminating the 1,138-acre Cornman Tweedy property from the AWC certificated area would result in any noticeable loss of reliability or efficiency to AWC's operations. Any economies of scale would not even be measurable.

By comparison, the effect of someday including the 1,138-acre Cornman-Tweedy property in the approximately 4,500-acre existing certificated territory of Picacho Water Company is very substantial. The eventual inclusion of the Cornman Tweedy property would increase the size of the existing Picacho Water Company CC&N by approximately 25%. An increase of 25% would significantly improve the reliability and efficiency of the Picacho Water Company water system. The economies of scale would be very noticeable as illustrated in my pre-filed direct testimony in this remand proceeding and the pre-filed direct testimony of Mr. Hendricks.

Q. IN YOUR OPINION, WOULD THE DELETION OF THE CORNMAN TWEEDY PROPERTY FROM AWC'S CC&N HAVE AN ADVERSE EFFECT ON THE COMPANY'S PLANS OR ABILITY TO SERVE THE REMAINING PORTION OF ITS PINAL VALLEY WATER SYSTEM?

A. No. Based upon my review of AWC's Pinal Valley Water System Master Plan (Exhibit WMG-17) and other information provided by AWC in this docket and in responses to data requests, the deletion of the Cornman Tweedy property would have no adverse effect on AWC's water system. The Cornman Tweedy property is located at the southern boundary of the existing certificated territory of AWC. The deletion of this property would require only minor modifications to AWC's plans, and would have no impact on the company's ability to serve its customers.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

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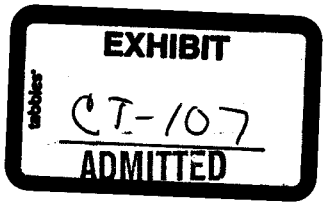

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY IN CASA GRANDE, PINAL COUNTY, ARIZONA

DOCKET NO. W-01445A-03-0559

REBUTTAL TESTIMONY OF FRED E. GOLDMAN, PH.D., P.E., REMAND PROCEEDING II ON BEHALF OF CORNMAN TWEEDY 560, LLC JULY 18, 2014

CORNMAN TWEEDY 560 LLC

Rebuttal Testimony of Fred E. Goldman, Ph.D., P.E.
Remand Proceeding II

July 18, 2014

I. INTRODUCTION.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Fred E. Goldman. My business address is 28 West Moon Valley Drive, Phoenix, Arizona 85023.

Q. ARE YOU THE SAME FRED GOLDMAN WHO PREVIOUSLY PROVIDED TESTIMONY IN THIS DOCKET?

A. Yes. On behalf of Cornman Tweedy 560, LLC, ("Cornman Tweedy") I previously submitted direct testimony dated January 4, 2008, and rebuttal testimony dated February 5, 2008.

Q. ARE YOU ADOPTING YOUR PRE-FILED TESTIMONY?

A. Yes. I adopt all of my previous pre-filed testimony in this docket.

Q. IN YOUR DIRECT TESTIMONY DATED JANUARY 4, 2008, AT PAGES 1-2, YOU DESCRIBE YOUR EXPERIENCE IN DESIGNING AND EVALUATING WATER SUPPLY AND DISTRIBUTION SYSTEMS. HAVE YOU HAD ANY ADDITIONAL EXPERIENCE IN THESE AREAS SINCE THE SUBMISSION OF YOUR TESTIMONY IN 2008?

A. Yes. I worked on the design of a 2 MGD (million-gallon-per-day) expansion of the Heber Water Treatment Plant in California as a subcontractor to The Holt Group (I am also registered in the State of California), and I am currently carrying out a study of the water supply system of Clarkdale, Arizona which includes consideration of adding an existing well, analysis of the town's water distribution system and cost analyses.

Q. IN YOUR DIRECT TESTIMONY DATED JANUARY 4, 2008, AT PAGE 2, YOU DESCRIBE YOUR EXPERIENCE IN DESIGNING INTEGRATED WATER AND WASTEWATER SYSTEMS. HAVE YOU HAD ANY ADDITIONAL EXPERIENCE IN THIS AREA SINCE THE SUBMISSION OF YOUR TESTIMONY IN 2008?

A. Yes. I designed a new 350,000 GPD (gallon-per-day) wastewater treatment plant for the Town of Clarkdale (as a sub-contractor to SEC Engineering) that produces A+ effluent and I am working with the town to utilize the effluent in lieu of groundwater to preserve groundwater recharges with the goal of eventually recharging the A+ effluent to enhance local groundwater resources.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. I would like to respond to certain statements in the Direct Testimony of Fredrick K. Schneider (Hearing on Remand – Phase 2) that was filed with the Commission on May 30, 2014.

Q. HAVE YOU REVIEWED THE DIRECT TESTIMONY OF FREDRICK K. SCHNEIDER (HEARING ON REMAND – PHASE 2)?

A. Yes.

Q. DO YOU HAVE ANY GENERAL COMMENTS REGARDING MR. SCHNEIDER'S TESTIMONY?

A. Yes. Mr. Schneider describes how Arizona Water Company ("AWC") has updated its Pinal Valley Water System Master Plan ("Master Plan") to show the interconnection[1] of the Casa Grande and Coolidge water systems and the location of the planned Central Arizona Project recharge and recovery facility. He explains that AWC updated the Master Plan to accommodate PhoenixMart, a planned commerce center located adjacent to the northwest corner of the Cornman

[1] Mr. Schneider states in his testimony at page 5, line 18, that the Master Plan shows the "completed" interconnection of AWC's Casa Grande and Coolidge water systems. However, based upon my review of the Master Plan attached as Exhibit FKS-2 and the enlarged portion of the Master Plan attached as Exhibit FKS-3, it does not appear that the interconnection has been completed. Cornman Tweedy will attempt to resolve this discrepancy with a data request.

Tweedy property. He explains how the developer of Post Ranch, a development on the east side of the Cornman Tweedy property, has prepared a master plan for the development in a joint planning effort with the developers of PhoenixMart. He describes how AWC has pursued arrangements with PERC Water Corporation ("PERC") whereby PERC would permit, design and construct wastewater facilities in areas where AWC is the water provider and no wastewater provider exists. However, none of this addresses Cornman Tweedy's desire that its property be served by an integrated water and wastewater provider; none of this changes the fact that Cornman Tweedy does not want its property included in AWC's CC&N; and none of this changes the fact that there is no need for water service on the Cornman Tweedy property for the foreseeable future.

Q. IN MR. SCHNEIDER'S DIRECT TESTIMONY, HE STATES THAT "ARIZONA WATER COMPANY HAS INVESTED A SIGNIFICANT AMOUNT OF TIME AND EFFORT TO PLAN FOR THE WATER NEEDS OF ITS PINAL VALLEY WATER SYSTEM AND PLANNING AREA."[2] DO YOU HAVE ANY ESTIMATE AS TO HOW MUCH TIME AND EFFORT WOULD HAVE BEEN DEVOTED TO PLANNING FOR THE CORNMAN TWEEDY PROPERTY?

A. I would have to say little or none. The Cornman Tweedy property that is subject to this proceeding comprises 1,138 acres. In his Direct Testimony, Mr. Schneider states that AWC's "Pinal Valley CC&N comprises approximately 172,160 acres or 269 square miles and its Pinal Valley planning area includes approximately 305,280 acres or 477 square miles."[3] Thus, the Cornman Tweedy property represents approximately one-third of one percent of the Pinal Valley planning area. I see no evidence in this case that AWC has incurred any measurable costs planning for water service to the Cornman Tweedy property.

[2] Direct Testimony of Fredrick K. Schneider (Hearing on Remand – Phase 2) at 4, lines 11-12.
[3] *Id.* at 4, lines 6-8.

Q. BASED UPON YOUR REVIEW OF THE MASTER PLAN AND OTHER DOCUMENTS PROVIDED BY AWC IN THIS CASE, WHAT HAS AWC DONE TO PLAN FOR THE DELIVERY OF EFFLUENT IN ITS PINAL VALLEY PLANNING AREA?

A. I don't see that AWC has done anything to plan for the delivery of effluent in its Pinal Valley planning area. AWC's distribution system appears to be designed and sized to deliver potable water or Central Arizona Project water to supply all water demands within its CC&N area, without any infrastructure to deliver treated effluent.

Q. WHY IS THIS SIGNIFICANT?

A. Integrated water and wastewater providers plan for the delivery of effluent from day one. Wastewater utilities are keenly aware that there is a continuous flow of effluent discharging from their wastewater treatment plants. This effluent can be delivered to customers, recharged and stored in the aquifer, or discharged (and unavailable for beneficial use in the service area) pursuant to a discharge permit, but it must go somewhere. When a wastewater utility and a water utility work together in an integrated fashion, they can jointly plan for the most efficient use of the effluent. For example, an integrated utility may reduce the price of its effluent in order to find buyers for that effluent. While the sale of the effluent displaces the sale of potable water to those customers, the integrated utility is willing to accept the trade-off in order to manage the effluent. As another example, an integrated utility may implement tariffs, with prior Commission approval, that promote the use of effluent by certain classes of customers. The end result is that effluent is beneficially used within the service territory which reduces the amount of groundwater or surface water that is used in the service territory.

In comparison, a stand-alone water company such as AWC does not have any incentive to promote the sale of effluent (which it does not have) over the sale of groundwater or treated surface water. If a customer wants to purchase potable

water, the stand-alone water company is going to supply that water. There is simply no reason for the water company to encourage that customer to buy effluent from the wastewater provider.

Q. IN HIS DIRECT TESTIMONY, MR. SCHNEIDER STATES THAT "MORE IMPORTANT TO THIS PROCEEDING, THE PHOENIXMART PROJECT REPRESENTS A SIGNIFICANT DEMAND FOR WATER SERVICE."[4] DO YOU AGREE THAT THE PHOENIXMART PROJECT IS IMPORTANT WITH RESPECT TO THE CORNMAN TWEEDY PROPERTY?

A. If the PhoenixMart commerce center actually moves forward, AWC will construct water infrastructure that can later be extended to serve the Cornman Tweedy property if and when there is a need for water service. However, the installation of water infrastructure adjacent to the Cornman Tweedy property does nothing to address Cornman Tweedy's desire that its property be served by an integrated water and wastewater provider.

Q. ATTACHED TO MR. SCHNEIDER'S DIRECT TESTIMONY AS EXHIBIT FKS-2 IS A COPY OF AWC'S PINAL VALLEY WATER SYSTEM MASTER PLAN, AND EXHIBIT FKS-3 IS A PORTION OF THE MASTER PLAN WHICH SHOWS THE EXISTING AND PLANNED WATER INFRASTRUCTURE WITHIN AND ADJACENT TO THE CORNMAN TWEEDY PROPERTY. DOES EITHER EXHIBIT SHOW ANY RECLAIMED WATER DELIVERY INFRASTRUCTURE?

A. No. There is no existing or planned reclaimed water delivery infrastructure shown on the Master Plan.

[4] *Id.* at 6, lines 18-19.

Q. TO YOUR KNOWLEDGE, WILL THE PHOENIXMART COMMERCE CENTER USE RECLAIMED WATER?

A. No. Cornman Tweedy asked that question of AWC in Cornman Tweedy Data Request 6.58 and AWC responded that the PhoenixMart project would not utilize reclaimed water at this time.

Q. IN YOUR DIRECT TESTIMONY YOU STATE THAT "IF AWC SERVES THE CORNMAN PROPERTY, THIS WILL RESULT IN THE CONSTRUCTION OF ONE WATER PLANT BY AWC TO SERVE THE CORNMAN PROPERTY AND THE CONSTRUCTION OF A SEPARATE WATER PLANT TO SERVE THE SOUTH HALF OF THE NORTH SERVICE AREA."[5] IS THERE ANYTHING IN MR. SCHNEIDER'S TESTIMONY WHICH CHANGES THIS FACT?

A. No. As I testified previously, the construction of separate water plants to serve the north half and the south half of the same development means additional design costs and construction costs because of the unavoidable duplication of wells, storage tanks, booster pumps, treatment facilities and transmission piping.

I would note also that Mr. Schneider's Exhibit FKS-3 shows the Cornman Tweedy property divided into two pressure zones. The engineering data does not exist at this time for me to determine the cost impact of two pressure zones, but I would expect that the need for pressure reducing valves or booster pumps will increase the cost of the infrastructure to serve the Cornman Tweedy property and complicate fire protection storage requirements. However, if the Cornman Tweedy property and the Robson property to the south are served by a single water provider, the entire development can be served in one pressure zone.

[5] *Id.* at 9, lines 21-23.

Q. MR. SCHNEIDER STATES IN HIS DIRECT TESTIMONY THAT "SMALLER ISOLATED SYSTEMS OFTEN LACK THE ABILITY TO PROVIDE RELIABLE WATER SUPPLY AND FLOW RATES SUFFICIENT FOR FIRE PROTECTION PURPOSES."[6] DOES THIS COMMENT APPLY TO THE UTILITIES CONSTRUCTED AND OPERATED BY ROBSON?

A. No. The utilities constructed and operated by Robson are not small isolated systems but sophisticated systems designed using conservative assumptions. Thus, the Robson utilities do provide water supply, storage and flow rates sufficient for fire protection.

Q. MR. SCHNEIDER STATES IN HIS DIRECT TESTIMONY THAT "ARIZONA WATER COMPANY RECOGNIZES THE IMPORTANCE OF RECLAIMED WATER IN MEETING THE WATER NEEDS OF ITS CUSTOMERS AND IN ACHIEVING A MORE SUSTAINABLE WATER SUPPLY."[7] DO YOU SEE EVIDENCE THAT AWC RECOGNIZES THE IMPORTANCE OF RECLAIMED WATER?

A. The old adage is that actions speak louder than words. AWC's Pinal Valley CC&N includes 269 square miles yet AWC does not have a CC&N to provide sewer collection and treatment service anywhere in Arizona.[8] If AWC truly recognized the importance of reclaimed water in meeting the water needs of its customers, I would expect that the company would have sought a sewer CC&N somewhere along the line. Moreover, as I stated before, there is nothing in the Pinal Valley Master Plan that suggests that AWC is planning for the delivery of effluent in its Pinal Valley system.

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[6] *Id.* at 9, lines 17-18.
[7] *Id.* at 12, lines 6-7.
[8] Cornman Tweedy Data Request 6.47 to AWC.

Q. MR. SCHNEIDER STATES THAT "FOR THE PORTION OF ARIZONA WATER COMPANY'S CC&N LOCATED WITHIN THE CITY OF CASA GRANDE'S WASTEWATER SERVICE AREA, ARIZONA WATER COMPANY PARTNERED WITH THE CITY OF CASA GRANDE TO DEVELOP ITS RECLAIMED WATER USE CONCEPTUAL MASTER PLAN,"[9] A COPY OF WHICH IS ATTACHED AS EXHIBIT FKS-8 TO MR. SCHNEIDER'S DIRECT TESTIMONY. TO YOUR KNOWLEDGE, HAS THE MARCH 2008 CONCEPTUAL MASTER PLAN RESULTED IN THE DELIVERY OF ANY RECLAIMED WASTEWATER BY AWC?

A. No. Item No. 12 at page 64 of the March 2008 Reclaimed Water Use Conceptual Master Plan is a recommendation that the City of Casa Grande negotiate a Memorandum of Understanding ("MOU") with AWC regarding (i) AWC's operation and maintenance of City-owned reclaimed water distribution and recharge facilities; and (ii) cooperation regarding future planning activities designed to maximize the beneficial use of reclaimed water. However, in response to Cornman Tweedy Data Request 6.61 to AWC, AWC reported that the MOU has not been executed and AWC has "no expected date for execution of an agreement." Further, in response to Cornman Tweedy Data Request 6.45, AWC reported that it does not receive any reclaimed water from the Town of Casa Grande. Again, if AWC truly recognized the importance of reclaimed water in meeting the water needs of its customers, I would expect that the company would have completed the MOU that was called for in the conceptual plan prepared in 2008.

[9] Direct Testimony of Fredrick K. Schneider (Hearing on Remand – Phase 2) at 12, lines 7-11.

Q. MR. SCHNEIDER STATES THAT "ARIZONA WATER COMPANY ALSO PLANS TO PROVIDE RECLAIMED WATER AND WATER SERVICE IN THE WESTERN PORTION OF ARIZONA WATER COMPANY'S PINAL VALLEY PLANNING AREA" PURSUANT TO A MAY 15, 2008 SETTLEMENT AGREEMENT WITH GLOBAL WATER-PALO VERDE UTILITIES COMPANY.[10] TO YOUR KNOWLEDGE, HAS THE MAY 15, 2008 SETTLEMENT AGREEMENT RESULTED IN THE DELIVERY OF ANY RECLAIMED WASTEWATER BY AWC?

A. No. At page 5, lines 14-16 of the Direct Testimony of William M. Garfield (Hearing on Remand-Phase II), Mr. Garfield discusses the settlement agreement ("Settlement Agreement") between AWC and Global Water Resources and its subsidiaries and affiliates (collectively, "Global"), a copy of which is attached to Mr. Garfield's testimony as Exhibit WMG-1. Section 7(a) of the Settlement Agreement states that Global "shall enter into an agreement with Arizona Water Company to supply available reclaimed water to Arizona Water Company, if requested, to be sold and delivered by Arizona Water Company within its CCN and Planning Area." However, in response to Cornman Tweedy Data Request 6.43, AWC concedes that no such agreement has been drafted because "there is no current demand from customers for such services." Once again, if AWC truly recognized the importance of reclaimed water in meeting the water needs of its customers, I would expect that the company would have completed the agreement with Global that was called for in the 2008 settlement agreement.

[10] *Id.* at 12, lines 12-15.

Q. MR. SCHNEIDER STATES IN HIS DIRECT TESTIMONY THAT AWC HAS BEEN IN DISCUSSIONS WITH PERC WATER CORPORATION ("PERC") TO DEVELOP A MEMO OF UNDERSTANDING WHEREBY PERC WOULD PERMIT, DESIGN AND CONSTRUCT WASTEWATER FACILITIES IN AREAS WHERE AWC IS THE WATER PROVIDER AND WHERE NO WASTEWATER PROVIDER EXISTS.[11] ARE AWC'S DISCUSSIONS WITH PERC RELEVANT IN THIS CASE?

A. No. Picacho Sewer Company already holds the CC&N for the Cornman Tweedy property, so based upon the circumstances presented in this case, a memorandum of understanding ("MOU") between AWC and PERC is not relevant.

I would also point out that an MOU, even if it is signed, does not provide any proof that AWC and PERC have a viable plan to provide wastewater service to the Cornman Tweedy property. What is needed is a comprehensive wastewater management plan that not only addresses the collection and treatment of wastewater, but also the critical element of management of the effluent. Since the Cornman Tweedy property has no outfall for discharging effluent, reuse or recharge are the only options available to manage the effluent. Given that the Cornman Tweedy property will not have a golf course or ornamental lakes when it is ultimately developed, the reuse options are limited.

Recharge of effluent is complicated and expensive, and it requires a significant amount of maintenance. Hence, having PERC construct a stand-alone wastewater system which incorporates effluent recharge for the Cornman Tweedy property would undoubtedly result in higher rates for customers than if the wastewater service was provided by Picacho Sewer Company, which already has an effluent management plan in place utilizing both direct use and recharge.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

[11] *Id.* at 14, lines 12-17.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

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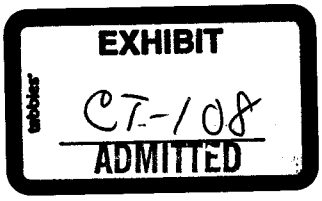


IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY IN CASA GRANDE, PINAL COUNTY, ARIZONA

DOCKET NO. W-01445A-03-0559

REJOINDER TESTIMONY OF FRED E. GOLDMAN, Ph.D., P.E.
(REMAND PROCEEDING II)
ON BEHALF OF CORNMAN TWEEDY 560, LLC
FEBRUARY 1, 2016

CORNMAN TWEEDY 560 LLC

Rejoinder Testimony of Fred E. Goldman, Ph.D., P.E.
(Remand Proceeding II)

February 1, 2016

I. INTRODUCTION.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Fred E. Goldman, Ph.D., P.E. My business address is 28 W. Moon Valley Drive, Phoenix, Arizona 85023.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. Yes, I previously submitted three pieces of pre-filed testimony. I submitted rebuttal testimony dated July 18, 2014, in what has been referred to as Remand Hearing Phase II. Prior to that, I submitted direct testimony dated January 4, 2008, and rebuttal testimony dated February 5, 2008 in the first remand proceeding.

Q. DO YOU ADOPT YOUR EARLIER PRE-FILED TESTIMONY AT THIS TIME?

A. Yes. I adopt all three pieces of my earlier pre-filed testimony together with this rejoinder testimony.

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY?

A. I respond to certain statements in the January 11, 2016, Surrebuttal Testimony of Frederick K. Schneider (Hearing on Remand-Phase 2) and the January 11, 2016, Surrebuttal Testimony William M. Garfield (Hearing on Remand-Phase II) filed on behalf of Arizona Water Company ("Arizona Water Company" or "AWC").

Q. HAVE YOU REVIEWED THE PRE-FILED TESTIMONIES OF MESSRS. SCHNEIDER AND GARFIELD?

A. Yes.

Q. DO YOU HAVE ANY GENERAL COMMENTS REGARDING MR. SCHNEIDER'S SURREBUTTAL TESTIMONY?

A. Yes. Rather than offer new information that would be useful in understanding the advantages and/or disadvantages of service to the Cornman Tweedy property by an integrated water and wastewater utility versus separate stand-alone utilities, Mr. Schneider: (i) presents Arizona Water Company's plans for recharging Central Arizona Project ("CAP") water to reduce groundwater mining; (ii) offers a relatively recent Memorandum of Understanding between AWC and PERC Water Corporation as a solitary demonstration that AWC intends to provide wastewater services to developments, if there is a need; (iii) offers two reports as evidence that AWC has made some planning efforts to deliver effluent; (iv) misrepresents by understating the impact and importance of the reclaimed water recharge done by utilities owned and operated by members of the Robson family; (v) presents misguided representations of the difficulty of recharging reclaimed water successfully; and (vi) misrepresents my opinion and Robson's opinion regarding the importance of reclaimed water to the people of Arizona. I will address these items in my rejoinder testimony.

Q. DID YOU STATE IN YOUR REBUTTAL TESTIMONY THAT THE CASA GRANDE AND COOLIDGE SYSTEMS ARE NOT CONNECTED?[1]

A. No, I did not. I stated in a footnote on page 2 of my July 18, 2014, rebuttal testimony that the documents I reviewed were not clear and that a data request would be used to resolve the discrepancy. I am pleased that Arizona Water Company has added a 16" water line to interconnect its two systems and improve reliability. However, none of this (nor the long discussion in Mr. Schneider's testimony on system-wide water system planning) addresses Cornman Tweedy's desire that its property be served by an integrated water and wastewater provider; none of this changes the fact that Cornman Tweedy does not want its property

[1] Surrebuttal Testimony of Fredrick K. Schneider (Hearing on Remand – Phase 2) at 4, lines 6-9.

included in AWC's CC&N; and none of this changes the fact that there is no need or necessity for water service at the Cornman Tweedy property now or for the foreseeable future.

Q. MR. SCHNEIDER STATES AT PAGE 5, LINES 10-12, OF HIS SURREBUTTAL TESTIMONY THAT IT IS AWC'S LONG-STANDING POLICY "TO PROVIDE WASTEWATER SERVICE IN THOSE AREAS WHERE IT PROVIDES WATER SERVICE AND WHERE THERE IS NO EXISTING WASTEWATER PROVIDER ALREADY ESTABLISHED OR CERTIFICATED AND THERE IS A NEED FOR SUCH SERVICE." HAS AWC SHOWN AN INTEREST IN PROVIDING INTEGRATED WATER AND WASTEWATER SERVICES IN PINAL COUNTY?

A. No. Although it may be a "long-standing" policy of AWC to provide wastewater service where no wastewater provider already exists, I find it very telling that AWC has not found the opportunity to provide wastewater service anywhere in its service territory. While Mr. Schneider offers up a fairly recent Memorandum of Understanding ("MOU") between AWC and PERC Water Corporation which states that the companies will work cooperatively on unspecified future projects, this does not make AWC an integrated water and wastewater provider.

Also, I searched AWC's website and could not find any place where the company states that it can provide wastewater services. Rather, it states on the home page that "[t]he Company exists as an Arizona corporation ... furnishing domestic, commercial, and industrial water service to customers."[2] I would add that I could find no mention on AWC's website of the MOU signed with PERC Water Corporation. Thus, there appears to be no current mechanism to inform potential customers about AWC's professed willingness to provide wastewater services as an integrated service provider. I believe that actions speak louder than words.

[2] http://azwater.com/index.html visited January 31, 2016.

Q. AFTER A LONG DISCUSSION BY MR. SCHNEIDER BEGINNING ON PAGE 6, LINE 12, OF HIS SURREBUTTAL TESTIMONY REGARDING AWC'S PLANS TO RECHARGE CAP WATER, MR. SCHNEIDER STATES "AND THIS IS CONTRARY TO MR. GOLDMAN'S REBUTTAL TESTIMONY." DOES THIS STATEMENT REPRESENT YOUR TESTIMONY OR YOUR VIEWS ON RECHARGING CAP WATER?

A. No. My testimony supports utility service for the Cornman Tweedy property by an integrated water and wastewater provider. I did state that removing less than 1% of the current AWC service area (*i.e.*, the Cornman Tweedy property) would have no impact on the reliability and efficiency of water service to the area. I still maintain this is true and the Surrebuttal Testimony of Mr. Schneider, in fact, supports my statement. Figure 3 on page 11 of Mr. Schneider's rebuttal testimony shows that in 2020, less than 60% of the Pinal Valley Service Area will receive CAP water. Thus, the AWC recharge program would simply not be impacted by removing the Cornman Tweedy property. Conservation of groundwater, on the other hand, would clearly be enhanced by allowing the Cornman Tweedy property to be served by an integrated water and wastewater provider.

Q. WHY DO YOU BELIEVE THAT CONSERVATION OF GROUNDWATER WOULD BE ENHANCED IF THE CORNMAN TWEEDY PROPERTY IS SERVED BY AN INTEGRATED WATER AND WASTEWATER PROVIDER?

A. An integrated provider does not have to worry about competition in the sale of its effluent from a water company supplying potable water to the same area. For example, if AWC constructs the potable water system to serve the Cornman Tweedy property, it is unlikely that the wastewater provider would undertake the financial risk of constructing an effluent delivery system to serve the same area. The water supplied by AWC would be competition to the use of effluent. An integrated provider, however, does not view the sale of potable water as

competition. An integrated provider understands the necessity of finding the most beneficial use of the effluent that continuously discharges from its treatment plants. Thus, a utility which provides both water and wastewater services has various tools at its disposal to manage its business so that there is a market for the effluent.

Q. MR. SCHNEIDER TAKES ISSUE WITH THE STATEMENT IN YOUR REBUTTAL TESTIMONY THAT "[YOU] DON'T SEE THAT AWC HAS DONE ANYTHING TO PLAN FOR THE DELIVERY OF EFFLUENT IN ITS PINAL VALLEY PLANNING AREA."[3] HOW DO YOU RESPOND?

A. I stand by my statement. An integrated utility that provides water and wastewater services includes reclaimed water distribution lines in its planning. It's not an afterthought or a retrofit. This is demonstrated by the planning of Picacho Water Company and Picacho Sewer Company. Purple pipe for reclaimed water delivery is installed at the same time potable water lines are installed. This planning optimizes the utilization of effluent in the service area and preserves groundwater for its highest and best uses.

In his Direct Testimony (Hearing on Remand-Phase 2), Mr. Schneider includes Exhibit FKS-9 which is the Copper Mountain Ranch Reclaimed Water Masterplan dated September 21, 2012, (sealed by Mr. Schneider) as an example of the reclaimed water planning work done by AWC. The report starts with the statement "As part of the application requirements the Arizona Corporation Commission … requires the Company to describe any plans for reclaimed water use within the CCN extension area."[4] The report contains an estimate of the demand for reclaimed water within the 13,000 residential unit/3,500-acre project which includes large turfed areas, recreation centers and one 18-hole golf course. The report then develops an estimated cost of $7.8 million for infrastructure

[3] Surrebuttal Testimony of Fredrick K. Schneider (Hearing on Remand – Phase 2) at 15, lines 10-13.
[4] Direct Testimony of Frederick K. Schneider (Hearing on Remand-Phase 2), Exhibit FKS-9 at page 3.

which includes distribution lines (ductile iron pipe, incidentally, and not purple pipe) and two booster pump stations. The report concludes that "[b]ased on this analysis, the Company recommends constructing a reclaimed water system for irrigating the turf areas and golf course within CMR."[5]

Copper Mountain Ranch, the development addressed in the report, is a Planned Area Development which was approved by the City of Casa Grande. However, there is no discussion in AWC's report about whether the City of Casa Grande will require the reclaimed water distribution system to be built, who will pay for construction of the system, how it will be operated, how customers will be charged for the system, and most importantly, how customers will choose the water source for their irrigation needs. Thus, I question whether the report provides a roadmap on how a reclaimed water system will be implemented by AWC or is simply an exercise to meet an ACC requirement. I note also that there is no mention made in Mr. Schneider's testimony of any design work or construction underway to implement this plan at Copper Mountain Ranch.

Q. DO YOU AGREE WITH MR. SCHNEIDER'S CHARACTERIZATION OF YOUR VIEWS THAT DEVELOPERS TYPICALLY SEE EFFLUENT AS A "PAIN TO DEAL WITH?"[6]

A. No, that is a clear mischaracterization of my view, and may be reflective of the fact that AWC does not understand the integration of water and wastewater services because it has always been a water-only utility. Throughout my career, I have always viewed effluent as a valuable resource and not a liability, a view incidentally that is shared by Robson and the utilities that are operated by members of the Robson family. My first engineering job was in Israel where I learned how treated effluent could extend limited water resources. I later worked with cities, towns, Indian communities and developers to maximize the usage of

[5] *Id.* at page 7.
[6] Surrebuttal Testimony of Frederick K. Schneider (Hearing on Remand-Phase 2) at 15, lines 23-24.

effluent within their jurisdictions and properties. My work with Pima Utility Company is a great example. Twenty years ago, there were operational problems at the wastewater treatment plant that served Sun Lakes, but working with integrated Pima Utility we developed a plan to recharge reclaimed water in the winter for use during the summer. In effect, we used the aquifer as our storage reservoir. This required building a new wastewater treatment plant that generated aquifer-quality effluent, reclaimed water distribution systems, and recharge and recovery wells. This reclaimed water management system pioneered by Robson created a very valuable asset for Pima Utility and its customers, and it became an innovative model which has often been emulated by other Robson utilities, cities and other integrated utilities. I am very proud of this truly innovative project.

Obviously, this model is dependent upon the well-planned integration of water and wastewater services. The management and beneficial use of effluent is much more difficult in the case of separate water and wastewater providers, notwithstanding AWC's claims that the benefits of integration can be achieved through collaborative arrangements.

Q. DOES MR. SCHNEIDER MISREPRESENT YOUR COMMENTS REGARDING WASTEWATER PLANNING FOR THE CORNMAN TWEEDY PROPERTY?

A. Yes. My comments were related to Mr. Schneider's Direct Testimony (Hearing on Remand-Phase 2) at page 14, lines 10-14, and page 17, lines 1-10, on how AWC would provide wastewater service to the Cornman Tweedy property. His testimony leaves the impression that an agreement with an entity like PERC Corporation is all that is necessary to integrate water and wastewater services. In my view, the treatment and management of the wastewater would be much more complicated and expensive if provided by an AWC-PERC collaboration than if done by Picacho Sewer Company working in integration with Picacho Water Company. These impacts were apparently not considered by Mr. Schneider and

misrepresent the reality of providing a separate and isolated wastewater management system for the Cornman Tweedy property.

Q. DO YOU AGREE WITH THE STATEMENT ON PAGE 16, LINE 14, OF MR. SCHEIDER'S SURREBUTTAL TESTIMONY THAT "MR. GOLDMAN AND ROBSON PLACE LITTLE VALUE ON RECLAIMED WATER?"

A. Definitely not. The basis of this statement was that an integrated utility can implement tariffs (with prior Commission approval of course) that could promote the use of effluent to manage the effluent even though it displaces the sale of potable water. A stand-alone water company that delivers effluent on behalf of the wastewater utility has little incentive to sell effluent since it would reduce its potable water sales.

I would also like to comment on the implication in his testimony regarding me and the utilities that are owned and operated by members of the Robson family. I wish to make it clear that our views on the use of effluent are vastly different than Mr. Schneider's view, and apparently that of Arizona Water Company. Effluent is a very important resource in an arid climate such as Arizona generally and Pinal County specifically. The future of our state depends upon our ability to maximize the utilization of our water resources, including effluent, and as engineers and utility companies we have a duty to serve the people of Arizona by promoting the recharge and reuse of effluent to the greatest extent possible. My personal career is full of examples of how innovative management of effluent has enhanced the availability of water resources and helped communities. The utilities owned and operated by members of the Robson family are excellent examples of maximizing effluent to benefit the communities served.

Q. DO YOU AGREE WITH MESSRS. SCHNEIDER AND GARFIELD THAT ROBSON'S USE OF RECHARGE CREDITS IS NOT IN THE BEST INTEREST OF CUSTOMERS OR THE BEST INTEREST OF WATER CHALLENGED AREAS?[7]

A. No. Recharging effluent is hydrologically beneficial to the groundwater regardless of the timing of the use of recharge storage credits. A review of rising well water depth hydrographs for three wells in the Sun Lakes area demonstrates the positive impact of recharge by Pima Utility Company carried out since the mid-90's and the City of Chandler. Attached hereto as Exhibit FEG-1 are hydrographs and maps from the Arizona Department of Water Resources for the referenced wells.

Mr. Schneider states at page 16, lines 4-6, of his surrebuttal testimony that "Robson's use of mined groundwater where it could offset its mined groundwater use with recharged effluent shows Robson's mismanagement of water resources in a water challenged area." However, this statement makes no sense. Consider Mr. Garfield's Surrebuttal Testimony at page 6, lines 7-10, where he states that Pima Utility Company's supply of mined water to the golf courses south of Riggs Road instead of recovered effluent was poor water management. This statement is a hydrological red herring. Every drop of effluent generated by the Pima Utility Company wastewater treatment plant is either used instead of mined groundwater or recharged to the aquifer. There is no way Pima Utility Company can increase the amount recharged. Using or not using storage credits has no effect on the impact of recharge on the aquifer. Whether water is pumped from a well using effluent recharge credits or not, it is still pumped from the aquifer. The net impact on the groundwater of the recharge and well pumping is the same.

[7] Surrebuttal Testimony of Frederick K. Schneider (Hearing on Remand-Phase 2) at 16, lines 4-8, and Surrebuttal Testimony of William M. Garfield (Hearing on Remand-Phase II) at 6, lines 5-15.

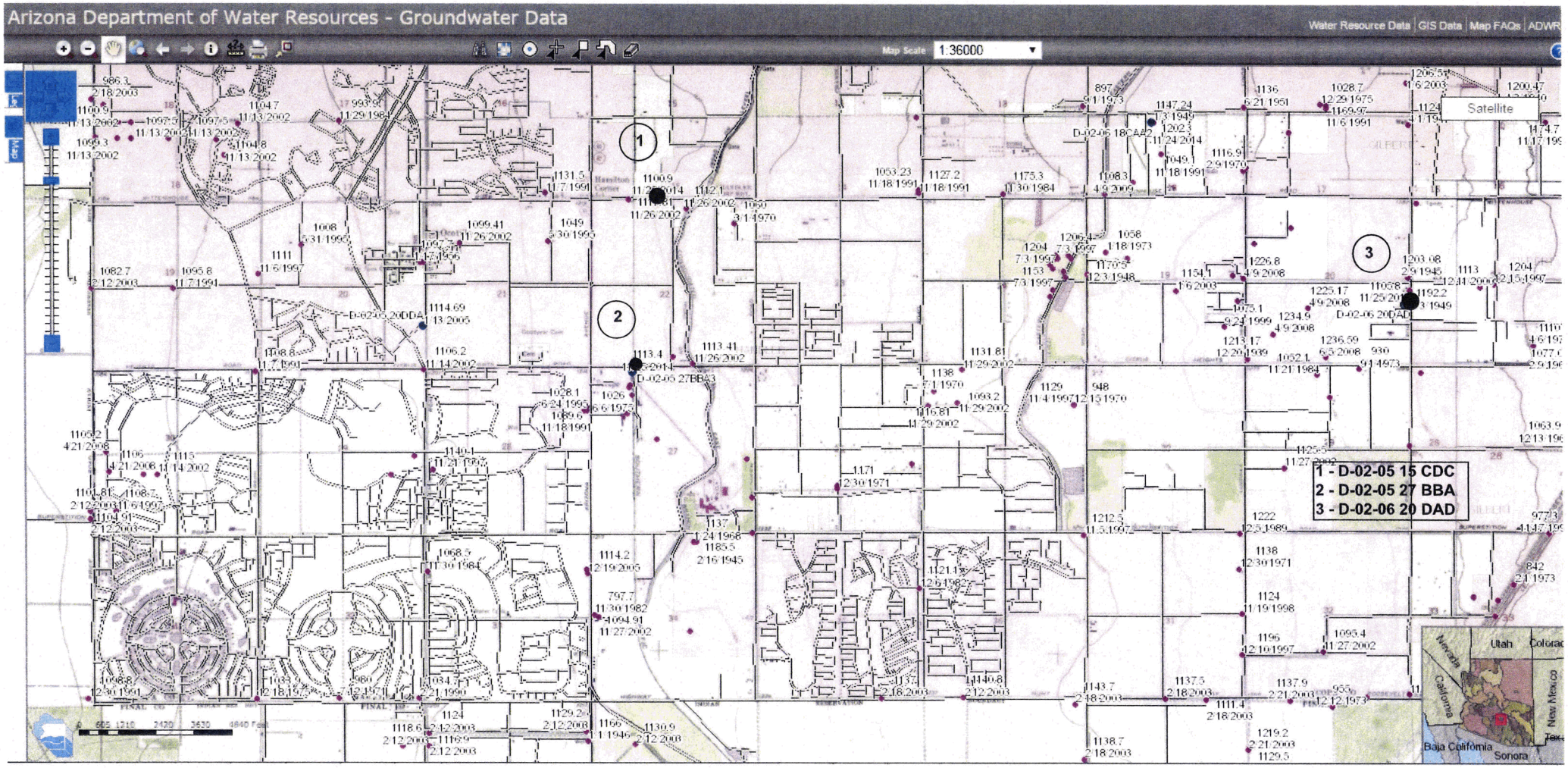
Q. DO YOU AGREE WITH MR. SCHNEIDER'S STATEMENT AT PAGE 16, LINES 21-23, OF HIS SURREBUTTAL TESTIMONY THAT RECHARGING EFFLUENT IS NOT MORE DIFFICULT THAN RECHARGING CAP WATER?

A. No. Mr. Schneider is incorrect. It is much more difficult to recharge effluent than CAP water. Disinfected effluent, although free of coliform bacteria, is abundant with facultative bacteria (able to grow in environments with and without the presence of dissolved oxygen) and anaerobic bacteria (able to grow in oxygen deficient environments) which use dissolved organics in the effluent and metals in the soil to grow and to form a polysaccharide coating on the soil particles resulting in clogging. The coating protects the bacteria and is difficult to remove. Thus, the issue of clogging makes it much more difficult and expensive to recharge effluent than CAP water.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT FEG-1


Arizona Department of Water Resources - Groundwater Data
Water Resource Data | GIS Data | Map FAQs | ADWR
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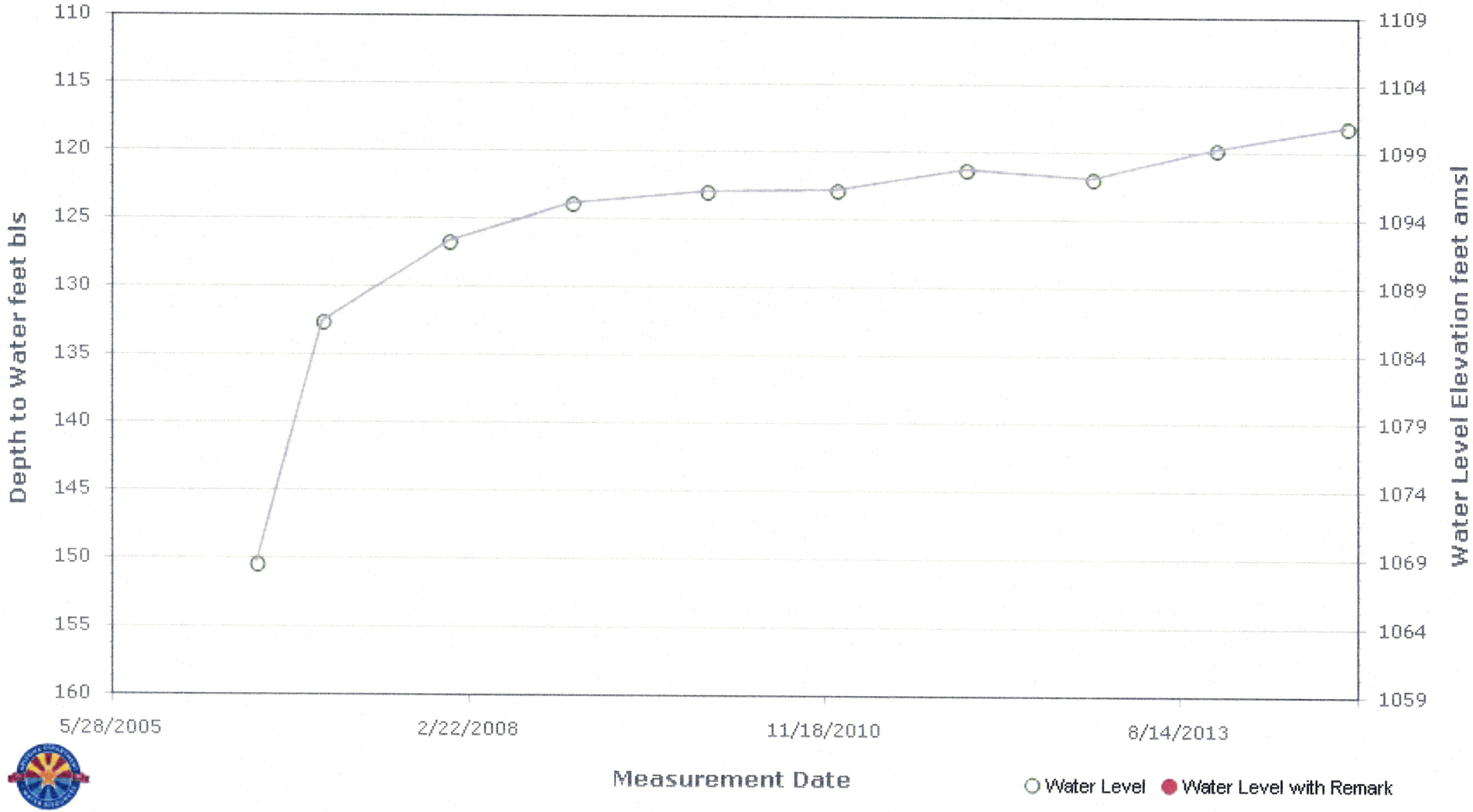
1 - D-02-05 15 CDC
2 - D-02-05 27 BBA
3 - D-02-06 20 DAD
Nevada
Utah
California
Baja California
Sonora

Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia.(in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
D-02-05 15CDC	331452111500201	085100	33° 14' 52.2"	111° 50' 2.2"	1219	DOMESTIC	650	8	8/11/1980	11/25/2014	118.1	1100.9



GWSI is ADWR's technical database of well locations, construction data, and water levels

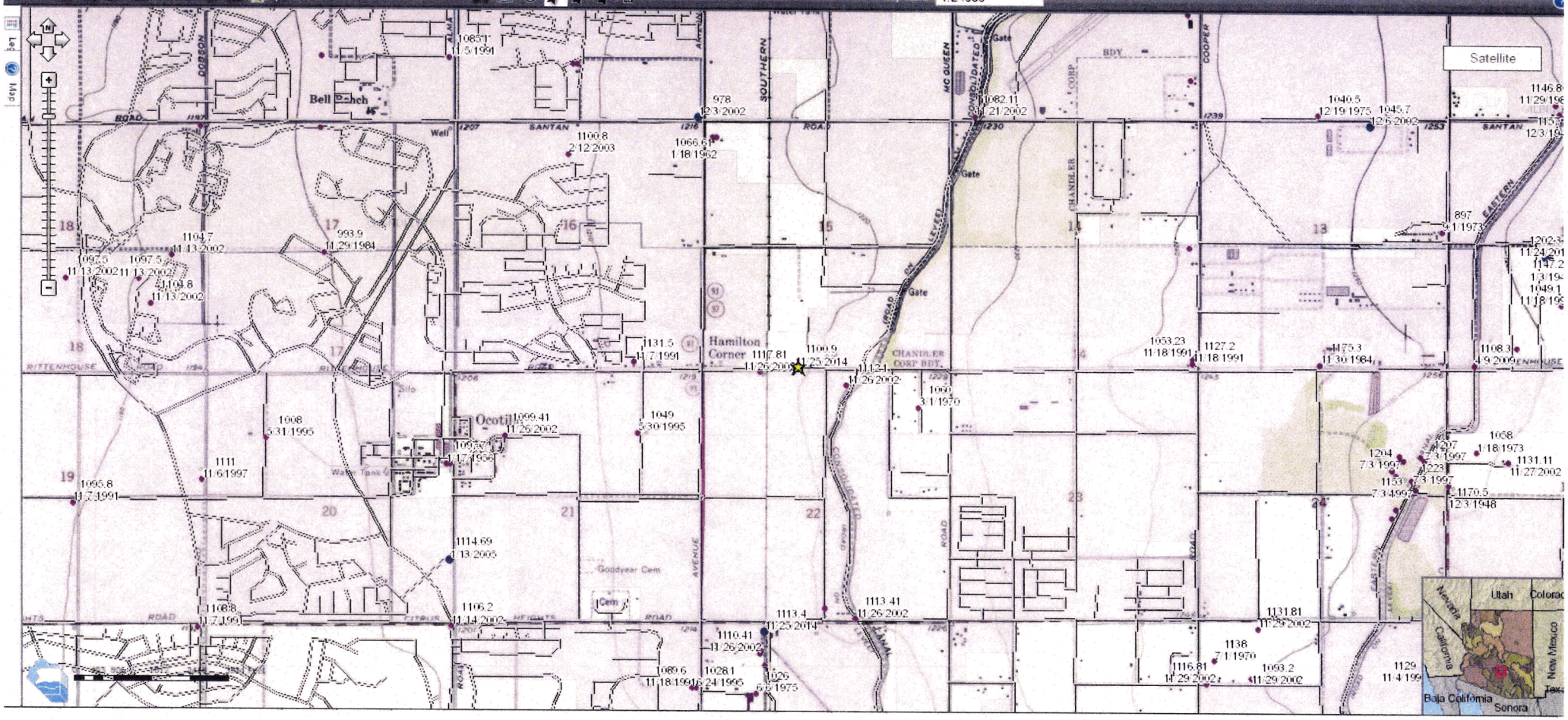
Created on 1/26/2016

Arizona Department of Water Resources - Groundwater Data

Water Resource Data | GIS Data | Map FAQs | ADWR

Map Scale 1:24000

Satellite

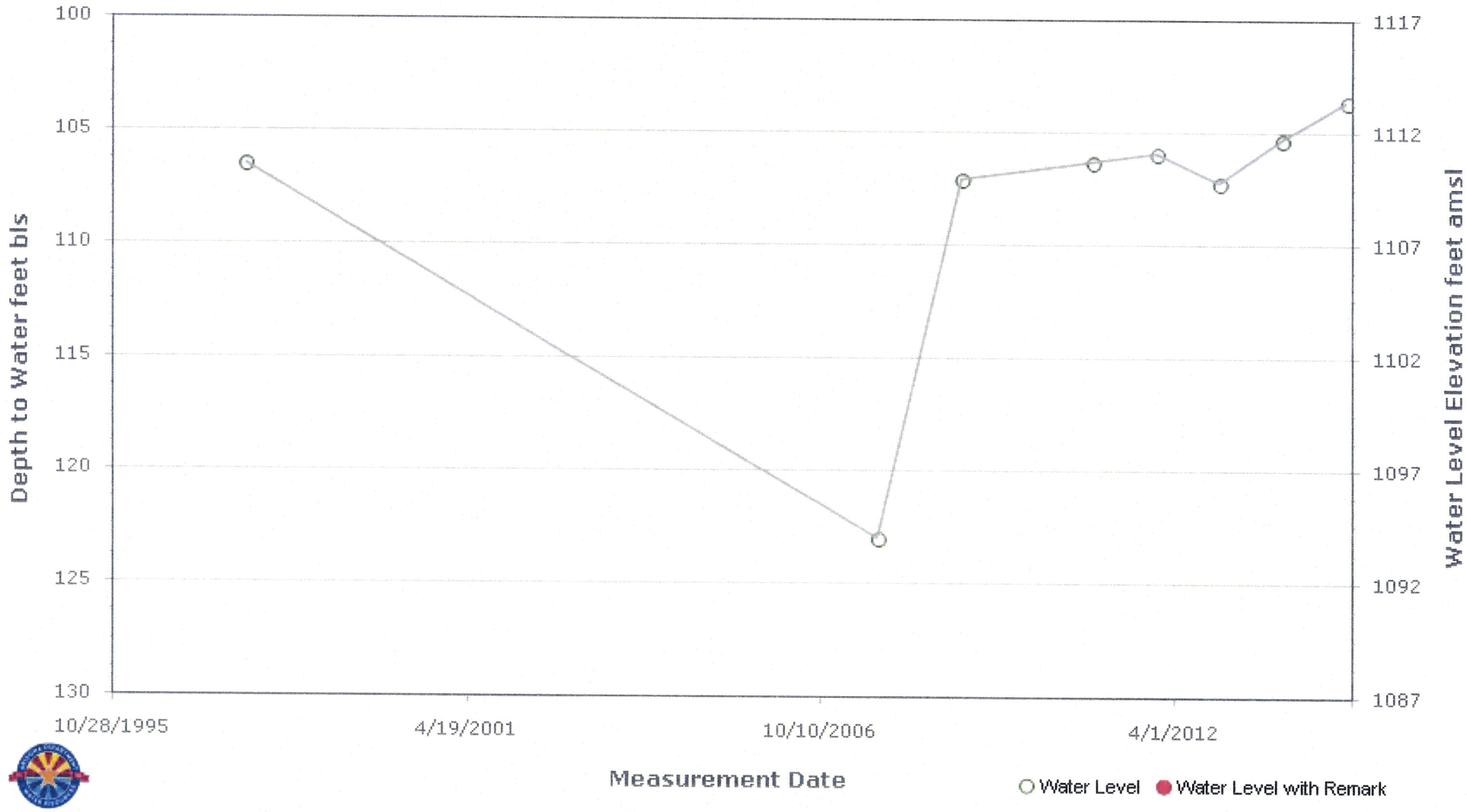


Well Info | Map | Reset Graph | Auto Site Hydrograph | Email | Help

Set x | Set y | Measurement Rem

Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia.(in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
D-02-05 27BBA3	331357111501001	626097	33° 13' 57.0"	111° 50' 10.0"	1217	INDUSTRIAL		12.89		11/25/2014	103.6	1113.4



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Arizona Department of Water Resources - Groundwater Data

Water Resource Data | GIS Data | Map FAQs | ADW

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Satellite

Hamilton Corner

Ocotil

CHANDLER CORP BDY.

Goodyear Cem

Silo

Water Tank

Gate

Well

Cem

RITTENHOUSE ROAD

HEIGHTS ROAD

CITRUS HEIGHTS ROAD

SOUTHERN AVENUE

ARIZONA AVENUE

CONSOLIDATED CANAL

EASTERN CANAL

MC QUEEN ROAD

Utah

Colora

Nevada

California

New Mexico

Baja California

Sonora

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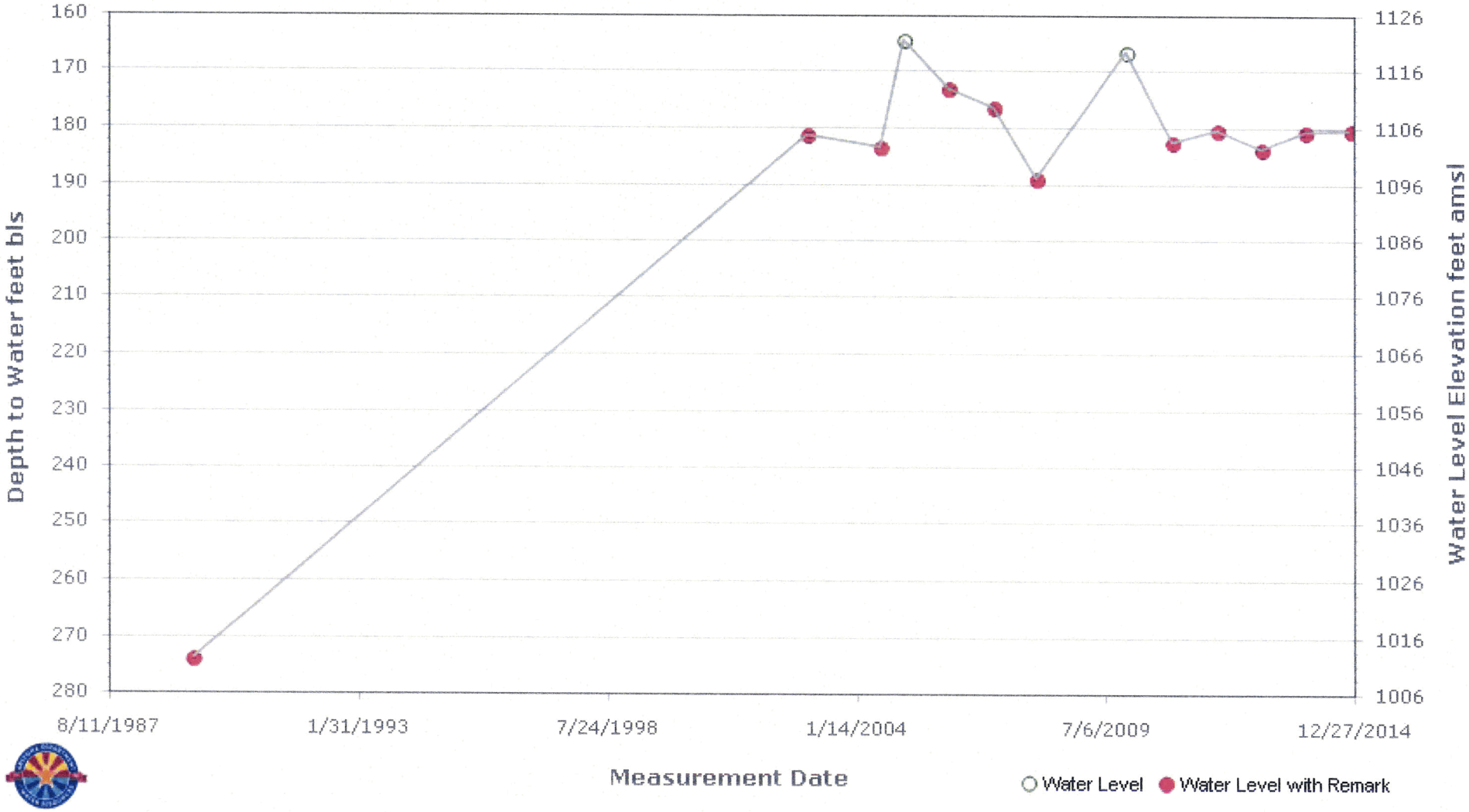
Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia.(in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
D-02-06 20DAD	331421111451701	625145	33° 14' 20.6"	111° 45' 19.2"	1286	DOMESTIC				12/11/2009	166.5	1119.5



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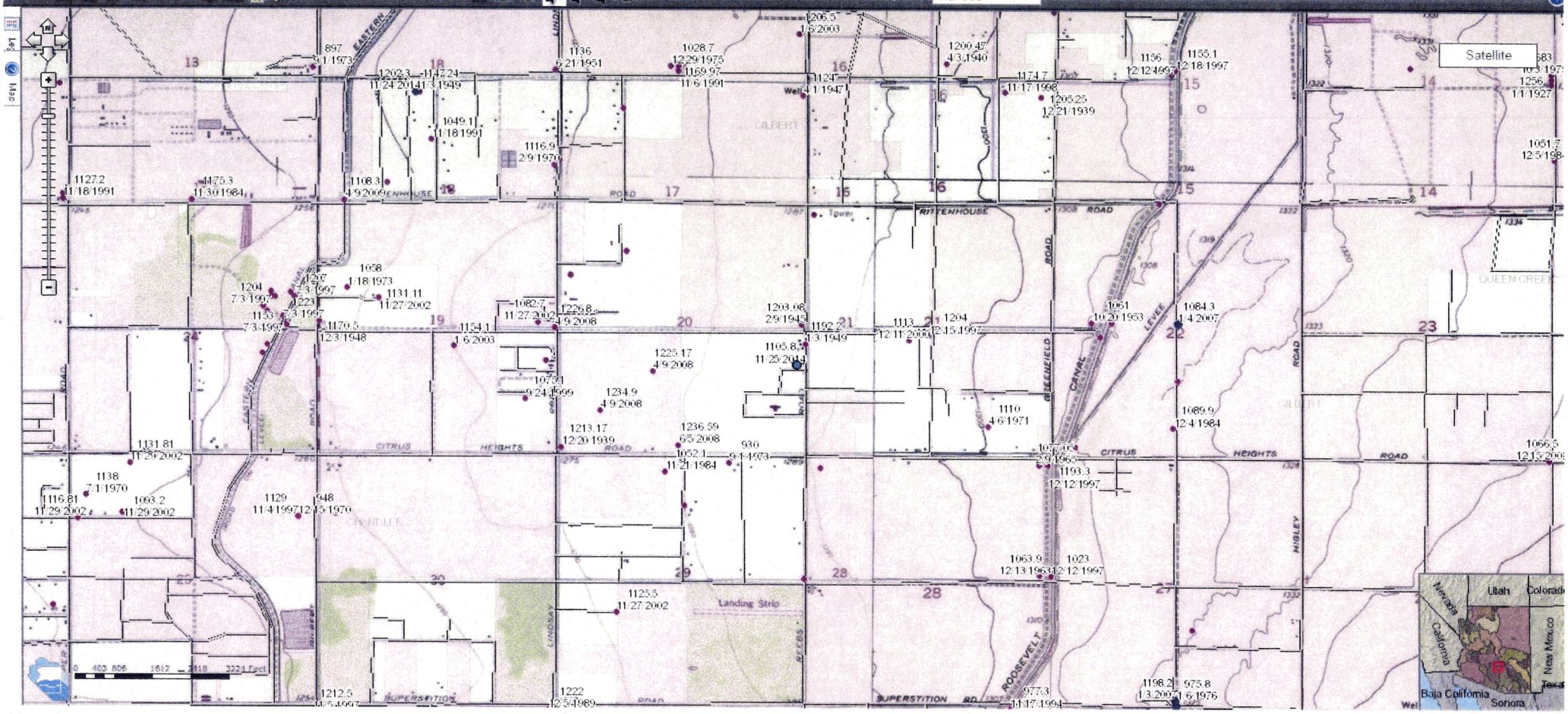
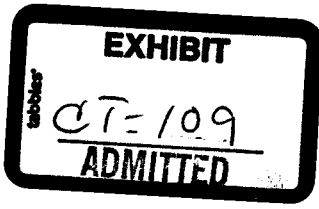


BEFORE THE ARIZONA CORPORATION COMMISSION



BOB STUMP
Chairman
GARY PIERCE
Commissioner
BRENDA BURNS
Commissioner
BOB BURNS
Commissioner
SUSAN BITTER SMITH
Commissioner

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY AT CASA GRANDE AND PINAL COUNTY, ARIZONA.	)	DOCKET NO. W-01445A-03-0559

REBUTTAL TESTIMONY

OF

ERNEST G. JOHNSON SR., ESQ.

(REMAND PROCEEDING II)

ON BEHALF OF CORNMAN TWEEDY 560, LLC

REDACTED IN ACCORDANCE WITH THE PROCEDURAL ORDER DATED DECEMBER 9, 2015

JULY 18, 2014

TABLE OF CONTENTS

Page

I. INTRODUCTION 1

II. THE PURPOSE AND SCOPE OF THIS REMAND PROCEEDING....4

III. COMMENTS REGARDING MR. WALKERS' PRE-FILED TESTIMONY 6

IV. THIS CASE IS FACTUALLY AND PROCEDURALLY DIFFERENT FROM THE CC&N DELETION CASES CITED BY MR. WALKER IN HIS DIRECT TESTIMONY....9

V. PUBLIC INTEREST IS THE STANDARD OF REVIEW....12

VI. JAMES P. PAUL DOES NOT CONTROL IN THIS CASE....15

VII. REMOVING THE CORNMAN TWEEDY PROPERTY FROM AWC's CC&N WILL NOT NEGATIVELY IMPACT OTHER UTILITIES 20

VIII. RESPONSE TO AWC WITNESS, RITA MAGUIRE....25

IX. RECOMMENDED REGULATORY ANALYTICAL FRAMEWORK....25

X. CONCLUSION....29

EXECUTIVE SUMMARY
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-03-0559

My rebuttal testimony takes exception with the analysis, issues and arguments raised in the direct testimony of Arizona Water Company witness Paul Walker. I conclude that Mr. Walkers' testimony utilizes a premise which I believe is unsuitable in addressing the question identified by the Arizona Corporation Commission ("Commission") in the February 24, 2014, Procedural Order issued by Judge Nodes. Further, in my opinion, because the arguments posed by Mr. Walker's testimony are based upon an unsuitable premise, I further conclude that his arguments are not responsive to the Commission's examination of the question posed in the procedural order. I state my view that several primary assertions or conclusions offered by Mr. Walker are not supported by the facts in this case. Additionally, I conclude that the testimony offered by Mr. Walker appears more focused on arguing in favor of regulatory entitlements than examining the public interest issues that are always relevant, and in my view, paramount, in regulatory proceedings. My testimony offers the Commission a regulatory framework to assist in its analysis of the specific facts and circumstances present in this case. I conclude, based upon the specific facts of this case, as follows:

- That stand-alone water service would not constitute reasonable service where quality integrated service is an option.
- That integrated water and wastewater service would constitute reasonable service.
- That the broad public interest supports excluding the Cornman Tweedy property from Arizona Water Company's CC&N.
- That the *James P. Paul* case is not controlling under the facts of this case.
- That "reasonable" service must be determined on a case-by-case basis.

I further conclude that this proceeding is not simply about the model used to provision service or about whom the provider may be; the bottom line must be about meeting the customer's needs and expectations at the lowest reasonable cost and utilizing a scarce resource in the most efficient manner consistent with the broad public interest. Finally, I address several assertions made by Arizona Water Company witness Rita Maguire and express my opinion that the Robson utilities are well-managed and very reliable utility service providers.

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Ernest G. Johnson Sr., 762 W. Hemlock Way, Chandler, Arizona 85248.

Q. By whom are you employed and in what capacity?

A. I am employed by STRATEGUS as Principal Consultant.

Q. Could you please describe STRATEGUS?

A. Yes, STRATEGUS is a strategic thinking and regulatory consulting firm providing client assistance in strategic thinking, regulatory communications and expert testimony in utility regulatory matters.

Q. How long have you been employed by STRATEGUS?

A. I founded STRATEGUS in 2013 after serving over 25 years as a utility regulator. I have over 25 years of public utility regulatory experience spanning all aspects of water, sewer, electric, natural gas and telecommunication services.

Q. Prior to founding STRATEGUS, by whom were you employed and in what capacity?

A. Prior to founding STRATEGUS, I was employed by the Arizona Corporation Commission ("ACC" or "Commission") from October 2001 until early 2013. I served as Director of the Utilities Division until I was selected as Executive Director in August 2009, a title that I held until the end of 2012.

Q. Please describe your responsibilities as Utilities Division Director.

A. I was responsible for the day-to-day operations of the Utilities Division, including policy development, case strategy, and overall Division management.

Q. Please describe your responsibilities as Executive Director.

A. As Executive Director, I was responsible for the day-to-day operations of all agency divisions at the Commission.

Q. Please summarize your educational background and other professional experience.

A. In 1979 and 1982, respectively, I earned Bachelor of Science and Juris Doctorate degrees, both from the University of Oklahoma. In December 1986, I began my regulatory career at the Oklahoma Corporation Commission serving as Staff Attorney, Deputy General Counsel and Utilities Director. In 1993, I was named acting Utilities Director and served in that position until mid-1994. I served as the permanent Utilities Director from mid-1994 until October 2001 when I joined the ACC staff as Utilities Division Director. I have served on numerous committees including the National Association of Regulatory Commissioners sub-committees focusing on energy and telecommunications issues. I have also attended seminars and training events focusing on issues facing the water industry.

Q. You stated that you have been involved in the regulation of public utilities since 1986, is that correct?

A. Yes, that is correct.

Q. Could you please estimate the approximate number of utility regulatory proceedings that you have participated in since 1986?

A. I would be in the hundreds.

Q. Could you please elaborate on your areas of experience and expertise in utility regulation?

A. Yes, my regulatory experience covers most areas of utility regulation including water, electric, natural gas, telecommunications, cotton gins and pipeline safety.

Q. During your tenure as a regulator, were you involved in both federal and state regulatory proceedings?

A. Yes, I have been involved in federal, state and regional regulatory proceedings addressing virtually all aspects of utility regulation.

Q. Have you participated in utility regulatory policy formulation during your regulatory career?

A. Yes. I have been involved in utility regulatory policy discussions and policy formulation for over 25 years at the federal, regional and state levels concerning water, electric, natural gas and telecommunications matters.

Q. You stated that you served as a utility attorney, utilities division director and executive director, is that correct?

A. Yes, that is correct.

Q. Did you ever testify in utility regulatory proceeding in any of those capacities?

A. Yes. As Utilities Division Director, I participated in many regulatory proceedings and offered testimony before the Oklahoma Corporation Commission, the Oklahoma State Legislature, and the ACC. Additionally, during my career as a regulator I participated in regulatory panels and made presentations concerning regulation and regulatory issues at both the federal and state level.

Q. On whose behalf are you testifying today?

A. I am testifying on behalf of Cornman Tweedy 560, LLC.

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

A. The purpose of my testimony is to respond to certain statements in the Direct Testimony of Mr. Paul Walker, (Hearing on Remand – Phase 2) and the Direct Testimony of Rita P. Maguire who submitted testimony on behalf of Arizona Water Company ("AWC") on May 30, 2014.

Q. Have you reviewed the Direct Testimony of Mr. Walker and Ms. Maguire?

A. Yes. I have also reviewed the other pre-filed testimony that has been submitted in this docket., as well as much of the contents of the file in this case on the Commission's eDocket.

II. PURPOSE AND SCOPE OF THIS REMAND PROCEEDING.

Q. What is the purpose and scope of this remand proceeding?

A. As described in Decision 69722, the purpose of this remand proceeding is to consider "whether Arizona Water should continue to hold a CC&N for the Cornman extension area at this time."[1] [redacted] Accordingly, the Commission directed that "[t]he proceeding on remand should be broad in scope so that

[1] Decision 69722 at 19, FOF 101.
[redacted]

the Commission may develop a record to consider the overall public interest underlying service to the Cornman property...."[3]

Q. Did the Commission provide any additional direction regarding the scope of these remand proceedings?

A. Yes. At its February 1, 2011, Open Meeting, the Commission directed further proceedings to determine "whether a public service corporation, like Arizona Water, in this water challenged area and under the circumstances presented in this case, is providing reasonable service if it is not able or not willing to provide integrated water and wastewater services."[4]

Q. Mr. Johnson, based upon your review of the record in this docket, including the pre-filed testimony and legal briefs of the parties, do you believe that Arizona Water Company can provide reasonable service to the Cornman Tweedy property under the circumstances presented in this case?

A. No. In consideration of all of the facts and circumstances of this case, I do not believe that it is in the broad public interest for AWC to hold a CC&N to provide water service to the Cornman Tweedy property. My opinion is based upon, and limited to, the facts and circumstances of this case, including:

- There is no current need for water service to the Cornman Tweedy property;
- Cornman Tweedy has not asked for its property to be included in AWC's CC&N;
- Cornman Tweedy has provided many reasons why it does not want its property included in AWC's CC&N; and

[3] *Id.* at 20, FOF 104.
[4] See Procedural Order dated February 10, 2011 at 2, lines 7-10.

- Permitting AWC to hold the CC&N for the Cornman Tweedy property will not allow the integration of water and wastewater utility services.

Q. Mr. Johnson, your testimony is based upon your 25 years as a utility regulator and is presented from a regulatory policy perspective, correct?

A. Yes, that is correct.

III. COMMENTS REGARDING MR. WALKER'S PRE-FILED TESTIMONY.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] Because the procedural history and facts of this case are so very unique, and unprecedented in my experience, a description of the case does not lend itself to such a general characterization as contained in Mr. Walker's testimony.

IV. THIS CASE IS FACTUALLY AND PROCEDURALLY DIFFERENT FROM THE CC&N DELETION CASES CITED BY MR. WALKER IN HIS DIRECT TESTIMONY.

Q. In his direct testimony, Mr. Walker discusses cases where the commission has deleted CC&Ns.[11] Are the facts and circumstances of the cases cited by Mr. Walker comparable to the facts and circumstances of this case?

A. No, not at all. Mr. Walker discusses two well-known cases where the certificated water providers failed abysmally at providing safe, adequate and reliable water service to their customers. These cases involved Carl Harvey d/b/a Golden Corridor Water Company (Docket W-024974A-06-0580) and American Realty & Mortgage Co., Inc., d/b/a Hacienda Acres Water System (Docket W-02258A-07-0470). In both cases, the Commission cancelled the companies' respective CC&Ns and appointed interim managers because the companies' conduct endangered the public health and safety of their customers. A third, well-known case cited by Mr. Walker involved a group of companies collectively referred to as the McLain systems located in Cochise County, Arizona.[12] While the Commission approved the sale and transfer of utility assets and cancellation of the corresponding CC&Ns with respect to the McLain water systems—as opposed

[11] *Id.* at 3, lines 17-19, and pp. 4-5.
[12] The McLain Systems include Miracle Valley Water Company, In., Cochise Water Co., Horseshoe Ranch Water Company, Crystal Water Company, Mustang Water Company, Coronado Estates Water Company and Sierra Sunset Water Company.

to revoking the CC&Ns—the systems had very serious problems which rendered them unable to provide safe, reliable and adequate water service to their customers and, in fact, was found by the Commission to be "a clear and present danger to the public health and safety."[13]

Q. Does this case present a situation where Arizona Water Company is unable or unwilling to provide safe, adequate and reliable water service to the Cornman Tweedy Property?

A. No. Cornman Tweedy has never asserted that AWC is unable to provide safe, adequate and reliable water service to the Cornman Tweedy property. To cast this case as an inquiry into the ability of AWC to provide safe, adequate and reliable water service misdirects the proper focus of this case and cynically foreordains the outcome. Rather, Cornman Tweedy has raised the following issues:

1. There is no need and necessity for water service on the Cornman Tweedy property as the owner has no plans to develop the property in the near term.[14]
2. Cornman Tweedy has not requested water service from AWC. In fact, since April 2005, Cornman Tweedy has been working to get its property excluded from AWC's CC&N. Before that, the Dermer Trust (to which Cornman Tweedy is a successor) began working to get its property excluded from AWC's CC&N in April, 2004.[15]
3. Cornman Tweedy does not want AWC to be its water provider for a variety of reasons, including:

[13] Decision 66241 (Dockets W-01646A-03-0601 *et al.*).
[14] Direct Testimony and Exhibits of Jim Poulos in the Remand Proceeding (January 4, 2008) at 10, lines 24-25.
[15] *Id.* at 13, lines 13-25.

- Cornman Tweedy would lose the opportunity to have integrated water and wastewater systems serving the property at the point in time that service is required.
- Service by AWC will necessitate the construction of separate water campuses to serve the north half of the property located within the CC&N of AWC and the south half of the property located within the CC&N of Picacho Water Company, thereby increasing costs to the ultimate developer which will be reflected in higher costs to customers.
- Cornman Tweedy would incur added costs in dealing with AWC that it would not incur dealing with Picacho Water Company.
- Cornman Tweedy would experience time delays in dealing with AWC that it would not experience dealing with Picacho Water Company.[16]

4. Where there is an option for a single water provider to serve an entire development, it would be reasonable for the Commission to opt for a single provider instead of splitting the development between two providers.[17]

5. Where there is an option for an integrated water and wastewater provider for a development, it would be reasonable for the Commission to opt for an integrated water and wastewater provider over stand-along water and wastewater providers.[18]

The issues in this case are clearly very different from the issues raised in the Golden Corridor Water Company, Hacienda Acres Water System, and McLain water system cases. In addition, none of the CC&Ns held by the companies cited by Mr. Walker were subject to a remand proceeding as in this case.

[16] *Id.* at 15-16.
[17] *Id.* at 9, lines 10-12.
[18] *Id.* at lines 13-16.

Q. Does Mr. Walker discuss other cases where the Commission has deleted the CC&N of a public service corporation?

A. Yes. Mr. Walker notes that the Commission has deleted CC&Ns in cases of condemnation by a municipality and in cases where a utility has requested a sale of assets. Of course, those circumstances are clearly not comparable to the facts and circumstances of this case.

Q. In his direct testimony, Mr. Walker states that he is not aware "of any case where the Commission has deleted a utility's CC&N on the grounds that it was not providing reasonable service because it only provided water or wastewater service, and not both, to a single area."[19] Are you aware of any such cases?

A. I am not aware of any case where the Commission has addressed the facts and circumstances that are presented in this case. [redacted]

[19] Direct Testimony of Paul Walker (Hearing on Remand – Phase 2) at 7, lines 3-8.

Q. As the Director of Utilities Divisions in Oklahoma and Arizona over a span of 20 years, did you develop an understanding of the public interest standard?

A. Yes. The public interest standard by its very definition requires consideration of the broad public interest in the decision-making process

[redacted]

[redacted]

[redacted]

[redacted]

Q. Do you believe the public interest supports the exclusion of the Cornman Tweedy property from AWC's CC&N based upon the facts and circumstances of this case?

A. Yes. An integrated water and wastewater provider does not treat the delivery of water and the treatment of wastewater as separate unrelated activities. Rather, an integrated water and wastewater provider recognizes that the delivery of water services is substantially interrelated with the provision of wastewater services. An integrated provider recognizes that the use of reclaimed water for turf facilities and recharge of the aquifer are critical to the long-term sustainable provision of water and wastewater services to utility customers.

I believe that integrated water and wastewater systems are essential in order to advance water sustainability in a water scare environment, and I have concerns about an area that is not served by an integrated provider. Stand-alone water companies such as AWC are largely unable to provide effluent for re-use on turfed areas such as parks, golf courses and ornamental water features, and they lack the ability to engage in effective groundwater management on the scale that is possessed by integrated water and wastewater providers. Such practices as the recharge of effluent and the direct use of effluent for turf irrigation and other non-potable purposes are central to the very notion of water sustainability.

Because AWC cannot provide efficient use of effluent, future customers within the Cornman Tweedy property will not be served in a manner that will promote water conservation to the greatest extent possible. Thus, in balancing the public interest, this fact along with the many other benefits of integrated utility services lead me to conclude that the Cornman Tweedy property should be excluded from AWC's CC&N.

Q. In the Direct Testimony of William M. Garfield (Hearing on Remand – Phase II), Mr. Garfield states that "Arizona Water Company is willing and able to provide water and wastewater service to the Cornman Tweedy property."[26] Does this statement surprise you?

A. Yes. In my experience at the Commission, AWC has generally used a different business model and, to my recollection, has always resisted providing wastewater service in Arizona. Additionally, AWC has opposed the efforts of others to distribute effluent within its service area as evidenced by the lawsuits AWC filed against the Town of Bisbee and the Town of Casa Grande.

VI. *JAMES P. PAUL* DOES NOT CONTROL IN THIS CASE.

[redacted]

[26] Direct Testimony of William M. Garfield (Hearing on Remand – Phase II) at 8, lines 9-10.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Q. Is there anything else that distinguishes this case from *James P. Paul*?

A. Yes. *James P. Paul* was decided more than 30 years ago in 1983. I believe stand-alone water and wastewater providers were largely the norm at that time. However, most of the larger utilities in Arizona now provide integrated water and wastewater services. EPCOR Water Arizona, Global Utilities, Liberty Utilities, Johnson Utilities and the majority of the

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[redacted]

Robson utilities are integrated providers, to name several. Moreover, it is my understanding that utilities formed to serve new developments are now typically formed as integrated water and wastewater providers. Woodruff Water Company and Woodruff Utility Company certificated in 2006 (Decision 68453)[30] and Perkins Mountain Water Company and Perkins Mountain Utility Company certificated in 2008 (Decision 70663)[31] are two recent examples. In addition, Southwest Environmental Utilities, L.L.C., filed an application in 2013 to provide integrated water and wastewater services for a new development in the Town of Florence.[32] AWC is very unique in that it is a large utility, which has persisted in the stand-alone water company model. The question of integration of water and wastewater services was not an issue and was not addressed in *James P. Paul*.

Q. Why do you believe integration of water and wastewater service appears to have become the norm?

A. There are several reasons. First, during my tenure as Utilities Division Director and then Executive Director, the Commission came to the settled view that integrated water and wastewater systems are necessary to advance water sustainability in water-scare regions of the state. Stand-alone water companies are largely unable to provide effluent for re-use on turfed areas such as parks, golf courses and ornamental water features, and they lack the ability to engage in effective groundwater management on the scale of the integrated water and wastewater providers. The recharge of effluent and the use of effluent for turf irrigation are central to water sustainability. The Commission has clearly expressed its preference for integrated water and wastewater providers. For example, in

[30] Docket Nos. W-04264A-04-0438 and SW-04265A-04-0439.
[31] Docket Nos. W-20380A-05-0490 and SW-20379A-05-0489.
[32] Docket No. WS-20878A-13-0065.

the cases of Woodruff Water Company and Woodruff Utility Company that I mentioned above, the Commission approved the CC&N application of Woodruff Water Company over a competing application for the same territory filed by AWC.[33] In that case, I submitted the Staff Report to the Commission in which Staff concluded as follows:

> The Commission has long supported financially viable, inter-connected utilities operating for long term compliance with the state's water policy goals. AWC is such a utility. <u>However, while Arizona Water provides substantial value as sophisticated interconnected potable water provider, AWC does not offer wastewater treatment services to the proposed community</u>.
>
> <u>Water Policy requires recognition of the value of appropriate treatment and use of wastewater in water scarce areas. Staff must base its recommendation on goals to ensure the long term viability and compliance of water and wastewater utilities. Staff supports regional planning for water and wastewater to ensure an economy of scale for both services. Staff recognizes integrated utilities provide enhanced services to work in conjunction with public policy goals of clean water, use of reclaimed water for turf facilities and recharge of the aquifer</u>.
>
> The Sandia property will extinguish grandfathered irrigation wells and obtain extinguishment credits for compliance with the groundwater regulations. On a going forward basis, Sandia will also produce effluent which could result in a recharge credit. <u>Unified water and wastewater utilities should be better suited to comply with groundwater management requirements by sharing customer information between divisions, recognizing groundwater credits for irrigation well retirement and ensuring reuse permits obtain maximum value</u>.[34]

In Decision 68453, the Commission approved Woodruff Water Company's request for a CC&N, finding that "[t]he benefits of developing and operating integrated water and wastewater utilities in this instance outweigh the economies imputed to AWC's larger size."[35]

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[33] Consolidated Docket Nos. W-04264A-04-0438, SW-04265A-04-0439 and W-01445A-04-0755.
[34] Staff Report dated March 3, 2005, from Ernest Johnson to Docket Control (Consolidated Docket Nos. W-04264A-04-0438, SW-04265A-04-0439 and W-01445A-04-0755) at 15 (emphasis added).
[35] Decision 68453 at 29, FOF 129.4.

Second, as explained in the testimony filed in this docket by Messrs. Goldman and Hendricks, integrated water and wastewater systems hold benefits beyond water conservation including cost savings, allowing for more effective design of systems for environmental compliance purposes, and facilitating customer convenience by allowing for joint billing and collection. I would add also that integrated water and wastewater providers can eliminate one of the major challenges of stand-alone sewer providers, which is dealing with customers who will not pay their sewer bills.

Third, there is a very practical reason. Wastewater service obviously includes the collection and treatment of wastewater from customers. However, the operator of a wastewater treatment plant must also manage the effluent which continuously discharges from the plant. Integrated utilities are better able to manage the effluent because they can coordinate the delivery and use of effluent with the delivery and use of potable water in ways which make the most beneficial use of both resources.

Q. Is there anything else that distinguishes this case from *James P. Paul*?

A. Yes. In *James P. Paul*, there was a demonstrated need for water service. The record shows that one month prior to the hearing in that case, the property owner informed the Paul Water Company of its anticipated water needs.[36] However, in the case of Cornman Tweedy, there is no need or necessity for water service. Additionally, Cornman Tweedy has expressed a desire that its property be served by an integrated provider. There was no such request by the landowner in *James P. Paul*.

[36] *James P. Paul*, 137 Ariz. at 430, 671 P.2d at 409.

VII. REMOVING THE CORNMAN TWEEDY PROPERTY FROM AWC'S CC&N WILL NOT NEGATIVELY IMPACT OTHER UTILITIES.

Q. Mr. Walker asserts that if the commission deletes the Cornman Tweedy Property from AWC's CC&N, "[S]uch a decision will alarm every water and wastewater utility in the state, the vast majority of which provide only one type of service."[37] Do you agree with this assertion?

A. No. Mr. Walker provides no factual support for his assertion. The Commission in Decision 69722 placed AWC on notice that the remand proceeding would be for the purpose of considering whether the Cornman property should be excluded from AWC's CC&N. On February 24, 2014, Judge Nodes issued a procedural order asking the parties to address the following question:

> Whether a public service corporation like Arizona Water in this water challenged area and under the circumstances presented in this case, is providing reasonable services if it is not able or not willing to provide integrated water and wastewater services.[38]

Despite the notice that has been provided in this docket, and despite Mr. Walker's associations with many of the larger water and wastewater utilities in this state, not a single water or wastewater utility has intervened in this proceeding. In my experience, water and wastewater utilities actively protect their interests when they are facing perceived financial harm or when their business interests are at risk. Thus, it is only logical to conclude that Mr. Walker's perspective is not shared by other water and wastewater utilities in the state.

Further, as I discussed above, most private utilities serving in the more populated growth areas of the state already provide integrated water and wastewater service. There has been substantial consolidation within the industry over the past decade with utilities

[37] Direct Testimony of Paul Walker (Hearing on Remand – Phase 2) at 7, lines 13-14.
[38] Procedural Order dated February 10, 2011 at 2, lines 6-10.

such as Epcor Water, Global Water and Liberty Utilities acquiring smaller stand-alone water and wastewater companies.[39] Thus, I do not believe that a decision to exclude the Cornman Tweedy property would cause alarm among the integrated providers such as Epcor Water Arizona, Global Utilities, Liberty Utilities, Johnson Utilities and the Robson utilities. In fact, these companies may even welcome a decision that would advance the integration of water and wastewater services. In addition, new applications for CC&N's to serve new developments now typically address both water and wastewater services, as in the cases of the Woodruff utilities, the Perkins Mountain utilities, and Southwest Environmental Utilities, to name a few.

[39] I would also note that there have been numerous acquisitions of stand-alone water and wastewater utilities by municipalities in Arizona.

[redacted]

Likewise, I do not believe that the Commission is setting policy by excluding the Cornman Tweedy property from AWC's CC&N because any such a decision will necessarily turn on the unique facts and circumstances of this case. That being said, I do believe the Commission has clearly expressed a preference in recent years for integrated water and wastewater utilities, and a decision to exclude the Cornman Tweedy property from AWC's CC&N would be consistent with that preference.

[redacted]

Q. Mr. Walker makes the following statement, at page 8 line 6 of his pre-filed direct testimony:

> **I believe deleting a CC&N because the regulator decided after the CC&N is granted that a utility should be "integrated" and provide some form of utility service is bad policy, increases investment risk and discourages investments by utilities, which will increase the cost of service that customers ultimately pay in utility rates.**

Do you agree with that statement?

A. No. First, I would note In Decision 69722 the ACC ordered as follows:

> We therefore officially place Arizona Water on notice that our subsequent proceeding on remand will be for the purpose of considering whether the Cornman property should be deleted from the CCN granted to Arizona Water by Decision No. 66893.[41]

Clearly, AWC and the water industry had notice of the issues to be considered on remand. However, I note the absence of other water and wastewater providers and RUCO from this proceeding. In my opinion, it is highly unlikely that these entities would fail to assert their business interests or the interests of those that they represent. Also, there have been no requests for intervention by RUCO or any water or wastewater providers in this proceeding. To me, their absence and apparent lack of interest stands contrary to Mr. Walker's assertions.

VIII. RESPONSE TO AWC WITNESS RITA MAGUIRE.

Q. During your tenure as Utilities Division Director and then Executive Director at the Commission, did you become familiar with the water and wastewater utilities that are operated by Mr. Robson?

A. Yes. The Robson companies own and operate a number of utilities in Arizona including Pima Utility Company, Lago Del Oro Water Company, Ridgeview Utility Company,

[41] Decision 69722 at 4, lines 17-20.

Saddlebrooke Utility Company, Quail Creek Water Company, Picacho Water Company, Mountain Pass Utility Company, Santa Rosa Water Company and Santa Rosa Utility Company. During my time at the Commission, the Robson utilities made numerous filings for CC&N extensions, rate increases, financing authorizations, tariff approvals and other requests. The various utilities filed annual reports with the Commission, and I had occasions to meet with representatives of the utilities. I became generally familiar with the Robson utilities.

Q. On page 14 of the Direct Testimony of Rita P. Maguire, Ms. Maguire makes the following assertion:

> **Often developers build the infrastructure and treatment facilities only to sell them to the municipality after the subdivision or master planned community is substantially built-out, but by then, the residential population is left reliant on groundwater. If problems arise with the operations of these facilities, as has occurred in the past, the municipalities are stuck with repairing/retrofitting the inadequate infrastructure at a greater cost than if the facilities were constructed appropriately at the outset.[42]**

Based on your experience, does this comment apply to the utilities that are constructed, owned and operated by the Robson companies?

A. I don't know what developers Ms. Maguire may be referring to, but to my knowledge her statement certainly does not apply to the Robson utilities. I believe that the Robson companies retain ownership of the utilities that they constructs to serve their developments, and I am not aware of any utility infrastructure that has ever been sold or conveyed by the Robson companies to a municipality or to any other entity. During my time at the Commission, I don't recall any problem with any of the utility infrastructure that serves the Robson developments. Also, to my knowledge, the Commission has not

[42] Direct Testimony of Rita P. Maguire at 14-15.

received any complaints regarding the quality of the construction or operations of the utility infrastructure. Certainly, I am not aware of any infrastructure that was inadequately constructed or which required significant repairs or retrofitting.

Q. Ms. Maguire also makes the following assertion in her Direct Testimony:

> **Another issue of concern is the scale of the water and wastewater operations. Whether it is a developer or small municipal provider, if the business is too small, it may be difficult to recruit, hire, and retain well-trained system operators or to maintain the infrastructure to meet applicable water quality standards and water use requirements. The value of an integrated water and wastewater system will be lost if it is not properly operated and maintained.**

Based on your experience, does this concern apply to any of the Robson utilities?

A. No. In the aggregate, the Robson utilities form one of the larger private water and wastewater providers in the state. As Utilities Division Director, I never had any concern regarding Robson's ability to recruit, hire and retain well-trained system operators, and I don't recall any problem manifest itself in the form of customer complaints, service outages, or other indicators of deficient performance. Likewise, I never observed any deficiency in the maintenance of the utility infrastructure or any lack of compliance with water quality standards or water use requirements. During my time at the Commission, I formed an opinion that the Robson utilities are very well managed, employ top-notch employees and retain quality resources to assist with the operation of the utilities.

Q. Mr. Johnson, while you were Utilities Director, were your opinions regarding Robson Utilities shared by any of your executive team?

A. Yes. In fact, current Utilities Director, Mr. Steve Olea, testified that:

> There [are] a few companies I would put up there along with Arizona Water Company, and Robson's companies would be those also.[43]

IX. RECOMMENDED REGULATORY ANALYTICAL FRAMEWORK.

Q. Mr. Johnson, have you developed an analytical framework to assist you in responding to the question presented in this remand proceeding?

A. Yes, I have developed a regulatory analytical framework, which I think will be useful to the Commission and is necessitated by the unique procedural history and facts of this case.

Q. Please explain.

A. My recommended regulatory framework is based upon the following:

- Recognition that the public interest is a broad concept requiring a broad examination.
- The Commission should determine and assess the public interest, utilizing the specific facts present in each case.
- The Commission should apply appropriate legal principles applicable to the facts of each case.
- The Commission should appropriately balance respective interests.
- The Commission should render a regulatory decision, which is fully cognizant of its impact upon end-users.

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[43] Woodruff Water Company, Inc. (Docket Nos. W-04264A-04-0438, W-04265A-04-0439 and W-01445A-04-0755) Hearing Transcript Vol. VII at 1424, Lines 17-22.

In my view, the unconventional procedural and unique factual history of this case requires consideration of the question posed by the Commission utilizing a suitable analytical framework.

[redacted]

[redacted]

Q. Mr. Johnson, in addition to your own experience and training, could you identify some of the other sources that you considered in developing the analytical framework that you utilized in your testimony?

A. Some of the additional sources that I reviewed and considered include the Arizona State Constitution, a law review article authored by Ms. Deborah Scott Engelby, entitled, "The Corporation Commission: Preserving its Independence, A.R.S. 40 sections 252, 281-285. Additionally, I considered the *James P. Paul* case,[44] ACC Decision 69722, the three CC&N deletion cases cited in Mr. Walker's testimony, the procedural order issued in this proceeding by Judge Nodes on February 24, 2014 and the ACC water rules.

[44] 137 Ariz. 426, 671 P.2d 404

[redacted]

Q. Please explain.

A. This proceeding has been lengthy and procedurally unique, yet it has provided a forum for the Commission to pose a very specific question infused with the public interest. The question of reasonableness, and its impact upon the public and the public interest, is front and center in this remand proceeding and must be considered accordingly. In my view, it is both reasonable and necessary to consider the perspective of the end-user in assessing the public interest and in determining this issue.

Q. Mr. Johnson, in your opinion, would it be beneficial to an end-user to receive water and wastewater services from a single provider?

A. Yes, depending upon individual facts and circumstances. In my opinion, there can be both benefit and value to an end-user from receiving integrated water and wastewater services.

Q. Please explain.

A. In my experience as Utilities Director, having personally received many telephone calls from frustrated and highly agitated customers, it is my opinion that from a qualitative perspective, the customer experience is enhanced by having a single provider, a single point of contact, a single relationship, a single experience and a single expectation.

Q. Mr. Johnson, based upon your experience as Utilities Director, do you think water and wastewater customers are interested in their utility bill?

A. Yes.

Q. Do you think that they are also interested in service quality?

A. Yes.

Q. Do you think that customers may also be interested in who supplies their drinking water?

A. Yes.

Q. Do you think that customers are interested in managing their water and wastewater usage?

A. Yes.

Q. Based upon your experience as Utilities Division Director and conversations with customers, do you think conserving and efficiently using water and wastewater is an important issue for customers?

A. Yes.

Q. Mr. Johnson, based upon your knowledge and experience, and the specific facts of this case, what is your recommendation?

A. Based upon having served over twenty-five years as a utility regulator and the very specific facts of this case, I recommend that the Commission exclude the Cornman Tweedy property from AWC's CC&N.

Q. Is that your recommendation to the Commission?

A. Yes, utilizing the regulatory framework that I considered, that is my recommendation to the Commission.

X. CONCLUSION.

Q. Mr. Johnson, what conclusions did you reach after reviewing the facts and assessing the broad public interest present in this case?

A. I concluded, based upon the specific facts of this case:

- That standalone water service would not constitute reasonable service where quality integrated service is an option.
- That integrated water and wastewater service would constitute reasonable service.
- That the broad public interest supports excluding the Cornman Tweedy property from AWC's CC&N.
- [redacted]
- That "reasonable" service must be determined on a case by case basis.

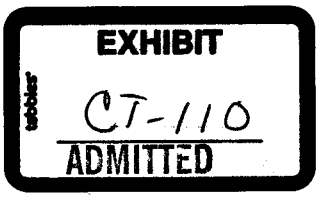
Q. Does that conclude your testimony?

A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

DOUG LITTLE – Interim Chairman
BOB STUMP
BOB BURNS
TOM FORESE



IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY TO EXTEND ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECCESSITY AT CASA GRANDE AND PINAL COUNTY, ARIZONA.	)	DOCKET NO. W-01445A-03-0559

REJOINDER

TESTIMONY

OF

ERNEST G. JOHNSON SR., ESQ.

(REMAND PROCEEDING II)

ON BEHALF OF CORNMAN TWEEDY 560, LLC

FEBRUARY 1, 2016

TABLE OF CONTENTS

Page

I. INTRODUCTION. 1

II. PURPOSE. 1

III. RESPONSE TO THE SURREBUTTAL TESTIMONY OF PAUL WALKER. 2

IV. RESPONSE TO SURREBUTTAL TESTIMONY OF WILLIAM GARFIELD. 18

V. CONCLUSION. 21

I. INTRODUCTION.

Q. Please state your name and business address.

A. My name is Ernest G. Johnson Sr. My business address is Post Office Box 12376, Chandler, Arizona, 85249.

Q. Did you previously file testimony in this proceeding?

A. Yes, I filed rebuttal testimony dated July 18, 2014, on behalf of Cornman Tweedy 560, LLC ("Cornman Tweedy") in this second remand proceeding.

Q. Does that testimony set forth your background and professional experience?

A. Yes, my rebuttal testimony details my background, professional experience and expertise.

Q. On whose behalf are you submitting this rejoinder testimony?

A. I am submitting this rejoinder testimony on behalf of Cornman Tweedy.

Q. Are you adopting your earlier rebuttal testimony?

A. Yes. I am adopting my July 18, 2014, rebuttal testimony as modified by the Procedural Order dated December 9, 2015, in this docket.

II. PURPOSE.

Q. What is the purpose of your rejoinder testimony?

A. My rejoinder testimony is provided in response to the surrebuttal testimonies of Mr. Paul Walker and Mr. William Garfield filed January 11, 2016, on behalf of Arizona Water Company ("AWC").

III. RESPONSE TO THE SURREBUTTAL TESTIMONY OF PAUL WALKER.

Q. Mr. Johnson, did you review the surrebuttal testimony of Mr. Paul Walker filed in this proceeding?

A. Yes, I have reviewed and considered Mr. Walker's surrebuttal testimony.

Q. Do you have any general observations after reviewing and considering Mr. Walker's surrebuttal testimony?

A. Yes. After reviewing and considering Mr. Walker's surrebuttal testimony, I am even more convinced that AWC should not hold the certificate of convenience and necessity ("CC&N") to serve water to the property owned by Cornman Tweedy (the "Cornman Tweedy Property") based upon the public interest and the specific facts of this case.

Q. **Mr. Walker states in his surrebuttal testimony that "this case is actually about ... an entity trying to revoke a CC&N so that its parent company can have an affiliate take the CC&N for itself."[1] Do you agree with that characterization?**

A. Absolutely not. This case is about "whether a public service corporation, like Arizona Water, in this water challenged area and under the circumstances presented in this case, is providing reasonable service if it is not able or not willing to provide integrated water and wastewater services."[2] In short, this case is about "whether Arizona Water should continue to hold a CC&N for the Cornman extension area at this time."[3] For the reasons that are set forth in my rebuttal testimony and this rejoinder testimony, I do not believe that AWC can provide reasonable or adequate service to the Cornman Tweedy Property and I do not believe that AWC should continue to hold the CC&N for the Cornman Tweedy Property.

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[1] Surrebuttal Testimony of Paul Walker at page 4, lines 5-6.
[2] Procedural Order dated February 10, 2011 at page 2, lines 7-10.
[3] Decision 69722 at page 19, Finding of Fact 101.

Q. Have your opinions and conclusions changed as a result of Mr. Walker's surrebuttal testimony?

A. No. I remain of the opinion that:

- Service to the Cornman Tweedy Property by an integrated water and wastewater provider is reasonable service under the facts of this case.
- Service to the Cornman Tweedy Property by a standalone water provider is not reasonable or adequate service where quality service by an integrated water and wastewater provider is an option.
- Service to the Cornman Tweedy Property by an integrated water and wastewater provider is a better option under the facts of this case. At a minimum, the Arizona Corporation Commission ("Commission" or "ACC") should preserve this option in light of the fact that there is no need or necessity for water service on the property.
- Service from an integrated water and wastewater provider offers greater customer benefits/experiences than other options under the facts of this case.

Q. Do you have any further observations?

A. Yes, after reviewing Mr. Walker's surrebuttal testimony, I note that:

- Mr. Walker rightly acknowledges that the public interest is the appropriate regulatory policy premise to be utilized in addressing the issues presented in this case.[4]
- Mr. Walker's testimony indirectly supports utilization of my recommended analytical framework.[5]
- Mr. Walker continues to favor regulatory entitlements notwithstanding his denials.[6]
- Mr. Walker's wide-ranging arguments and assertions are unsupported by the facts of this case.[7]

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[4] Surrebuttal Testimony of Paul Walker at page 7, line13-page 8, line 5.
[5] *Id.* at page 5, lines 2-5.
[6] *Id.* at page 3-page 4, line 2.
[7] *Id.* at page 11, lines 8-18.

- Mr. Walker provides no evidence to support his broad assertions that the future of the water/wastewater industries hinges upon the outcome of this proceeding.[8]
- Mr. Walker concedes that integrated water and wastewater service offers many benefits.[9]

Q. Mr. Johnson would you please elaborate regarding each of your observations?

A. Yes. Removal of the Cornman Tweedy Property from AWC's CC&N remains the better regulatory outcome. Contrary to Mr. Walker's assertion,[10] the public interest is not best served by allowing AWC to hold the CC&N covering the Cornman Tweedy Property.

Efficiently utilizing scare resources (groundwater and effluent) through an integrated water and wastewater provider is the most reasonable, practical, policy and public interest-based outcome that can come out of this proceeding. This proceeding affords the ACC the opportunity to clearly recognize that in the water challenged area affected by this proceeding, maximizing the efficient use of both groundwater and effluent is providing reasonable service to customers, and is the best public interest outcome. I would add also that removing the Cornman Tweedy Property from AWC's CC&N does not result in a decision today regarding the water service provider for the property, but it leaves all options on the table for the Commission once development proceeds at some future time.

Q. Mr. Johnson, after reviewing Mr. Walker's surrebuttal testimony, why do you still believe that service from an integrated water and wastewater provider would be reasonable and adequate service under the facts of this case?

A. Service from an integrated water and wastewater provider best ensures the efficient use of both groundwater and effluent. In addition, integrated water and wastewater service "can

[8] *Id.* at page 11, lines 8-18.
[9] *Id.* at page 5, lines 7-12.
[10] *Id.* at page 3, lines 21, 22.

provide "financial, environmental, and engineering benefits" as Mr. Walker correctly acknowledges.[11] In my many years of regulatory experience, consideration of the totality of the circumstances is always a necessary step in achieving a result that is in the public interest. Under the facts of this case, permitting AWC to hold the CC&N for the Cornman Tweedy Property will eliminate the option of an integrated water and wastewater provider in the future when the property is developed which will not provide the best customer experience from a qualitative perspective. My experience based on talking to utility customers for more than two decades is that the customer experience is enhanced qualitatively when customers can interact with a single utility provider, a single point of contact, a single relationship, a single utility experience, and a single expectation.

Q. Mr. Johnson, after reviewing Mr. Walker's surrebuttal testimony, do you still believe that standalone water service would <u>not</u> constitute reasonable or adequate service where quality service from an integrated water and wastewater provider is an option?

A. Yes. In circumstances where no quality integrated water and wastewater option exists, standalone service providers must be used. However, that is not the case here, and we certainly don't need to foreclose the option for an integrated provider when there is no present need or necessity for water or wastewater service on the Cornman Tweedy Property. Even Mr. Walker acknowledges that standalone water companies operating in Arizona are facing a challenging future and will need to develop more innovative and collaborative arrangements with wastewater companies.[12] I certainly agree with his comment that "we are in a situation of much decreased surface water and precipitation that appears to be 'the new normal.'"[13] Thus, it is all the more important that we maximize the efficient use of scare groundwater and effluent resources by certificating providers that can integrate the provision of water and wastewater service.

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[11] *Id.* at page 5, lines11- 12.
[12] *Id.* at page 5, line 27 - page 6, line 3.
[13] *Id.* at page 5, line 27 – page 6, line 20 (citation omitted).

Mr. Walker's surrebuttal testimony does not explain why standalone service or standalone providers working together is in the best interest of the customer under the facts of this case. Instead, Mr. Walker tries to make the case that through the use of a so-called collaborative arrangement between AWC and wastewater providers, AWC can approximate the benefits that can be achieved by an integrated provider.[14] It may be the case that a collaborative arrangement can help approximate some of the benefits of an integrated water and wastewater provider where there is no option for an integrated provider. However, where there is an option for an integrated provider, as is the case here, the Commission should not settle for an approximation of some of the benefits through collaborative arrangements between standalone providers. As other Cornman Tweedy witnesses testify, standalone providers simply do not have the same incentives to work together to efficiently use groundwater and effluent resources that an integrated provider has. Certainly, the Commission should leave open the option for an integrated provider in this case by removing the Cornman Tweedy Property from AWC's CC&N.

Q. What are your observations regarding Mr. Walker's testimony that AWC has developed innovative and collaborative arrangements with wastewater companies?[15]

A. While collaborative arrangements can potentially be innovative, they may not be optimal nor represent the best public interest-based regulatory solution. Public interest regulatory solutions generally result from a broad inquiry on the part of the regulatory authority. That may or may not be the case with a negotiated arrangement between utilities, especially where such arrangements are not submitted to nor approved by the Commission. Public interest-based solutions reflect the regulatory perspective, which is necessarily broad, because the public interest is broad. Collaborative arrangements may be constrained by the negotiations and not reflect the broader public interest. As a result, I believe that

[14] *Id.* at page 6, line 8 - page 7 line 40.
[15] *Id.* at page 6 line 8 - page 7 line 4.

collaborative arrangements are less optimal than fully integrated water and wastewater options.

Moreover, negotiated arrangements are always optional for a utility. This point is made clear by the examples cited by Mr. Walker. In those two cases, AWC *chose* to enter into those arrangements.[16] However, AWC could have exercised its prerogative not to enter into those very arrangements. The point being that AWC maintains all of the discretion. How this discretion is exercised by AWC may or may not result in the optimal use of groundwater and effluent in a given area such as the Cornman Tweedy Property. Individual circumstances will ultimately determine the appropriateness of the structure or model that should be utilized. In this case, I believe that a fully integrated model will represent the best and most optimal regulatory outcome.

Q. Why do you state above that quality integrated water and wastewater service may provide greater customer benefits/experiences than other options?

A. The experience of the customer is a fundamental and significant regulatory consideration. As I state in my rebuttal testimony,

> "*In my experience as Utilities Director, having personally received many telephone calls from frustrated and highly agitated customers, it is my opinion that from a qualitative perspective, the customer experience is enhanced by having a single provider, a single point of contact, a single relationship, a single experience and a single expectation.*"[17]

Mr. Walker neglects to address this aspect of integrated service versus stand-alone service. I believe his omission further illuminates the benefits and distinction between these two options. On balance, the facts of this case favor utilization of an integrated service model.

[16] *Id.* at page 6, lines 8-23.
[17] Rebuttal Testimony of Ernest G. Johnson, Sr., at page 30, lines 23-26.

Also, Mr. Walker mentions two contractual arrangements between AWC and other entities.[18] While contractual models have been implemented before between standalone providers, I haven't seen any evidence that such arrangements enhance the customer experience. From a regulatory policy perspective, facts matter, and each case presents unique facts and circumstances. Based upon the facts of this case, I remain convinced that the customer experience will be enhanced by utilizing a single integrated provider for the reasons that I previously outlined.

Q. Does Mr. Walker acknowledge that the "public interest" is the appropriate regulatory policy premise to be utilized in considering the policy issues presented in this case?

A. Yes, although he makes the concept more difficult than it is in reality. Mr. Walker sets forth the public interest definition that he embraces at page 7, lines 24-25 of his surrebuttal testimony, while also identifying what he believes to be the public interest in this case.[19] In addition, Mr. Walker identifies what he asserts are the public interest issues to be determined on page 8, lines 1-5.[20] What is important here is that Mr. Walker recognizes that the public interest—however it is defined by the Commission—is relevant and foundational to the consideration of the policy issues presented by this case.

Q. Do you believe that Mr. Walker's surrebuttal testimony indirectly supports utilization of your recommended analytical framework in addressing the policy issues present in this case?

A. Yes. Mr. Walker asserts that the public interest is not served by a "one size fits all approach."[21] I agree with that statement and that is why my recommended analytical framework looks at the unique facts and circumstances of each case. Mr. Walker asserts that I believe that the public interest is *only* served by allowing integrated water and

[18] Surrebuttal Testimony of Paul Walker at page 6, lines 8-23.
[19] *Id.* at page 7, lines 24-25.
[20] *Id.* at page 8, lines 1-5.
[21] *Id.* at page 5 lines 2-3.

wastewater providers to serve new growth.[22] Ironically, it is Mr. Walker who appears to favor a one-size-fits-all approach because he fails to even consider the possibility that allowing for an integrated water and wastewater provider to serve the Cornman Tweedy Property is in the public interest. Having considered all the facts and circumstances in this case comparing integrated service to standalone service, I believe that the integrated approach represents the optimal structure for the Cornman Tweedy Property, keeping in mind that there is no need and necessity for utility services today.

Mr. Walker also asserts that the Commission's job is much more complex than a "one-size-fits-all" approach, and that it requires balancing competing legal, financial, environmental and engineering questions.[23] Again I agree. That is why I have developed and recommended the regulatory analytical framework set forth in my rebuttal testimony.[24] My recommended framework recognizes the unique procedural and factual history of this case and provides a framework in which the ACC can examine all of the legal, financial, environmental and engineering questions that come into play. The process that I recommend is flexible and recognizes that facts and circumstances differ from case to case. It recognizes the need to balance complex competing issues fully cognizant of the impact upon customers. More importantly, it recognizes and highlights that the public interest is a broad concept requiring a broad examination.

Q. Why do you say that Mr. Walker continues to support regulatory entitlements notwithstanding his denials?

A. Mr. Walker asserts that: "A CC&N is not a 'regulatory entitlement' it is instead a regulatory obligation, and that obligation comes with both costs and potential future benefits."[25] The fundamental concern that I have with this statement is that the public interest doesn't appear

[22] *Id.* at page 5, lines 1-2.
[23] *Id.* at page 5, lines 3-5.
[24] Rebuttal Testimony of Ernest G. Johnson, Sr., at page 28, line 7 - page 29, line 3.
[25] Surrebuttal Testimony of Paul Walker at page 3, line 27 - page 4, line 2.

to be the focus of his concerns; rather his focus appears to be on costs and rights associated with the obligation to serve. While those narrow concerns merit consideration, they do no comprise the entirety of the broad public interest.

From a policy perspective, the utility regulator must consider and assess broader concerns impacting the public interest determination. This case isn't limited to cost considerations nor rights associated with the obligation to serve. The Commission, consistent with consideration of the broad public interest, has identified the issue of reasonable service. While AWC may have an obligation to serve the Cornman Tweedy Property, AWC may be unable to provide reasonable or adequate service to the Cornman Tweedy Property under the facts and circumstances of this case. For the reasons that I and the other witnesses for Cornman Tweedy have articulated, the specific facts and circumstances present in the water challenged area where the Cornman Tweedy Property is located require an integrated provider in order to maximize the efficient use of groundwater and effluent.

Q. Why do you say that Mr. Walker's wide-ranging arguments and assertions are unsupported by the facts of this case?

A. While conceding that the larger water companies have not intervened in this proceeding (despite an awareness of the issues before the Commission in this docket), Mr. Walker nonetheless argues that these same companies share his concerns and would be willing to weigh in and strongly support AWC's position in this case.[26]

If his assertion is correct, why haven't these same companies intervened and provided the support that he claims exists. Mr. Walker has not provided a single piece of evidence to support his contention. These same companies certainly could have intervened during the many years that this matter has been pending.

[26] *Id.* at page 8, lines 11-17.

In its February 2011 Open Meeting, the Commission specifically and publicly ordered a review of whether AWC, as a non-integrated water company operating in a water-challenged area, can provide reasonable service to the Cornman Tweedy Property under the facts and circumstances of this case. While Mr. Walker alleges that the large utilities in the State are worried about the significant and adverse consequences that a decision in favor of Cornman Tweedy would have, the fact is that not one intervention request was made by a single water company nor any entity or association on behalf of its water members. In light of Mr. Walker's assertions regarding the dire consequences potentially resulting from this proceeding,[27] I remain puzzled why not one of the 282 water companies or their representatives chose to intervene in this case.

Q. Why do you say that Mr. Walker provides no evidence to support his broad assertions that the future of the water/wastewater utility industries hinge upon the outcome of this proceeding?

A. Mr. Walker's testimony does not contain any evidence or proof that establishes that the water and wastewater industries will collapse as a result of the Commission removing the Cornman Tweedy Property from AWC's CC&N. Instead, Mr. Walker provides his speculation, admonitions and arguments.[28]

Q. Does Mr. Walker concede that integrated water and wastewater service offers many benefits?

A. Yes. Mr. Walker specifically acknowledges this point in his surrebuttal testimony, stating as follows:

> *Q. But you have, many times in the past, argued for integrated water and wastewater service, have you not?*

[27] *Id.* at page 14, lines 7-12.
[28] *Id.* at page 11, lines 8-18.

A. I have made that argument in appropriate circumstances because integrated water and wastewater service can, as Mr. Johnson recognizes, provide benefits - addressing each of the questions the Commission must balance. It can provide financial, environmental, and engineering benefits.[29]

Mr. Walker has been one of the State's most zealous advocates of the benefits of integrating water and wastewater providers in the work he has done for Global Water. However, because AWC is a stand-alone water company, he is unwilling to consider the benefits that integration would provide to the customers who will someday live on the Cornman Tweedy Property.

Q. Mr. Walker asserts that you favor a one-size-fits-all approach.[30] Is that a correct characterization of your position?

A. As a general rule, no. However, it is difficult for me to envision a scenario where customers would be better off with stand-alone water and wastewater providers where an integrated provider is an option, assuming that the stand-alone providers and the integrated providers are each technically and financially solid. That being said, each case must be reviewed and considered on its own merits. The relevant facts in this case are well established:

- There is no current or foreseeable need for water service to the Cornman Tweedy Property;
- Cornman Tweedy has not asked for its property to be included in AWC's CC&N;
- Cornman Tweedy has provided many reasons why it does not want its property included in AWC's CC&N; and

[29] *Id.* at page 5, lines 7-12.
[30] *Id.* at page 5, lines 2-3.

- Permitting AWC to have the CC&N for the Cornman Tweedy Property will foreclose the possibility of service from an integrated water and wastewater provider in the future.[31]

Q. Does Mr. Walker believe that "public interest" is a difficult concept to define?

A. Yes. Beginning on page 7, line 13 of his Surrebuttal Testimony, Mr. Walker provides a lengthy dissertation concerning a very convoluted definition of public interest and the attributes he associates with the public interest. In fact, Mr. Walker states that he tries very hard to avoid even using the phrase, opting instead for this user-friendly alternative: "[T]o a substantial extent, sound ratemaking policy is a policy of reasonable compromise among partly conflicting objectives."[32]

Q. Do you agree that the public interest is a difficult concept to define?

A. No. As a utility regulator for over two decades, I have observed that utility regulators are well equipped and adept at understanding the concept of public interest. While different people may use different words to define the concept, utility regulators understand that acting in the public interest means doing what best serves the general welfare, interests and well-being of the affected public, considering all of the facts and circumstances of a particular case.

Q. Is that how you define the concept of public interest?

A. Yes. My definition is based upon over two decades of utility regulatory training and experience, having served as a Utilities Division Director in both Arizona and Oklahoma.

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[31] Rebuttal Testimony of Ernest G. Johnson Sr., at page 5, line 20 - page 6, line 2.
[32] Surrebuttal Testimony of Paul Walker at page 7, lines 24-25.

Q. During your regulatory career, was the public interest routinely identified, assessed and determined by the ACC and other public utility commissions.

A. Yes. As a Utilities Division Director both in Arizona and Oklahoma, I was directly involved in identifying, assessing and determining the public interest and its implications in the regulation of public utilities on a daily basis. In my experience, the concept of public interest is not some intellectual exercise but is real, discernible and sometimes inconvenient and messy, but it always lies at the heart of meeting the needs of the public.

Q. Based upon your experience as a utility regulator, is there a relationship between public need and public interest?

A. Yes, in my experience as a utility regulator, the public interest is premised upon the public need and public need initiates public interest.

Q. Please explain.

A. During my career as a utility regulator, identifying and ascertaining the public interest was the paramount regulatory consideration in utility regulatory matters. I observed that public need usually preceded and initiated the public interest. However, both components were necessary when identifying and considering matters affecting the general welfare, interests or well-being of the affected public.

Q. Does Mr. Walker recognize that reasonableness is a factor in considering the public interest?

A. Yes, I believe he does. Mr. Walker refers to reasonableness when he discusses the *James P. Paul* case[33] and when discussing what he describes as a "more reasonable regulatory process."[34]

[33] *Id.* at page 13, line 19 - page 14, line 5.
[34] *Id.* at page 15, lines 14-18.

Q. In your role as a utility regulator, charged with identifying and pursuing the public interest, was "reasonableness" a consideration?

A. Yes, in my experience, utility regulators consider the reasonableness of their regulatory actions at all times, particularly when they are attempting to evaluate and balance competing, complex and important utility regulatory issues affecting the broad public interest.

Q. In your opinion, and based on your experience, is reasonableness a component of the public interest assessment and determination?

A. Yes. Reasonableness must always be considered in determining what is in the public interest.

Q. As a former utility regulator, how did you derive reasonableness?

A. Reasonableness was derived from consideration and balancing of multiple disparate and oftentimes competing interests.

Q. Please elaborate.

A. Evaluating and balancing competing, conflicting and diverse interests presents fundamental challenges for the utility regulator. The utility regulator is challenged to keep his or her eye on the broad public interest while simultaneously considering the individual concerns or outcomes (often referred to as regulatory considerations). This balancing on the part of the utility regulator is comprised of both art and science. The art is comprised of common sense and good judgment and it considers the qualitative aspects such as customer/end-user experience, benefits, hardships, and so forth.

The science or quantitative side of the balancing is generally focused on mathematical or logic-based outcomes (*e.g.*, revenue requirement/cost of equity). In my experience, the best

and most reasonable regulatory outcomes are premised upon both the art and the science present in utility regulatory proceedings.

Q. What role does reasonableness play in this second remand proceeding?

A. The Commission has raised the issue of reasonableness in its consideration of this matter. At its February 1, 2011, Open Meeting, the Commission directed further proceedings to determine:

> *[W]hether a public service corporation, like Arizona Water, in this water challenged area and under the circumstances presented in this case, is providing reasonable service if it is not able or not willing to provide integrated water and wastewater services."*[35]

Q. Is the Commission's inquiry focusing on reasonable service consistent with your experience in identifying, assessing and determining the public interest?

A. Yes. However, I would first reiterate that there is no present need and necessity for utility services on the Cornman Tweedy Property. With that understanding, as I stated earlier, public interest is premised upon public need. When there is a public need for utility services on the Cornman Tweedy Property at some future date, certificating the provider that best meets the needs of the customers will best serve the public interest. Based on the facts and circumstances of this case, the Commission should not foreclose the opportunity for the future customers of the Cornman Tweedy Property to enjoy the benefits of integrated water and wastewater service.

[35] *See* Procedural Order dated February 10, 2011 at 2, lines 7-10.

Q. In your opinion, based upon the facts of this case and in consideration of the public interest, would it be reasonable for the Commission to remove the Cornman Tweedy Property from AWC's CC&N?

A. Yes. Considering all the facts and circumstances, reasonableness favors removing the Cornman Tweedy Property from AWC's CC&N.

Q. Please elaborate.

A. The Cornman Tweedy Property is located in a water-challenged area. The Commission recognized this very fact when it issued its directive during the February 1, 2011, Open Meeting. It is also a fact that permitting AWC to hold the CC&N for the Cornman Tweedy Property will not permit an integrated water and wastewater provider to serve the property. Therefore, when the property is developed at some unknown date in the future, customers will not experience the benefits of integration that have been rightly acknowledged by Mr. Walker[36] and thoroughly described by the witnesses of Cornman Tweedy in this case. Such an unfortunate outcome would not be consistent with meeting the public need for service or the public interest associated with that need for service.

Q. In your opinion and based upon your experience as a utility regulator, does the public interest necessitate regulatory vigilance and continual review?

A. Yes. In my experience, the public interest is not a static consideration because it can change over time as facts and circumstances change. As a consequence, regulators must remain vigilant and continue to always pursue that which is in the public interest, as warranted by the facts and circumstances of each case.

[36] Surrebuttal Testimony of Paul Walker at page 5, lines 9-12.

Q. Do you believe that Mr. Walker supports regulatory vigilance?

A. Yes. I do believe that Mr. Walker supports regulatory vigilance based upon his comments regarding water scarcity and the need for regulatory leadership.[37]

Q. Based upon your understanding of the facts and circumstances present in this case, is AWC providing reasonable and adequate service if it is not able to provide integrated water and wastewater services to the Cornman Tweedy Property?

A. No. The public interest, simple common sense and good judgment all support the more efficient use of a scarce resource which is accomplished by integrating water and wastewater service. For both practical and policy reasons, regulators should ensure that regulated utilities efficiently and effectively maximize the use of both groundwater and effluent, particularly in water challenged areas. Efficient use of groundwater and effluent through an integrated provider remains the right policy decision and is the right thing to do, consistent with the broad public interest.

IV. RESPONSE TO SURREBUTTAL TESTIMONY OF WILLIAM GARFIELD.

Q. Mr. Johnson, did you review the surrebuttal testimony of Mr. William Garfield on behalf of Arizona Water Company?

A. Yes.

Q. Does Mr. Garfield contend that you are incorrect in your assessment of AWC's business model?[38]

A. Yes.

[37] *Id.* at page 15 lines 14-18.
[38] *Id.* at page11, lines 4-16.

Q. Do you have any observations concerning Mr. Garfield's statements?

A. Yes. It is undisputed fact that AWC does not provide wastewater service. The Company's website states that *"[t]he Company exists as an Arizona corporation, specifically a public utility, as defined by the Arizona Revised Statutes, furnishing domestic, commercial, and industrial water service to customers in several communities throughout the State of Arizona under the Terms and Conditions for the Provision of Water Service approved by the Commission."*[39]

The fact that AWC may have on occasion signed collaborative arrangements with wastewater providers does not change the business purpose for which AWC was created and under which it operates. Nor does it change the primary business focus, business interests or practices employed by AWC. Nor does it necessarily result in the optimal use of a scarce natural resource. With respect to the Cornman Tweedy Property, an integrated water and wastewater provider will provide greater benefits. AWC is a water company whose primary revenues are derived from the furnishing of water and whose business model is premised upon the sale of water, not effluent. AWC files rate cases at the ACC related to the furnishing of water service, *not* water and wastewater service.

Q. Mr. Garfield argues that the ACC has not adopted the view that integrated water and wastewater services are necessary to advance sustainability in water scarce regions of the state.[40] Do you agree?

A. No, not at all. The Commission clearly expressed its view that integrated providers are superior to standalone providers where the option exists when it granted CC&Ns to integrated provider Woodruff Water Company and Woodruff Utility Company over a competing application by AWC (Consolidated Docket Nos. W-04264A-04-0438, SW-04265A-04-0439 and W-01445A-04-0755). In that case, the Commission found that "[t]he

[39] http://azwater.com/index.html visited January 30, 2016.
[40] Surrebuttal Testimony of William M. Garfield at page 13, lines 12-23.

benefits of developing and operating integrated water and wastewater utilities in this instance outweigh the economies imputed to AWC's larger scale."[41] I am not aware of any decision since where the Commission has abandoned or backtracked from that view. In my opinion, the fact that AWC has recently entered into collaborative agreements regarding wastewater service is evidence that AWC believes the Commission holds this view.

Q. Mr. Garfield reasons that the lack of a prescriptive rule mandating integrated water and wastewater service signals that the Commission does not embrace the "settled view" preferring integrated water and wastewater service.[42] Do you agree with his assertion?

A. Absolutely not. The reasoning employed by Mr. Garfield requires a great mental leap in order to reach his desired outcome. The rules for water and wastewater CC&Ns cited by Mr. Garfield contain the requirements for submitting an application for a new CC&N or a CC&N extension. There is nothing in the 2010 revision to the rules which contradicts or in any way suggests that the Commission has backtracked from its finding in the Woodruff Water Company and Woodruff Utility Company case.

Q. Mr. Johnson, do you believe that the Commission today favors an integrated water and wastewater provider over standalone providers where there is an option for an integrated provider?

A. Yes I do.

[41] Decision 68453 at page 29, lines 4-6.
[42] Surrebuttal Testimony of William M. Garfield at page 14, lines 1-13.

1 **V. CONCLUSION.**

2 **Q. Please summarize your conclusions**

3 A. Removal of the Cornman Tweedy Property from AWC's CC&N is the better regulatory
4 outcome based upon the public interest and the specific facts of this case.

5

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

7 A. Yes, it does

EXHIBIT
CT-116
ADMITTED

TOTAL WATER MANAGEMENT: RESOURCE CONSERVATION IN THE FACE OF POPULATION GROWTH AND WATER SCARCITY

INTEGRATED SYSTEMS, REGIONAL PLANNING, AND THE ECONOMICS OF WATER RECLAMATION AND BENEFICIAL REUSE

By Trevor Hill, Graham Symmonds, Wesley Smith, and Paul Walker

INTRODUCTION

Water management in Arizona and the arid southwestern United States is being influenced by two increasingly synchronous and alarming trends: explosive growth and water scarcity.

The intersection of these factors – a future certainty – will drive water policy to extreme measures. In the absence of action now, those measures will both arrive sooner and be significantly more expensive. Sustainability in the future will depend solely on what action is taken today to preserve and extend the region's limited and increasingly valuable water resources.

The State of Arizona is in the crosshairs of the collision between growth and supply. In the absence of action today, as a landlocked state, Arizona must rely on non-renewable groundwater supplies and limited surface water supplies in order to meet the needs of its current and future populations. Exacerbating the issue is the fact that the state is entering its 13th year of drought, whilst leading the nation in growth. Arizona must take the initiative now to establish regional conservation practices, develop and deploy regional infrastructure, and develop alternate water resources in order to meet the needs of today's – and tomorrow's – customers. In the absence of such planning, Arizona residents will be subjected to continuous scarcity concerns, and ultimately will face materially increased costs for an essential commodity.

With the uncertainty of surface water resources and dwindling groundwater aquifers, recycled water exists as the only water source experiencing an increase in availability.[1] While broad based water recycling programs have become sound public policy and have been widely adopted around the globe in regions facing water scarcity, the State of Arizona has taken relatively minor steps to promote this renewable resource.

[1] Under Arizona's Groundwater Management Act, there are three sources of water: Surface Water - from local rivers and lakes or Central Arizona Project Water ("CAP") from the canal system connected to the Colorado River and its reservoirs, Groundwater from underground aquifers, and Recycled Water, which the Act calls 'Reclaimed Water' - wastewater that has been highly treated and made safe for numerous non-potable uses. Global calls its "treated and reclaimed wastewater" "Recycled Water."

This paper discusses water scarcity and compares current policy in the State of Arizona with examples from other regions. It also identifies factors that hamper broad utilization of recycling and focuses on the drivers for alternate water sources in the State. Water recycling applications throughout the world are discussed, as are the benefits of direct reuse over recharge.[2] Finally, the paper evaluates and analyzes the economics of recycled water infrastructure deployment. In doing so it presents theoretical and empirical data supporting both the concept and reality of deploying and using recycled water to the greatest extent possible.

ADDRESSING SCARCITY – THE ROLE OF RECYCLED WATER

Despite being one of the driest states in the country, the impetus for full development of recycled water resources have not occurred in Arizona. By contrast, the State of California has been in the vanguard of water reclamation. California took the lead in advancing water recycling some years ago with the creation of Title 22, Division 4 in the California Code of Regulations. It was Title 22 that defined the standards for recycled water and allowed its use to irrigate food crops, parks and playgrounds, school yards, residential landscaping, and unrestricted access golf courses.

The California Constitution, Article X, Section 2 addresses water use by establishing a "beneficial use" policy:

> It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the *waste or unreasonable use* or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare [emphasis added].

[2] The US Geological Survey defines recharge as "The process involved in the absorption and addition of water to the zone of saturation." Reuse is defined by the US Environmental Protection Agency as "The use of wastewater or reclaimed water."

California Water Code[3], Section 13500 further clarifies the State's water policy by directly supporting water recycling:

> The Legislature hereby finds and declares that *the use of potable domestic water for nonpotable uses,* including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial uses, *is a waste or an unreasonable use of the water* within the meaning of Section 2 of Article X of the California Constitution *if recycled water is available* [emphasis added].

In 2001, the California State Assembly established a mission to evaluate the water policy framework of the State and its ability to increase the use of recycled water.[4] The result was a June 2003 report titled "Water Recycling 2030 – Recommendations of California's Recycled Water Taskforce" that concluded "recycled water could free up enough fresh water to meet the household water demands of *30 to 50 percent* of the additional 17 million Californians"[5] expected to populate the State by 2030 [emphasis added].

Examples of water scarcity and the drastic impact that it has on society are dramatically evident in Australia. Prolonged drought has brought severe water shortages to this "First World" Nation. In Brisbane, Queensland, as water reserves dropped to under 20% capacity, the government imposed Level 5 water restrictions on April 10, 2007. In addition to mandatory bans on outdoor uses, residents are being asked to make significant indoor water use savings to lower residential use from 180 liters per person per day (47 gallons per person per day) to 140 liters per person per day (40 gallons per person per day).[6] Similar scenarios are found throughout Australia where recognition of the impending crisis has been accompanied by policy shifts towards maximizing of use of recycled water.

[3] California Law consists of the State Constitution, Statutes, and 29 Codes covering various subject areas, one of which is the Water Code
[4] Assembly Bill 331, Chapter 590, Statues of 2001
[5] "Water Recycling 2030 – Recommendations of California's Recycled Water Taskforce", June 2003
[6] "No Rain, No Water, Big Problem – Water reuse should ease water supply strain in Brisbane, Australia", Water Environment & Technology, August 2007, p 60-63

In Sydney, the Government of New South Wales has included in their 2006 Metropolitan Water Plan a fourfold increase in reuse to 70 billion liters per year (over 50 million gallons per day) by the year 2015.[7] In October of 2006, the New South Wales government cut agricultural irrigation from the River Murray by 20%, an additional 32% cut came weeks later, most recently, regional agriculture receives a zero allocation from the River.[8]

The Government of Western Australia initiated the development of a water plan in 2007, stating that "the State Government has given water and the management of water resources strategic priority. This will continue into the future given climate change and variability, resource scarcity and continued increases in demand."[9] Within the report, the Government announced plans to recycle 20% of its water by 2012 and 30% by 2030[10] when population is expected to increase by 40%. It is interesting to note that, also within the report under the heading "Priority Actions 2007-2011", the Government listed "Use and recycle water wisely" as number one.[11]

Whether by progressive thought or a crisis response to extreme scarcity, the water recycling programs in California and Australia serve as examples of sound water policy. Despite similarities in population growth and resource scarcity, the State of Arizona lags amazingly far behind. While political leaders and regulators have established lofty goals in other regions, Arizona remains passive in its approach to water recycling.

In the Arizona Drought Preparedness Plan, drafted in 2004 by the Governor's Drought Task Force, water recycling is barely mentioned:

> "Effluent, or treated wastewater, can be treated to a quality that can be used for purposes such as agricultural irrigation, turf grass watering, industrial

[7] "2006 Metropolitan Water Plan Executive Summary", NSW Government, April 2006.
[8] "A River Ran Through It", Claire Scoby, The Observer, August 5, 2007.
[9] "State Water Plan 2007 Summary", Government of Western Australia.
[10] Ibid
[11] Ibid

cooling, or maintenance of riparian areas. Effluent has the potential to replace a potable water supply when potable water quality is not necessary for the use."[12]

"Effluent has the potential to replace a potable water supply..." is a far cry from "the use of potable domestic water for non-potable uses...is a waste or an unreasonable use of the water... if recycled water is available" (California Code) or "30% recycled water by 2030" (Western Australia).

FACTORS HAMPERING BROAD UTILIZATION OF RECYCLED WATER

While the regulatory environment in Arizona has adopted stringent standards for Class A+ Reclaimed Water and provides the framework for reuse[13], water providers have not embraced this resource. There are three factors that hamper broad utilization of recycled water in the State:

- A lack of policy direction from elected officials and state agencies
- A lack of integrated service suppliers[14] which are capable of providing the service
- Need for regional planning: to address the economic reality that recycled water use can only be achieved on a regional scale

Policy

Given the critical nature of water scarcity in Arizona, the current regulatory framework for water conservation is surprisingly weak. Utilities have limited obligations to conserve and there are no requirements to use recycled water. With rapid growth, finite water resources, and the reality of sustained drought, the State must do more.

[12] "Arizona Drought Preparedness Plan – Background & Impact Assessment Section", Governor's Drought Task Force, October 8, 2004.
[13] Arizona Administrative Code (AAC) R18-11-303 defines Class A+ Reclaimed Water and references a number of approved uses including irrigation of food crops, recreational impoundments, residential landscape irrigation, school ground landscape irrigation, open access landscape irrigation, toilet and urinal flushing, fire protection systems, vehicle and equipment washing, and snowmaking.
[14] Integrated Service Suppliers are those defined as providing water, wastewater and recycled water services.

Recent initiatives by the Arizona Corporation Commission (ACC) indicate that some progress is being made. For example, in certain cases the ACC has banned the use of groundwater to serve golf courses and similar amenities. More importantly, the ACC has made conservation-focused rate designs a priority. The Arizona Department of Water Resources (ADWR) is currently developing "Best Management Practices" (BMP's) for water conservation. While some of the draft BMP's appear to be useful, recycled water is not even mentioned. Glossy brochures and "Water – Use It Wisely" advertisements will only go so far. Long term sustainability requires moving toward regional water reclamation and reuse.

Reliance on the individual consumer for conservation will not ultimately serve to address water scarcity in the State. While individual efforts are helpful on the margins, radical reduction in water use must be initiated by the Utility. It is the Utility that can impact the individual, and the Utility that should bear the burden of long-term resource management.

Integration

Integrated service suppliers provide both water and wastewater services within a region. In situations where an integrated supplier does not exist, opportunities to make use of recycled water are difficult. Obviously, it is the wastewater utility that collects wastewater, treats it to regulatory standards, and distributes recycled water – often to the economic detriment of the water utility.[15] In some cases, water utilities have litigated over the right to distribute recycled water claiming they have such a 'right'[16],

[15] The use of recycled water in lieu of potable water means a diminished demand for the potable water produced by local water companies – reduced water sales diminish the water company's revenues.
[16] See Arizona Water Co. v. City of Casa Grande, No. CV2000-022448 (Superior Court, Maricopa County), Minute Entry dated March 27, 2002. AWC claimed a 'right' to sell City effluent to the Reliant Power Plant. AWC lost and appealed. The Court of Appeals, in an unpublished opinion, upheld the ruling against AWC. Arizona Water Co. v. City of Casa Grande, No. 1 CA-CV 02-0671 and 1 CA-CV 02-0724 (Arizona Court of Appeals), Memorandum Opinion filed October 14, 2003. AWC also lost a related case in federal court. See Arizona Water Co. v. City of Casa Grande, 33 Fed. Appx. 309 (9th Cir 2002)(unpublished opinion).

despite not owning the resource. This litigation further stifles recycled water's potential application. When water and wastewater utilities are placed at odds, neither party advances the use of this valuable resource.

Reducing the volume of water for potable uses directly reduces the costs of treatment to meet the National Primary Drinking Water Standards (obviously, the fewer gallons delivered, the fewer gallons treated, and the lower the costs of treatment). Considering the ever tightening regulatory environment for safe drinking water, reducing the overall capacity requirement of treatment systems means fewer such systems are required, and those that are required, because they treat less water, have lower operating and maintenance costs. The result is a partial sheltering of the consumer from the adverse financial impacts meeting future regulatory requirements of the Safe Drinking Water Act. Saving $0.50 to $2.00 per thousand gallons[18] is a very significant benefit to the consumer, and these funds can then be used for financing large-scale water recycling initiatives.

In addition to the technical aspects of integration, there are policy and financial benefits from integration. A joint Swedish-Polish research study viewed integration of water, wastewater and waste handling as part of a "municipal ecology". The study points out that the advantages of integration include "combinations with the energy sector...improved technical functions, possibilities in a large organization to employ qualified staff, simplification of fee collection system, and less environmental emissions and resources depletion."[17]

Regional Planning

Integration of water and wastewater service providers is a key element of planning for

[17] Current operation and maintenance costs associated with Arsenic treatment within a regional system range from $0.50 to $2.00 per 1,000 gallons of treated water. Treatment costs are likely to increase as other regulated contaminants are identified and must be addressed in the future.
[18] Integration of Water and Sanitation – A Challenge to Reach Sustainability Goals, B. Hultman, E. Plaza and T. Stypka.

total water management. Large-scale planning allows for the realization of a more diverse customer spectrum for recycled water and ensures that the benefits of recycled water are felt regionally. One can imagine that a single development may choose to deploy a significant recycled water scheme to reduce groundwater use, only to have those savings squandered by a neighboring development built solely on the basis of groundwater.

The concepts of total water management - "highest and best use for recycled water" and "the right source for the right use" are pillars of the new paradigm in the water industry. These foundations cannot be constructed without integrated and regional planning. Ultimately, this will drive the deployment of dual water mains and maximize the use of recycled water regardless of scarcity. But in the face of scarcity, these tenets become paramount.

THE IMPETUS FOR ALTERNATIVE WATER SOURCES

There are certain realities that must be collectively addressed in order to ensure long term water sustainability in the State of Arizona and that must form the backbone of any sustainable water policy for the state:

- Growth will continue
- As growth continues, underground aquifers will ultimately reach a rate of withdrawal that will exceed rates of natural recharge
- Surface water in the region is over-allocated and has been impacted by sustained drought, legal disputes over available supplies, and environmental policies regarding required stream flows
- Treatment costs are soaring and are unquantifiable in the future
- Public opinion will evolve as resource availability scenarios change

Growth

Arizona and the southwestern United States continue to experience unprecedented growth. Climate, cost of living, economic opportunity, and other considerations draw hundreds of thousands of people to the region every year.[19] This influx of new residents has served to enhance the state's quality of life. Entrepreneurs bring new business and opportunities. Recreational and cultural activities continue to evolve and develop. The region has become more attractive as it grows. Despite the recent adjustments in the housing market, all economic indicators point to prolonged growth in the Arizona and the southwest United States. In fact, RL Brown in his July 28, 2007 publication The Phoenix Housing Market Letter states "the metro Phoenix new-housing market remains one of the best spots on the planet for new home builders, developers, and the trades."[20]

Limits on Groundwater Supplies (Aquifers)

The situation in Pinal County, Arizona serves to effectively illustrate the limits of groundwater and the impracticality of relying on it as a sole source to support growth. According to the U.S. Census Bureau, the County (located south of Maricopa County) has grown by 51% since the 2000 Census - largely as an exurb of Maricopa County. The aquifer in the Pinal Active Management Area (AMA) is naturally recharged at an average rate of 82,500 acre-feet a year.[21] This means that 82,500 acre-feet per year (the equivalent of roughly 26,883 million gallons) is available in perpetuity. Current regulation requires that each equivalent dwelling unit (EDU) be supported by a demonstrated perpetual availability of 0.5 acre-feet per year.[22] Calculations based on

[19] U.S. Census Bureau, 'Arizona's Maricopa Leads Counties in Population Growth Since Census 2000', http://www.census.gov/Press-Release/www/releases/archives/population/009756.html - which states, in part, "Maricopa County Arizona gained 696,000 residents between 2000 and 2006, the largest numerical increase of the nation's 3,141 counties...Arizona became the nation's fastest growing state between 2005 and 2006."
[20] "The Phoenix Housing Market Letter", RL Brown Housing Reports, Volume 272, July 28, 2007.
[21] Hydrologic studies completed in December 2004 as part of an evaluation of the Pinal AMA's groundwater budget determined that the AMA's renewable groundwater supplies total 82,500 acre feet on a long-term average annual basis.
[22] Arizona Department of Water Resources internal protocol.

this data indicate that 165,000 EDU's can be developed in the Pinal AMA given groundwater as the only water resource. Yet, entitlements currently within the County exceed 650,000 EDU's – a threefold discrepancy between water supplies and projected water demand.[23] It is a fact that conservation and alternatives to groundwater utilization will be required to support the anticipated growth.

Over-allocation of Surface Water

The Colorado River provides a large percentage of the southwestern United States with the necessary water resources to promote growth and opportunity. Great engineering accomplishments throughout the twentieth century have tamed the river and diverted its flows to the population centers of the region. Arizona's claim to Colorado River water emanates from the original 1922 Colorado River Compact, and the state's share of the river was determined by the U.S. Supreme Court in Arizona v. California, 376 U.S. 340 (1964) – however, recent studies have shown that the supply data the Court relied upon was from an abnormally high flow period – and the Colorado River's 16.5 million acre-feet per year allocation likely overstates its actual production, by two to five million acre-feet per year.[24] Flow measurements conducted from 1906 to 1995 recorded an average annual flow of 15.2 million acre-feet and recent studies indicate that average annual flow in the Colorado River Basin may be 13.5 million to 14.6 million acre-feet.[25]

[23] The Morrison Institute for Public Policy, in their July 2007 report "The Future at Pinal", identified 653,277 units, mostly single-family homes, that have been entitled on private land within Pinal County.

[24] See, e.g., Colorado River Basin Water Management, 'Evaluating and Adjusting to Hydroclimatic Variability', National Research Council of the National Academies, 2007; and 'The Tree-Ring Record of Severe Sustained Drought' by David Meko, Charles W. Stockton, and W.R. Boggess, published in American Water Resources Association's Water Resources Bulletin, Vol. 31, No. 5, October 1995; and 'Two Perspectives on Drought: Paleoclimate and Climate Change' as presented by Gregg M. Garfin for the University of Arizona at the New Mexico Rural Water Association Annual Conference, March 21, 2005.

[25] An original landmark Colorado River tree-ring-based reconstruction study was completed at the University of Arizona in 1976 and estimated a long-term average flow of 13.5 million acre-feet per year. A 2006 collaboration between the University of Arizona's Laboratory of Tree-Ring Research, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, and the University of Colorado estimates the average water flow at 14.6 million acre-feet per year.

Periodic droughts, extending over a number of years also impact the actual amount of surface water available. Prudent water management must take into account these emerging realities.

Cost of Treatment

The provision of potable water in Arizona is governed by AAC R18-4 *et seq* which embodies the requirements of the Safe Drinking Water Act into the Arizona regulatory environment. The United States Environmental Protection Agency (USEPA) is required by statute to maintain a Contaminant Candidate List (CCL) and evaluate a minimum of five contaminants on the CCL during each review period for possible regulation, based on the potential for human health impacts. Technology's ability to detect constituents down to part-per-trillion levels and the ever increasing scrutiny of the effect of the environment on human health demand that regulatory parameters become inevitably more stringent. Regardless of the identity of the next regulated contaminant, there can be no doubt that there will be a treatment requirement for all but the most pristine water sources.

Wise water resource management must account for both quality and quantity of the resource, yet also must take into account the cost to the consumer. By establishing dual water main systems – one potable and one non-potable – the costs of treatment can be dramatically reduced, and as water treatment is essentially a process of contaminant removal and concentration, the production of concentrated residuals can be significantly curtailed. In the case where dual water mains supply recycled water, a significant reduction in the overall potable water demand can be realized – reducing the volume of water required to be treated meet the National Primary Drinking Water standards.

Evolution of Public Opinion

As water becomes increasingly scarce, public perception of alternative water

sources tends to shift, and changes in public perception enable modifications to water policy. Utilization of alternate water sources in the safest, most practical applications become the best available solutions. Throughout the world, public policy has evolved as the realities of scarcity begin to be addressed. Drastic turnabout in public opinion can be documented in communities where water resources became less abundant and alternative sources were required to maintain quality of life.

In Arizona, and throughout the southwestern United States, water utilities must make the investment in public education and community involvement to address the realities of growth and scarcity and foster support for inevitable changes in water policy. The communities examined later in this paper provide robust evidence of the evolution in public opinion and openness to water recycling.

WATER RECYCLING APPLICATIONS

The concept of water reclamation and recycling is not new. Indeed society has been recycling water in some form or another for hundreds of years – the most common approach has been to treat wastewater and return it to rivers, streams and washes. Global Water's utilization of highly treated recycled water in and around the City of Maricopa, is neither unique nor is it on the cutting edge of technology, but it does differ in that Global's recycled water is reused (for uses not requiring potable water) instead of being returned to rivers. The advances of the past 150 years in wastewater treatment have allowed the production of recycled water to be more consistent and achieved with a higher degree of reliability – Global Water's focus is to use that increased reliability and safety to increase the use of recycled water.

The WateReuse Association estimates there are 1,500 water reuse utilities throughout the United States delivering recycled water for a myriad of end uses, more than half of which were established in part due to water scarcity or preservation and protection of available resources. From the WateReuse Association's National Database of Water Reuse Facilities and other sources, a compendium of eleven water utilities in the United States and Australia has been developed

and is included as **Appendix A**. These utilities are providing recycled water for a full spectrum of end uses.

Five of the reclamation applications are located in arid environments with limited availability of renewable water supplies and make use of dual distribution systems supplying homes and businesses for irrigation and toilet flushing, see Table 1.

Utility Name and Location	Year Implemented	Number of Current Connections
Irvine Ranch Water District, California	1967	3,812
El Dorado Irrigation District, California	1999	3,437
Tucson Water, Arizona	1984	900
Mawson Lakes, Australia	2005	4,300
Rouse Hill, Australia	1995	16,500

Table 1

Irvine Ranch Water District

Located in Orange County, California, the Irvine Ranch Water District (IRWD) services a 133 square mile area that includes the City of Irvine and portions of Costa Mesa, Lake Forest, Newport Beach, Orange, and Tustin. IRWD makes use of imported surface water to accommodate 35% of the service area's domestic supply.[26] The remaining 65% comes from local wells. IRWD currently makes use of reclaimed water to offset 20% of their total water needs. Situated in a semi-arid region with an annual rainfall of 12 to 13 inches, water scarcity issues initiated the water recycling program forty years ago. Design and construction of reclaimed water infrastructure was completed as the community developed. As agricultural fields converted to rooftops, businessmen and planners, along with the water supplier, made a sound decision to utilize recycled water within the community.

[26] According to the IRWD Fact Sheet, dated July 2005, approximately 35 percent of IRWD's drinking water is purchased from the Metropolitan Water District of Southern California. Imported water comes from the Colorado River via the Colorado River Aqueduct and from Northern California via the State Water Project.

IRWD operates under the philosophy that water is too valuable to be used just once. "Every gallon of recycled water used...means a gallon of drinking water that can be saved for potable uses. Recycled water...reduce[es] the need to import expensive water and help[s] to keep water rates low."[27] The primary recycled water uses include landscape irrigation for parks, school grounds, golf courses, freeway landscaping, and irrigation of common areas managed by homeowners associations (HOAs). A majority of residences in Irvine have front yards that are owned by the HOA's and are thus irrigated with recycled water.

Utilization of recycled water was expanded in 1990 when the District, with support of the State of California, developed a policy requiring all new buildings over fifty- five feet high to install a dual distribution system for flushing toilets and urinals in areas where reclaimed water is available. In 1991, IRWD became the first water district in the nation to obtain health department permits for the interior use of reclaimed water from a community system. Reclaimed water currently makes use of dual-plumbing for toilet flushing in IRWD's facilities as well as in several high rise office buildings constructed with dual piping systems. Potable water demands in these buildings have dropped by as much as 80% due to reclaimed water use.[28]

The IRWD recycled water program is supervised by the California Department of Health Service and the Orange County Health Agency and the IRWD works in conjunction with these agencies to protect the public health while making the best use of reclaimed water. IRWD has established procedural guidelines and general design requirements for recycled water facilities that include construction specifications regarding pipe spacing and identification, guidelines for use, backflow prevention, and cross connection testing.[29]

[27] Taken from the IRWD Fact Sheet, dated July 2005.
[28] The IRWD website (www.irdw.com) represents that "in a typical office setting, approximately 80 percent of the water is used for toilet flushing. By using reclaimed water instead of drinking water to flush toilets, major savings can be realized."
[29] "Procedural Guidelines and General Design Requirements", Irvine Ranch Water District, Revised April, 2005 indicates in Section 5.1 that "all on-site facilities using recycled water will have an annual cross connection test unless otherwise approved by the state and county health agencies based on a case by case basis."

El Dorado Irrigation District

The Serrano development, located in the Sierra foothills community of El Dorado Hills, California near Sacramento, is serviced by the El Dorado Irrigation District (EID). In 1999, EID obtained approval from the State of California[30] to use recycled water to irrigate the front and back yards of residential units constructed in Serrano. Prior to the implementation of residential use, the community made use of reclaimed water on its golf courses, parks and greenbelts and was recognized by the California WateReuse Association as the "Project of the Year" in 1998. With the application of advanced water reclamation, homes are equipped with dual plumbing (potable water for interior use and reclaimed water for landscape irrigation). The recycled water is delivered through a dedicated pressurized "purple pipe" system.[31] This system "puts Serrano in the forefront of the trend toward environmental sensitive development and greatly improves the community's ability to remain lush and green during normal drought cycles."[32] In 2005, Serrano received the National WateReuse Award of Merit, recognizing the community for its innovative and concerted efforts in using recycled water.

In managing the recycled system, EID has developed an extensive set of policies and procedures to best serve the public. EID has established guidelines for water reuse and has created design and construction standards for both non-residential sites and residential dual plumbed homes. The standards included backflow prevention, trench details, and information regarding automatic controllers for onsite irrigation. They also included material standards and requirements for identifying above ground infrastructure.

[30] The California Code of Regulations, Title 22, Chapter 3, Division 4 defines the standards for recycled water used for surface irrigation and allows for its use to irrigate food crops, parks and playgrounds, school yards, residential landscaping, unrestricted access golf courses, and any other irrigation use not prohibited by other sections of the Code.
[31] Plumbing codes require that pipes containing reclaimed water be purple to prevent accidental cross-connection with potable water systems.
[32] Taken from the Serrano website (www.serranoeldorado.com). It should be noted that the community uses water recycling and reuse as a market differentiator, promoting its sensitivity to environmental issues.

Inspection procedures are in place during installation and the system is checked periodically to ensure continued compliance with all regulatory agencies.[33] All designers and contractors working with dual-plumbed communities are required to attend an EID workshop explaining the uses and regulations of recycled water before any design or installation begins. Refresher training is conducted every eighteen months.

EID promotes a public education program to continually inform their customers about the value of recycled water and how it can be safely utilized to supplement the water inventory. Monthly recycled water workshops for homeowners and publications periodically address different reuse issues. EID advocates reuse not only as good public policy in times of population growth and resource scarcity, but promotes the fact that its dual-plumbed household customers use 20% less water than single-plumbed household customers.[34]

The success of advanced reclamation and dual-plumbing in Serrano has prompted the El Dorado Irrigation District to expand the program to all new communities within their service area that can feasibly connect to the backbone recycled water infrastructure. In addition to the 3,500 homes in Serrano, roughly 600 residences outside of the development make use of recycled water for front and back yard irrigation and another 1,400 are in development.

Tucson Water

Development in Tucson, Arizona historically relied on groundwater to meet its water supply needs. Over time, withdrawals from the regional aquifer system surpassed the

[33] "Recycled Water Use Guidelines for Residential Dual Plumbed Homes", El Dorado Irrigation District, June 2003, Section 2.2.C.

[34] Taken from the El Dorado Irrigation District brochure titled "This Community Uses Recycled Water for Landscape Irrigation."

natural recharge and caused groundwater levels to fall. Despite aggressive demand management programs and a populace with a strong environmental ethic, Tucson began to see the declining water levels resulting in measurable land subsidence, increases in pumping costs, and the gradual loss of riparian habitats.

In order to address these issues, the City of Tucson Water Department (Tucson Water) recognized that renewable water supplies, including recycled water would be needed to satisfy projected water demand.[35] Tucson Water constructed Arizona's first community reclaimed water system in the early 1980's consisting of one filtration plant, ten miles of pipeline, and two customers. In subsequent years, the system has grown to 160 miles of pipeline and delivers almost 13,000 acre-feet to more than 900 irrigation customers annually. Functions of the reclaimed water system are governed by an institutional framework of effluent entitlement[36] and use is regulated by the Arizona Department of Environmental Quality (ADEQ) and the Arizona Department of Water Resources (ADWR) through a series of permits. Current (2007) sources of reclaimed water are capable of supplying 15,750 acre-feet per year and are projected to increase by 22,250 acre-feet per year by 2015.[37]

Reclaimed Water System Design Standards have been developed by Tucson Water that address pipeline conveyances, private plumbing requirements, backflow prevention, on-site storage, water meters, utility separation, identification marking, and air gaps. Inspection protocols and procedures are established that include application for service and a formal user agreement, a backflow permit, site inspection, and dye testing[38] to ensure that there is no cross connection with the potable system.

[35] Tucson Water addressed renewable water supplies in their "Water Plan: 2000-2050" dated November 22, 2004 which was presented to the Mayor and Council of Tucson.
[36] Effluent ownership is governed by a series of inter-governmental agreements (IGA's). The basic framework was established in 1979 in an IGA between the City of Tucson and Pima County and has expanded to include the Bureau of Reclamation, the Metropolitan Domestic Water Improvement District, and the Town of Oro Valley.
[37] "Reclaimed Water System Status Report – 2007", Tucson Water Department, p. 6.

Mawson Lakes

Mawson Lakes is a community in suburban Adelaide, South Australia that is currently home to 10,000 residents. Australia is enduring a prolonged drought and reservoirs are at critically low levels. Conditions have deteriorated to a point that recently the South Australian Government suspended domestic outdoor watering for the months of July and August 2007 to help conserve water.[39] The restrictions banned the use of household sprinklers, hoses, and irrigation systems for those months. These restrictions were in addition to previous limitations on nurseries, car washing, pools, spas, fountains, and ponds.

In the face of water scarcity, Mawson Lakes and South Australia Water (SA Water), which provides service to the community, implemented advanced water reclamation to extend utilization of this valuable resource. Home construction began in 2005 and the development features a dual water supply system, supplying drinking water and recycled water to homes via completely separate mains. The community employs advanced reclamation, where not only are lawns irrigated, but toilets are flushed with reclaimed water. As a result, Mawson Lakes has demonstrated a 50% reduction in water use, saving 800 megaliters (211 million gallons) annually.[40] The use of recycled water is not mandatory but residents of the community are required to accept the terms and conditions of a Recycled Water Supply Agreement. Within the Agreement, any customer that elects not to use recycled water must pay for the internal alterations required to irrigate and flush toilets with drinking water.[41]

[38] A dye test is conducted after the reclaimed meter and backflow prevention assembly are installed. Dye is added to the irrigation system on the customer's side of the new reclaimed water meter. At the time of testing, the irrigation system is not connected to the reclaimed water meter. Potable water is used to conduct the test. The inspector turns on each drinking water faucet and the presence of dye indicates a cross-connection. All cross-connections must be eliminated prior to the initiation of recycled water service.
[39] "News Release", Government of South Australia, June 17, 2007 (announcing July 2007 restrictions) and "News Release", Government of South Australia, July 24, 2007 (announcing the extension of the restrictions into August 2007).
[40] From South Australia Water website (www.sawater.com.au) What's New – News Room – "$16 million recycle system saves water."
[41] Mawson Lakes Recycled Water Supply Agreement, Terms and Conditions of Supply.

In April 2006, SA Water and the Government of South Australia published a Recycled Water Plumbing Guide with the intent to "ensure proper installation of the recycled water service and provide a clear guide for safe use of recycled water."[42] The document provides guidelines for use and installation and includes information on water mains, meter assemblies, approved products, and details on commissioning the system. An extensive public education program continues to inform and update customers on issues that range from how a recycled water system works to the proper use of the resource.

Rouse Hill

Australia's largest residential recycled water scheme is the Rouse Hill area located in northwestern Sydney. Since commencement in 2001, over 16,500 homes are using 1.9 billion liters (roughly 500 million gallons) each year to flush toilets, irrigate landscapes, and wash cars. On average, the Rouse Hill scheme has reduced demand for drinking water by 35%. Eventually 35,000 homes will be served. Water reclamation and recycling have been staples of Sydney Water's resource policy for the last decade. In fact, across greater Sydney more than 20 recycled water systems recycle 22 billion liters (almost 6 billion gallons or roughly 18,000 acre-feet) each year[43]. This renewable resource has proven valuable during the drought conditions that are currently impacting the region.

Periodic droughts are a feature of Sydney's climate and have shaped water policy in the area. Over the past 120 years, the region has experienced three prolonged droughts – one in the 1890's, a second in the 1940's, and is currently in the midst of the third. Questions regarding climate change and uncertainties about rainfall patterns only complicate planning for water in the future. The New South Wales (NSW) Government, which wholly owns Sydney Water, has advocated extensive reuse as policy and has included water recycling as a major component of their Metropolitan Water Plan. NSW states in an

[42] "Recycled Water Plumbing Guide", Government of South Australia, SA Water, April 2006, p. 3.
[43] From Sydney Water website (www.sydneywater.com.au).

executive summary of their 2006 Plan that "wastewater can be safely recycled and used in industry, agriculture and in new homes for garden watering, toilet flushing and other non-drinking uses. Recycling can...diversify the system with a supply source not relying on rainfall."[44]

DIRECT REUSE VERSUS RECHARGE

Direct reuse of recycled water is relatively straightforward. Wastewater is treated to a high level at a reclamation facility for reuse and, rather than discharging the product unused into the environment, purple pipe (plumbing code requires that the pipe color be purple to reflect its recycled status) moves the water from the treatment facility to its point of use. While recharging recycled water into the underlying water table is an important aspect of resource management, it is inferior to direct reuse. Recharge is a method of achieving seasonal resource equalization (i.e., storing recycled water in winter months for withdrawal and use in summer months), but it falls short in the "highest-and-best-use" category. There are a number of benefits that direct reuse has over recharge.

- Water is pumped once and then used repeatedly, reducing pumping and SDWA treatment costs
- Recharge facilities are complicated by local geology, wildlife and cultural concerns
- Recharge has the potential to increase salinity in the aquifer
- Contaminants of emerging concern may be better addressed by direct reuse
- Recharge is often conducted in areas remote from the use of the water resource

Water is Pumped Once

Groundwater requires a substantial amount of energy to lift it from the aquifer to the surface. The cost of groundwater extraction is in the order of $0.80 per 1,000

[44] "2006 Metropolitan Water Plan Executive Summary", NSW Government, April 2006.

gallons. Once on the surface, it can be distributed and redeployed for $0.10 per 1,000 gallons. Recharge requires that the water be removed once from the aquifer, distributed to homes, treated, pumped back into the aquifer (if using vadose zone wells or Aquifer Storage Recovery (ASR) wells), then recovered (pumped out again) from the aquifer, and treated again for SDWA compliance (as noted at a cost ranging from $0.50 to $2.00 per 1,000 gallons). The result is a three-fold increase in energy costs.

Recharge Facilities are Complicated

Recharge basins and wells are notoriously difficult to operate and maintain. Often soils (particularly in Arizona) do not percolate well, and they can be compromised by fines or bacteriological growth. Vadose zone and ASR wells require routine maintenance and have a useful life of 5 to 7 years. Furthermore, wildlife and cultural concerns greatly diminish the areas available for recharge and discharge.

Recharge and Salinity in the Aquifer

When a direct reuse scenario is implemented, the amount of water withdrawn from the underlying aquifer is less than that required when recharge is utilized (water already on the surface is recycled, supplementing the need for additional groundwater). As a result a direct reuse scenario has much less impact on the aquifer. Operating under a recharge scenario, more water is extracted from the aquifer and is replaced with water of a potentially significantly higher total dissolved solids (TDS) level. The result is increased salinity in the aquifer. This concept is more fully discussed in **Appendix B**.

Contaminants of Emerging Concern

Much research is ongoing to evaluate contaminants of emerging concern (CEC) in municipal effluents and recycled water. CEC's include endocrine disrupting compounds (EDC), pharmaceuticals and personal care products (PPCP). By creating a continuous loop of non-potable water on the surface, direct reuse minimizes exposure of CEC's

to the underlying aquifer. More information on EDC's and how they relate to direct reuse and recharge are presented in **Appendix C**.

Remote Recharge

Recharge is often conducted in areas remote from the water resource use. Because of land requirements needed for recharge and recovery, recharge areas are often well outside impacted areas. Direct reuse allows the water resource to be employed where it is required. Decentralized water reclamation and direct reuse allow for the minimization of material and resource flux – a key concept of sustainability.[45]

THE ECONOMICS OF WATER RECYCLING

The introduction of water reclamation and reuse into a region has substantial impact on water conservation and long term sustainability. The front end financial outlay required to execute a regional water reclamation plan is a sound investment and is good public policy when analyzed in the broader contexts of growth, resource scarcity issues, and resource quality issues.

As growth continues in Arizona and scarcity issues become paramount, the price to acquire water rights will continue to escalate. Pricing for surface water rights within the southwestern United States has surged upward; this trend will continue. In addition to acquisition considerations, the ever tightening regulatory environment presents a future laden with ever more stringent treatment requirements. Recent regulatory changes governing the maximum contaminant level (MCL) of arsenic have added significant costs to the operation of water utilities, both in capital investment for new infrastructure and in increased operating expenses. When the costs associated with reclamation are analyzed within the emerging water acquisition and treatment realities, the economics further shift in favor of reuse.

[45] Water Recycling and Decentralized Management: The Policy and Organizational Challenges for Innovative Approaches – Daniel J. Livingston, Nyree Stenekes, Hal K. Colebatch, Nicholas J. Ashbolt and T. David Waite.

Water reuse activities also allow for the maintenance of greenspace in the urban/suburban environment. This has a significant impact on overall temperatures in the region, and can significantly reduce overall power costs. Demand for electricity in United States cities increases by 3 to 4% for every one degree Celsius increase in ambient temperature.[46] Urbanization has increased the overall temperatures 0.1° to 1° C per decade in the past 50 years.[47] The maintenance of greenspace "measurably affects the thermal behavior of different sites within a city. Maximum temperatures within the greenspace of individual building sites may be 3° C cooler than outside the greenspace."[48] Significant power savings can be achieved by ensuring that water resources are available for greenspace activities.

Global Water, through its regulated utilities, Santa Cruz Water Company and Palo Verde Utilities Company, has made significant investment in water reclamation treatment and transmission infrastructure throughout developing communities in and around the Cities of Casa Grande and Maricopa, Arizona. This investment lays the foundation for long term total water management opportunities in the area, supporting growth while addressing scarcity and obviating treatment to meet the Safe Drinking Water Act (SDWA) for a significant volume of water. An analysis of the systems in the Maricopa/Casa Grande Region (MCGR) provides an opportunity to examine the economics of recycling.

MODELING AND ECONOMIC ANALYSIS

Modeling was developed to analyze capital investment for infrastructure, system operations and maintenance costs, and the rate requirements associated with various water resource scenarios. This model was calibrated from field experience and data accumulated from Santa Cruz Water Company and Palo Verde Utilities Company. The model is a quantitative analysis. The qualitative impacts of implementing a regional reclamation program (community amenities, recreational opportunities, power savings by employing greenspace etc.), while warranting consideration, were not included.

[46] Quantifying the Impact of Trees: The Chicago Urban Forest Climate Project – D.J. Nowak and E.G. McPherson.
[47] Ibid
[48] Ibid

The analysis was structured as follows:

- Parameters such as underlying regional conditions, population density, consumptive demand, and availability of recycled water were defined
- Quantifiable assessments were developed for relevant parameters (capital expenditures and Advances In Aid of Construction (AIAC), operations and maintenance, capital structure, and profit and loss)
- Three water resource scenarios were identified for evaluation:

    - o Groundwater Only/No Treatment – Assumes complete reliance on groundwater within the region. In this scenario, the underlying water source is assumed to meet compliance with all regulatory mandates without a requirement for significant treatment facilities

    - o Surface Water – Assumes that surface water is acquired and delivered to the region for use in lieu of groundwater

    - o Groundwater with Arsenic Treatment – Assumes that groundwater must be treated for compliance with one of the 90 regulated contaminants of the SDWA to meet changes in the Maximum Contaminent Levels (MCL)

- Each water resource scenario was evaluated in the context of no reclamation, basic reclamation, and advanced reclamation:

    - o No Reclamation is defined as employing groundwater for all water uses in a single-plumbed community

    - o Basic Reclamation is defined as reusing water produced by a water reclamation facility for irrigation of common areas, Homeowners Association (HOA) open spaces, community amenities and schoolyards

o Advanced Reclamation is defined as a dual-plumbed, highly distributed network of delivery of recycled water for the best and highest uses possible

Detailed discussion of baseline parameters is included as **Appendix D**.

ANALYSIS OF RESULTS

Modeling allowed for analysis of many different areas including:

- Water savings
- Baseline Costs (both capital costs and cost to the customer)
- The impact of surface water acquisition
- The impact of treatment

Results depicting front-end capital expenditures (infrastructure) and cost to the consumer (monthly billing) are summarized in the following Table 2 (calculation sheets are included as **Appendix E**) and analysis is made in the pages that follow.

Water Resource Scenario	Level of Reclamation	Infrastructure Total (per EDU)	Monthly Billing (per EDU/Mo)
Groundwater/No Treatment	None	$6,494	$83.19
Groundwater/No Treatment	Basic	$6,694	$80.99
Groundwater/No Treatment	Advanced	$8,214	$85.94
Surface Water	None	$12,428	$164.26
Surface Water	Basic	$10,533	$133.45
Surface Water	Advanced	$11,610	$132.33
Arsenic Treatment	None	$6,945	$104.03
Arsenic Treatment	Basic	$6,985	$94.48
Arsenic Treatment	Advanced	$8,472	$97.87

EDU - Equivalent Dwelling Unit • EDU/Mo - Equivalent Dwelling Unit Monthly

Table 2

Water Savings in Groundwater Only/No Treatment

Water recycling results in substantial water savings, reducing demand by 35% (basic recycling) to 43% (advanced recycling).

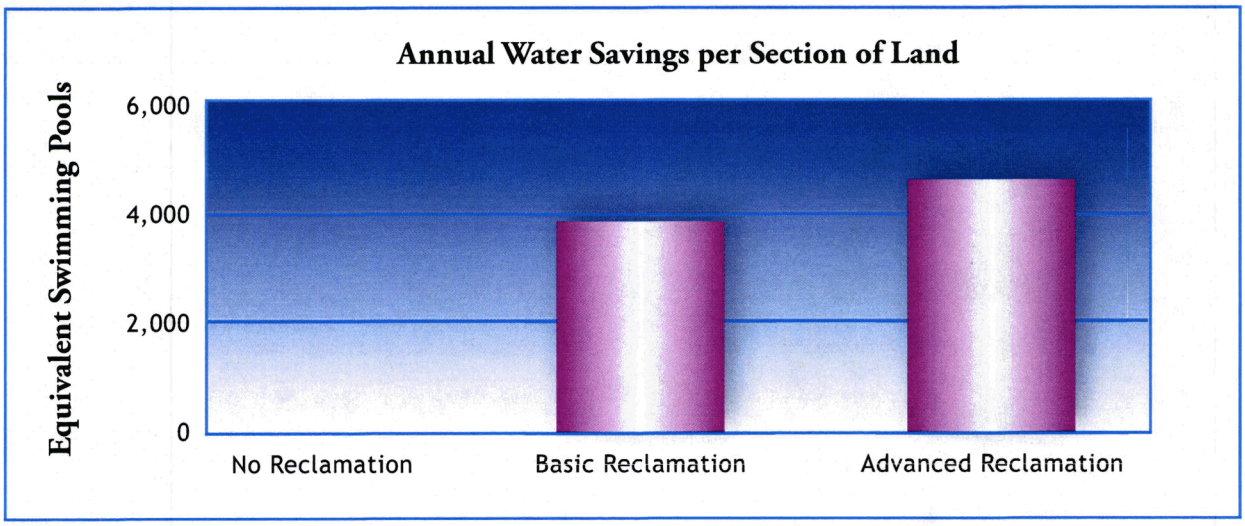

Table 3

The water savings associated with basic and advanced reclamation is tremendous, see (Table 3). Without reclamation, groundwater consumed on an annual basis within a section of developed land is approximately 273 million gallons (the equivalent of 10,919 swimming pools). The incorporation of basic reclamation to the section reduces consumption to 177 million gallons annually (7,065 swimming pools), a savings of 35%. [49] Advanced reclamation reduces the consumption to 156 million gallons (6,248 swimming pools), representing a 43% savings.[50]

As a result of these water savings, more growth may be sustained within the same volume of potable water. An additional 1,222 units may be serviced through the introduction of basic reclamation. Advanced reclamation increases that number to 1,481 units, this increase in

[49] (10,919-7,065)/10,919 = 3,854/10,919 = 0.35 (35%)
[50] (10,919-6,248)/10,919 = 4,671/10,919 = 0.43 (43%)

housing density yields other environmental benefits ranging from reduced transportation demand, increased community coherence, and increased local business development opportunities.[51]

Baseline Costs (Groundwater Only/No Treatment Scenario)

When analyzed in the Groundwater Only/No Treatment scenario it is apparent that the front-end capital costs associated with basic reclamation are only slightly higher (+3%) than those associated with the provision of no reclamation. Capital costs for Advanced reclamation are higher than that of basic reclamation (it should be noted that, while capital costs are higher, costs to the consumer are lower – as discussed below).

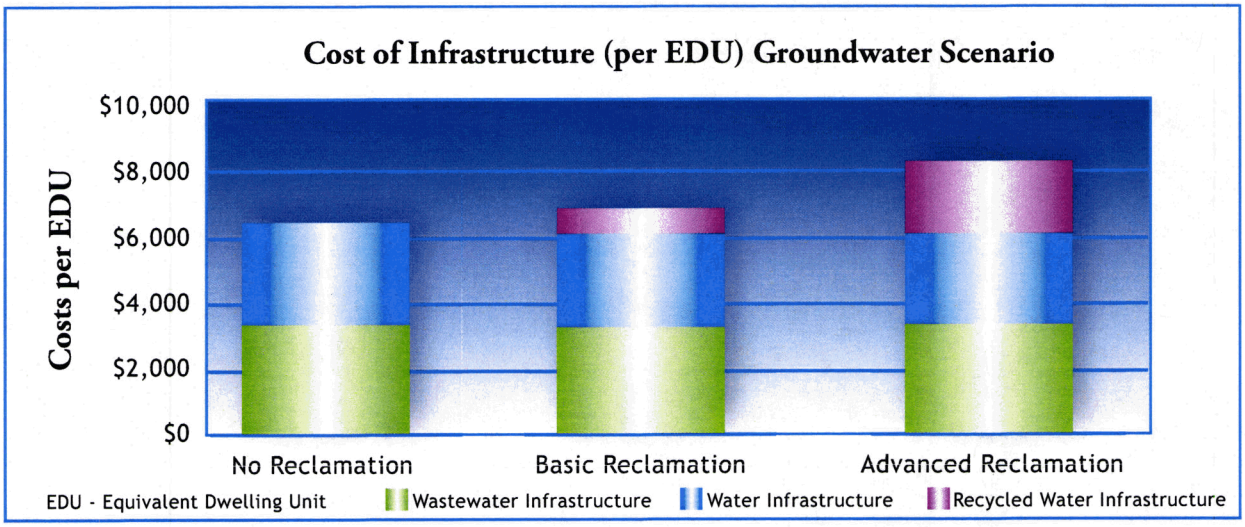

Table 4

Basic reclamation requires the installation of pipes and infrastructure to distribute recycled water from the water reclamation facility to its point of use (see Table 4). This is a non-pressurized system, where water is delivered at atmospheric pressure to Recycled Water Retention Structures (typically lake-type facilities). The point of use, from the perspective of the utility, is the onsite retention structure from which the development draws to irrigate common areas,

[51] See work of Urban Land Institute, generally, and Urban Land Institute/National Multi-Housing Council/American Institute of Architects' "Joint Forum on Housing Density", Feb. 7, 2002.

parks, ball fields, school grounds, etc. The cost of the pipeline is offset by a downsizing of facilities that treat and distribute potable water. These include well sites and distribution centers (storage and pumping). Total cost per EDU without reclamation is calculated to be $6,494. Cost per EDU with basic reclamation calculates to $6,694 (an increase of 3.1%).

Advanced reclamation includes all aspects of basic reclamation but adds infrastructure to distribute recycled water directly to each residence for irrigation purposes rather than simply delivering to centrally located retention structures. Under this scenario, each individual property has two meters, one for potable water and one for recycled water. Distribution must be pressurized, requiring construction of recycled water distribution centers for storage and pumping (typically large water tanks in excess of 1,000,000 to 2,000,000 gallons). Advanced reclamation also requires construction of in-parcel distribution pipelines. Cost per EDU is $8,214 (an increase of 26.5% when compared to no reclamation).

Operating under the Groundwater-only Scenario, cost to the consumer can be reduced by 2.6% when employing basic direct reuse. When advanced reclamation is utilized, the cost increases slightly (+ 3.3%).

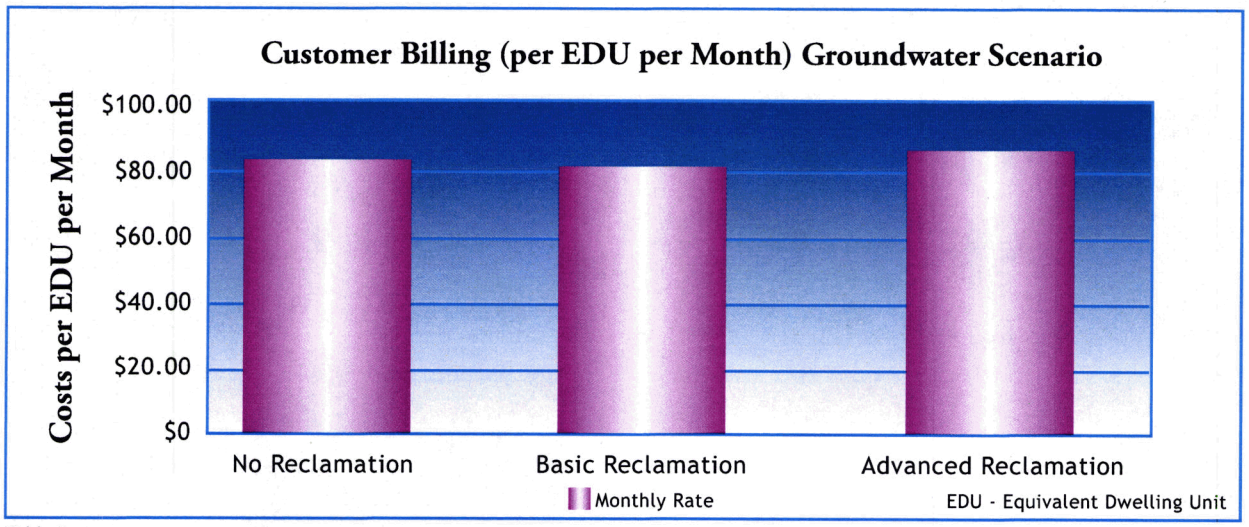

Table 5

While capital costs are slightly more expensive, implementation of basic water reclamation creates a scenario where the consumer recognizes a cost savings on monthly billing (see Table 5).

Without water reclamation, rates associated with the groundwater-only scenario are in the order of $83.19 per EDU per month. Reuse creates a decrease in treatment of potable water, reducing costs to the consumer. Consumer billing with basic reclamation will decrease to $80.99 per EDU per month (-2.6%). Advanced reclamation utilizes a pressurized distribution system, including storage and pumping. As a result, monthly costs to the consumer increase to $85.94 per EDU per month (+3.3%) when compared with the no reclamation scenario.

A comparison of water savings to capital cost and consumer billings in Table 6 illustrates that significant opportunities can be achieved through minimal front end capital investment.

Water Resource Scenario	No Reclamation	Basic Reclamation	Advanced Reclamation
Water Savings in Gallons/Year/Section	0	96,347,624 35% Savings	116,784,998 43% Savings
Additional EDU's Liberated @ 216 Gallons/EDU	0	1,222	1,481
Capital Cost per EDU	$6,494	$6,694 +3.1%	$8,214 +26.5%
Consumer Billing per EDU/Month	$83.19	$80.99	$85.94

EDU - Equivalent Dwelling Unit • EDU/Mo - Equivalent Dwelling Unit Monthly

Table 6

Impact of Surface Water

Introduction of surface water has substantial impact on the economics of water reclamation. When the cost associated with a perpetual water right is added to the equation, cost per EDU increases by over 90% (from $6,494 to $12,428). In this scenario, water reclamation offers substantial savings in front end capital cost. When factoring in surface water, a

savings of over 15% can be realized with basic reclamation ($12,428 per EDU drops to $10,533 per EDU). Advanced reclamation recognizes a cost savings of almost 7%.

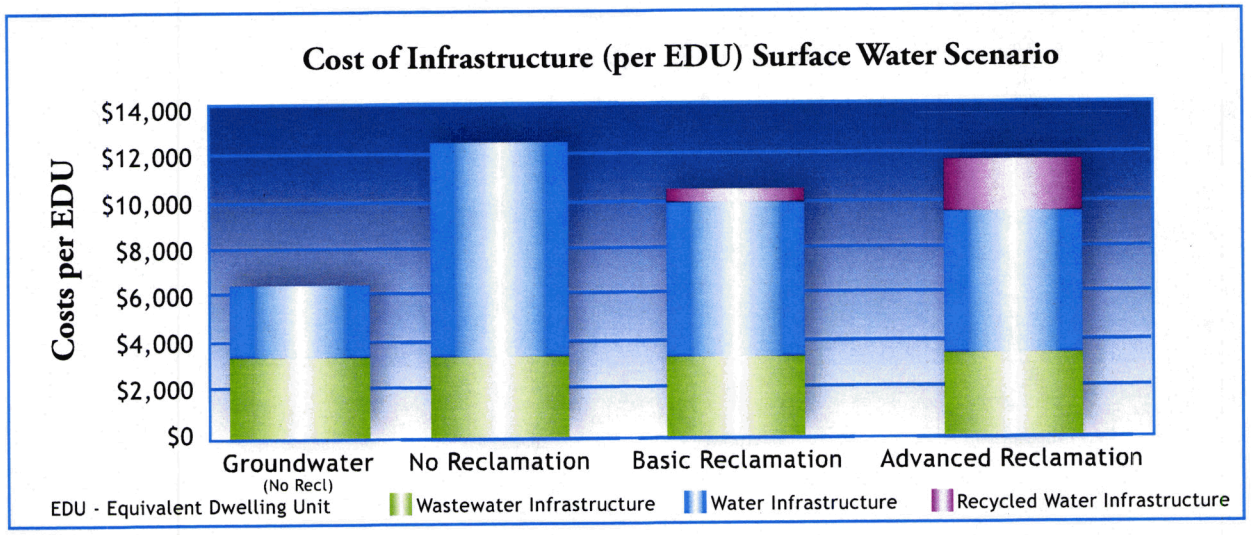

Table 7

The emerging reality of groundwater scarcity necessitates acquisition of renewable surface water as a supplemental resource. Research into the water rights market in the southwestern United States indicates an ongoing upward surge in prices. It is anticipated that this price surge will continue as growth and scarcity issues become increasingly polarized (see Table 7). For purposes of analysis, a baseline value for acquisition of surface water rights was established at $11,000 per acre foot.[52] The impact on front end capital requirements and cost to the consumer is staggering. Total front end capital cost per EDU increases from $6,494 per EDU (utilizing groundwater) to $12,428 per EDU when the cost of surface water acquisition is included (an increase of 91.4%). This value can be decreased substantially by utilizing water reclamation in the regional plan. By recycling water, the need for incremental surface water supplies is diminished. With basic reuse the cost drops to $10,533 per EDU (a decrease of 15.3% of the surface water scenario with no reclamation). Advanced reclamation in the surface water scenario calculates to $11,610 per EDU (a decrease of 6.6%).

[52] Discussion of $11,000 price per acre foot is included in Appendix D.

In the surface water scenario, the cost of treatment has a great impact on the cost to the consumer -- monthly billings nearly double ($83.19 per EDU per month with groundwater, $164.26 per EDU per month with surface water). By utilizing recycled water in lieu of surface water, consumer costs can be reduced by 18% to 20%.

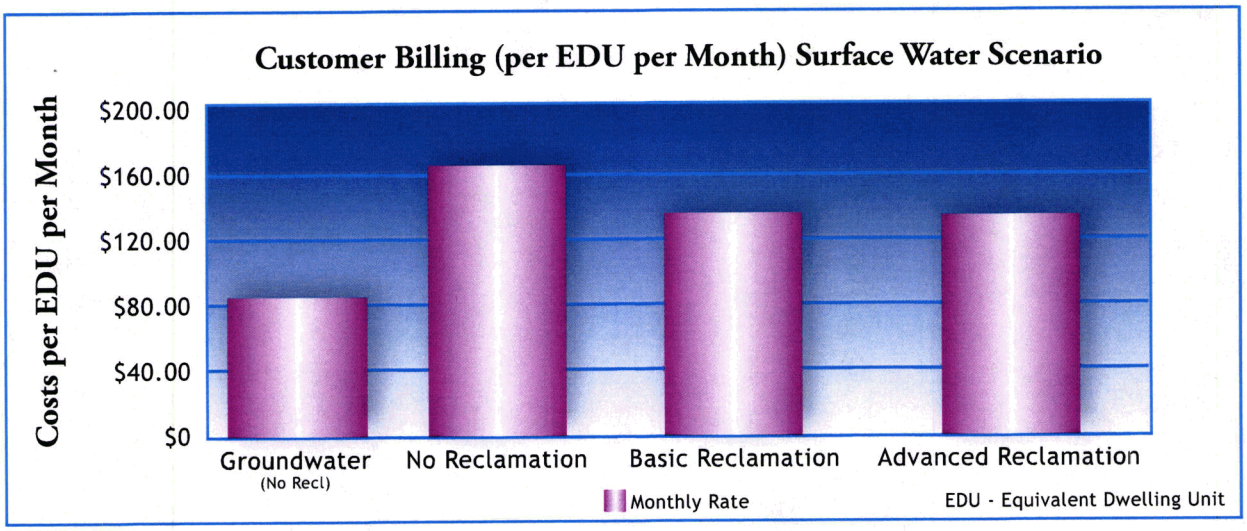

Table 8

In the surface water scenario, monthly billings calculated to $164.26 per EDU (see Table 8). Basic reclamation reduces that number to $133.45 per EDU (-18.8%) while advanced reclamation reduces the monthly billing even more to $132.33 per EDU (-19.4%).

Impact of Treatment

Treatment considerations have impacts on capital costs. When the cost associated with arsenic removal equipment is added to the model, cost per EDU increases by over 7%. When treatment is factored in, a slight savings of 0.6% can be realized with basic reclamation. In-parcel distribution pipelines increase the cost of advanced reclamation by 18% when compared to the no reclamation-groundwater only/no treatment scenario. Note that the model conservatively assumes that treatment is required for only one contaminant. In the event that the next regulated contaminant requires a separate and distinct treatment system, the effect on cost is compounded.

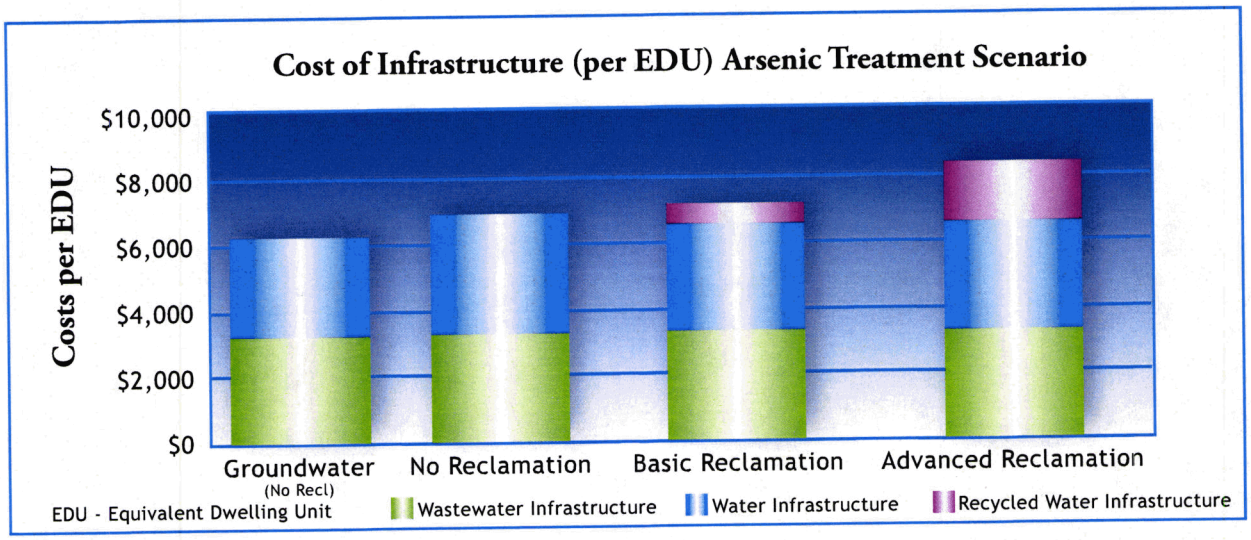

Table 9

The cost per EDU increases from $6,494 per EDU (utilizing groundwater that does not require treatment) to $6,945 per EDU when the cost of treatment is included (an increase of 11.1%), (see Table 9). With basic reuse the cost drops to $6,985 per EDU (a decrease of 0.6% of the treatment scenario with no reclamation). Advanced reclamation in the treatment scenario calculates to $8,472 per EDU (an increase of 18.0%).

When treatment is required, monthly billing to the consumer will increase by over 25%. Water reclamation in this scenario offers a savings to the consumer.

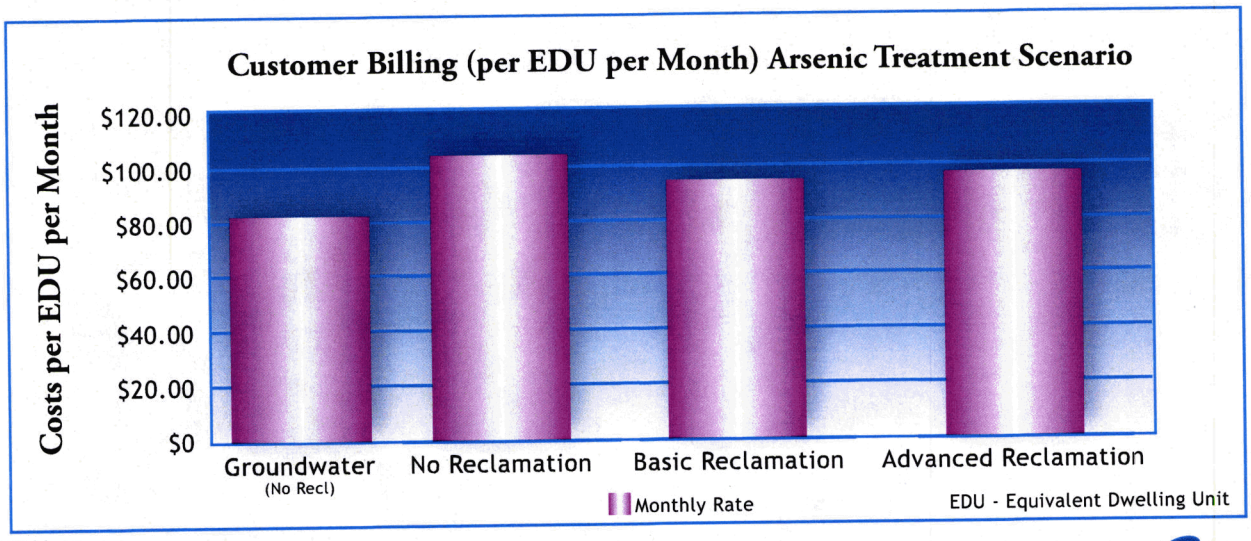

Table 10

Monthly billings within the treatment scenario calculated to $104.03 per EDU (an increase of 25.1% when compared to the scenario where groundwater does not require treatment), (see Table 10). Basic reclamation reduces that number to $94.48 per EDU (-9.2%). Advanced reclamation reduces the monthly billing under treatment scenarios to $97.87 per EDU (-5.9%).

CONCLUSIONS

According to a 2006 Arizona Department of Water Resources presentation on Arizona water issues, the State is dependent upon three sources of water as listed in Table 11 below[52]:

Water Source	Available Annual Water Supply in Arizona Million Acre-Feet (MAF)	% of Total
Surface Water		
Colorado River	2.8	35.6%
In-State Rivers	1.4	17.8%
		53.4%
Ground Water	2.9	36.8%
Reclaimed Water	**0.77**	**9.8%**

Table 11

Based on these figures, over-allocated rivers and extended periods of drought have the potential to impact 53.4% of the State's water supply while another 36.8% of its reserve relies on depleting underground aquifers. Reclaimed water exists as the only water source experiencing an increase in availability (9.8% and growing). The State must move aggressively to support and mandate water recycling as a long term solution to water scarcity.

An effective recycling program can only be deployed by an integrated services provider with the ability to plan regionally and construct infrastructure – early, in advance of development

[52] "Arizona Water Issues" presentation of ADWR, at Valley Forward Association meeting, March 16, 2006.

– of the appropriate size and capacity. The benefits of recycling can also be exploited by an integrated utility through common-trench construction, consistency of recycling objectives, commonality of standards and economies of scale for labor.

Global Water is not on the vanguard of successful water reuse programs. In fact, there are thousands of applications throughout the world. Much can be learned and emulated from utilities that have been implementing water recycling for some time.

- From examining the Irvine Ranch Water District, it is apparent that much can be accomplished if the benefits of reclamation are recognized early and if recycled water is a part of the planning process from the beginning. Arizona has a unique opportunity in this regard – growth is driving the development of new communities. Deploying recycled water infrastructure while these communities sit on the drawing table is far superior to attempting a retrofit later, when the scarcity reality is more pronounced.
- The El Dorado Irrigation District has demonstrated that implementation of advanced water recycling serves to lower the customer's monthly water bill.
- Tucson Water determined that, despite a populace with a strong environmental ethic, aggressive demand management alone cannot necessarily curtail depletion of underlying aquifers.
- The Australian community of Mawson Lakes shows that recycled water can be safely and dependably used to flush toilets in private residences.
- Rouse Park, in suburban Sydney, Australia, is an example where large scale water reclamation planning has been of significant benefit during times of prolonged drought. These are but five examples of dual-plumbed applications that were driven by scarcity.

Recycled water has been safely utilized throughout the world for several decades. In preparation for a March 2007 referendum on recycled water use, the Local Government Association of Queensland, Australia commissioned a study by the University of NSW. The report by Stuart Khan and David Roser, of the UNSW Centre for Water and Waste Technology, reviewed recycled drinking water schemes in the US and Singapore. "Despite more than 40 years' experience,

no clear deleterious health effects...have been observed," the authors wrote.[54] Recycled drinking water in the schemes was of equal quality to that from traditional sources – or better.[55]

Direct reuse, ultimately using dual piping networks (one for potable water and one for pressurized recycled water), offers the most practical and inexpensive way to make use of reclaimed water. While recharge remains a method of achieving seasonal resource equalization, direct reuse is preferable as a mechanism to reduce pumping costs, reduce the mass loading of residual contaminants on the receiving environment and reduce the volume of water treated to National Primary Drinking Water Standards and used by customers.

Deployment of recycled water infrastructure offers substantial water savings, ranging from 35% to 43%. This savings allows for increased housing density with numerous environmental benefits. In the context of residential density, this increase in unit serviceability allows population cores to be developed with existing resources. Accordingly, growth need not seek out new sources of water thereby increasing consumption of raw, native or otherwise desirable open space.

From an economic standpoint, analysis shows that while the implementation of dual water mains and water recycling may be more expensive (up front), they are less costly (to the consumer). Under the likeliest scenarios, i.e., groundwater must be treated to SDWA standards and surface water must be purchased and delivered to customers, the practice of water recycling has an immediate and profound impact on water scarcity management.

With the emerging concerns of groundwater scarcity and impending treatment considerations, the economics of reclamation have shifted sharply in favor of water recycling. Regions across the globe are vigorously changing their water policy, and emplacing billions of dollars in infrastructure to achieve water savings up to 50%.

The introduction of water reuse provides substantial benefits in the arid southwestern United

[54] From the article "All-clear for recycled water." The Courier Mail, January 22, 2007.
[55] Ibid

States. The pressures of drought, growth and aquifer overdraft are conspiring to limit the availability of water resources in the area. Significantly, these impacts can have a dramatic impact on the quality of life in Arizona. Consequently, it is in the public interest to maximize the availability of alternative water resources, and to minimize the consumption of limited groundwater and surface water resources. It is therefore critical that water recycling form a pillar of water policy in Arizona. Policy in Arizona lags surprisingly behind other areas. The emerging realities of population growth and water scarcity have already impacted the region's future. Failing to act now will accelerate that impact.

Arizona is now at a crossroads – its growth is incessant and historic, its water supplies diminished by 13 years of drought, its CAP water system has been thrice proven to be over-allocated – the time for decisive, progressive action is now.

By making the safest and best use of reclaimed water, the demand for expensive surface water and the requisite substantial drinking water treatment will be greatly reduced. Thus saving up front capital and acquisition costs and forever reducing operating and treatment costs for Arizona residents – all while ensuring that the State's water resources are used for their highest and best use.

It is widely accepted that a culture of conservation is in the public interest, and that utilizing less water per capita is also in the public interest. It is interesting to note that the very capital intensive advanced water recycling model provides long term rate protection to ratepayers – another key element of sound water policy. The only remaining question is whether the State's leaders will act now to protect the public interest for the next generations of Arizonans.

APPENDIX B – DETERMINATION OF ENVIRONMENTAL IMPACT RECHARGE VERSUS REUSE

In order to assess the relative merits of recharge versus re-use on the environment, in particular the underlying aquifer, a model has been developed to represent the following conditions:

1. *Water-only*
   Under this scenario, it is assumed that a non-integrated water-only solution has been deployed. There are no water demand reductions and, hence, all water for all uses must be treated from the aquifer.

2. *Recharge of Reclaimed Water*
   This scenario assumes that all reclaimed water treated from a water reclamation facility is directly recharged to the aquifer via vadose zone or ASR wells. No water is re-used in this scenario.

3. *Basic Re-Use of Recycled Water*
   This scenario provides recycled water for common area irrigation. Excess recycled water is recharged to the aquifer by vadose zone or ASR wells.

4. *Advanced Re-Use of Recycled Water*
   Under this case, recycled water is deployed for use as flush water in residential toilets, for use in residential irrigation, and for the uses included in the Basic Re-Use scenario. Shortfalls of this non-potable source to meet demand are made up with untreated surface water.

The model evaluates the impact of the above scenarios on total dissolved solids (TDS) in the aquifer and the impact on the overall available volume of the aquifer. This analysis is based on mass balance and volumetric considerations. The output of the model is termed the Impact

APPENDIX A – COMPENDIUM OF UTILITIES

Utility Name and Location	Number of Years Practicing	List of End Use Types	Driver for Water Reuse	Rate Information	Total Annual Volume of Water Reused	Miles of Water Reuse Distribution
Irvine Ranch Water District, CA (IRWD)	40 (since 1967) (dual plumbing since 1991)	Residential landscape irrigation 3742, commercial 13, industrial 2, and agricultural 55 (total 3812 reclaimed water connections) in 2005	Scarcity	$1.18/1000 gallons for non-agricultural landscape irrigation base rate; $0.79/1000 gallons for commercial and industrial	22,434	245 miles of pipelines, 8 storage reservoirs, and 12 pumping stations
Notes Service area of 133 mi2. Reclaimed water makes up over 20% of the water used in the IRWD service area. Water scarcity initiated water recycling program - semiarid region (an annual rainfall of 12 to 13 in). **An ordinance was enacted in 1990** requiring all new buildings over 55 ft high to install a dual distribution system for flushing toilets and urinals in areas where reclaimed water is available. In 1991, IRWD became the first water district in the nation to obtain health department permits for the interior use of reclaimed water from a community system. Reclaimed water is currently used for **toilet flushing** in IRWD's facilities as well as in several high rise office buildings constructed with **dual piping systems**. Potable, or drinking water demands in these buildings have dropped by as much as 75 percent due to the reclaimed water use.						
Serrano, CA	8 (since 1999)	3437 active accounts in 2006 (3277 dual recycled residentials, 139 commercials/industrials (irrigation), 8 construction meters, 13 recreational turf)	Scarcity	$1.096/1000 gallons for Residential (plus $106 basic charge for Commercial/ Industrial)	2,782	N/A
Notes Serrano is one of the first master-planned communities to use recycled water to irrigate the front and backyards of residential units. Homes are equipped with **dual plumbing** (potable water for interior use and reclaimed water for landscape irrigation). A dual plumbed home pays 50% of the normal (all potable) connection charge for delivery system capacity (i.e., $2,323 rather than $4,646). The Serrano El Dorado **Owners Association** made an agreement with the El Dorado Irrigation District to supply reclaimed water from the districts' WWTPs for irrigation purposes.						
Tucson Water, AZ	23 (since 1984)	Residential front yard irrigation - 900 sites (14 golf courses, 35 parks, 47 schools, > 700 single family homes)	Scarcity	$2.14/1000 gallons (usage charge) + service charge	11,350	160 miles
Notes The use of reclaimed water is regulated by the ADEQ and the ADWR through a series of permits. Water scarcity initiated water recycling program. In 2005, reclaimed customers saved 4.2 billion gallons of drinking water, enough for 39,000 families for a year.						

WWTP - WasteWater Treatment Plant • ac-ft/yr - Acre Feet per Year • ADEQ - AZ Dept. of Environmental Quality • ADWR - Arizona Department of Water Resources

Utility Name and Location	Number of Years Practicing Water Reuse	List of End Use Types	Driver for Water Reuse	Rate Information	Total Annual Volume of Water Reused	Miles of Water Reuse Distribution
Mawson Lakes, Australia	2 (since 2005)	Toilet flushing, residential yard irrigation (4300 homes by 2010)	Scarcity	Set at 75% of the price of mains drinking water (AUD $2.91/1000 gallons for 2004/05 financial year, 1 AUD = 0.884 USD)	N/A	N/A
Notes Mawson Lakes is a fully planned 620 hectare (2.4 mi2) community. **All homes and businesses are dual plumbed and use recycled water for front yard irrigation and toilet flushing.** This reduced usage of drinking water by 50% as compared to the Adelaide average. Recycled water from two sources - SA Water's Bolivar WWTP and the City of Salisbury's wetlands (treated stormwater). An anticipated saving on the use of surface water by about 210 MG per year by the Mawson Lakes community. An average household in Mawson Lakes could save approximately AUD $30 each year.						
Rouse Hill, Australia	12 (since 1995)	Toilets flushing, residential yard irrigation, car washing (more than 16,500 homes)	Scarcity	AUD $2.70/1000 gallons plus quarterly service charge AUD $4.69 (in 2007)	1,540	N/A
Notes Rouse Hill, a suburb of Sydney, has Australia's largest residential recycled water scheme. Rouse Hill put an initial dual system in operation in 1995. **All customers are dual plumbed with both potable and reclaimed water lines inside for toilet flushing.** The reclaimed water system also provide water for fire protection, not as a water conservation measure, but to reduce the size of the potable water pipelines. On average the Rouse Hill scheme has reduced demand for drinking water by 35 percent.						
St. Petersburg, FL	30 (since 1977)	Irrigation for 9,992 residential lawns, 61 schools, 111 parks, and 6 golf courses (total 10,284 active customers) in 2006	Discharge limit	Unmetered service: $14.36/mo. for first acre + $8.22/mo. for each additional acre; Metered service $0.42/1000 gal. ($14.36 min.); plus 10% tax within City limits, rates outside City limits are 125% of City rates (Nov `06)	40,700 (four WRFs)	291 miles, 3909 valves, 316 fire hydrants
Notes One of the oldest **dual distribution systems** in the U.S. The dual distribution system has reduced potable water usage by 50%. In response to a state legislative act that required either advanced treatment or zero discharge to Tampa Bay, the City Council adopted the concept of zero discharge through wastewater reuse. A treated wastewater main ties all four plants together in a complete loop.						

AUD - Australian Dollar to U.S. Dollar Exchange Rate • USD - United States Dollar • WWTP - Watse Water Treatment Plant • ac-ft/yr - Acre Feet per Year

Utility Name and Location	Number of Years Practicing Water Reuse	List of End Use Types	Driver for Water Reuse	Rate Information	Total Annual Volume of Water Reused	Miles of Water Reuse Distribution
Marin Municipal Water District, CA (MMWD)	**16 (since 1991)**	**Residential yard irrigation, toilet flushing, car washes, industrial cooling, commercial laundries (over 250 customers)**	**Conservation**	**$2.18/1000 gal. (70% of potable water, $3.07/1000 gal.) plus service charge**	**2,200**	**25 miles**
Notes MMWD was the first water supplier in California to use recycled water for car washes, air conditioning cooling towers, and commercial laundries. **First dual-plumbed new office building** was built in San Rafael in the mid-1990s.						
Orange County Water District, CA	16 (since 1991)	Urban irrigation, Industrial (cooling)	Scarcity	N/A	7,700	N/A
Notes Green Acres Project; distributes tertiary treated wastewater for uses in Fountain Valley, Huntington Beach, Costa Mesa, Newport Beach, and Santa Ana.						
West Basin Municipal Water District, CA	12 (since 1995)	Landscape irrigation, cooling towers, refineries, street sweeping, toilet flushing	Scarcity	N/A	33,000	75 miles
Notes West Basin Water Recycling Facility is the largest recycled water plant of its type in the United States, and produces six different qualities of recycled water.						
City of San Jose, CA	10 (since 1997)	Residential/ commercial toilet flushing, industrial cooling and process water, landscape irrigation	Conservation	$1.68/1000 gal. (71% of potable water) for irrigation, $1.09/1000 gal. (46% of potable water) for agricultural irrigation	27,800	105 miles
Notes In 1989 the cities of San Jose, Santa Clara and Milpitas in California launched the South Bay Water Recycling (SBWR) program to bring a reliable and sustainable water supply to the South Bay area. Most of the final treated water from the San Jose/Santa Clara Water Pollution Control Plant (167 MGD) is discharged as fresh water through Artesian Slough and into South San Francisco Bay. About 10% is recycled through SBWR pipelines around the South Bay where it is ultimately used for residential/commercial irrigation and toilet flushing.						
El Paso Water Utilities, TX (EPWU)	44 (since 1963)	Residential/ commercial yard irrigation,industrial cooling, irrigation - golf courses, schools, parks, recharge	Scarcity	$1.14/1000 gal. (70% of potable Block 1 rate, $1.63/1000 gal.)	6,850	40 miles
Notes EPWU has delivered recycled water since the 1960s realizing scarcity of water resources. EPWU is operating the first wastewater treatment plant in the world to meet drinking water standards for its reclaimed water, and the other three plants meet the highest possible quality rating of Type I reclaimed water. Four facilities - Northwest WRF, Fred Hervey WRP, Haskell Street WWTP, Roberto Bustamante WWTP.						

WWTP - Watse Water Treatment Plant • ac-ft/yr - Acre Feet per Year • MGD - Million Gallons/Day

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3. *Basic Re-Use of Recycled Water*
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   Under this case, recycled water is deployed for use as flush water in residential toilets, for use in residential irrigation, and for the uses included in the Basic Re-Use scenario. Shortfalls of this non-potable source to meet demand are made up with untreated surface water.

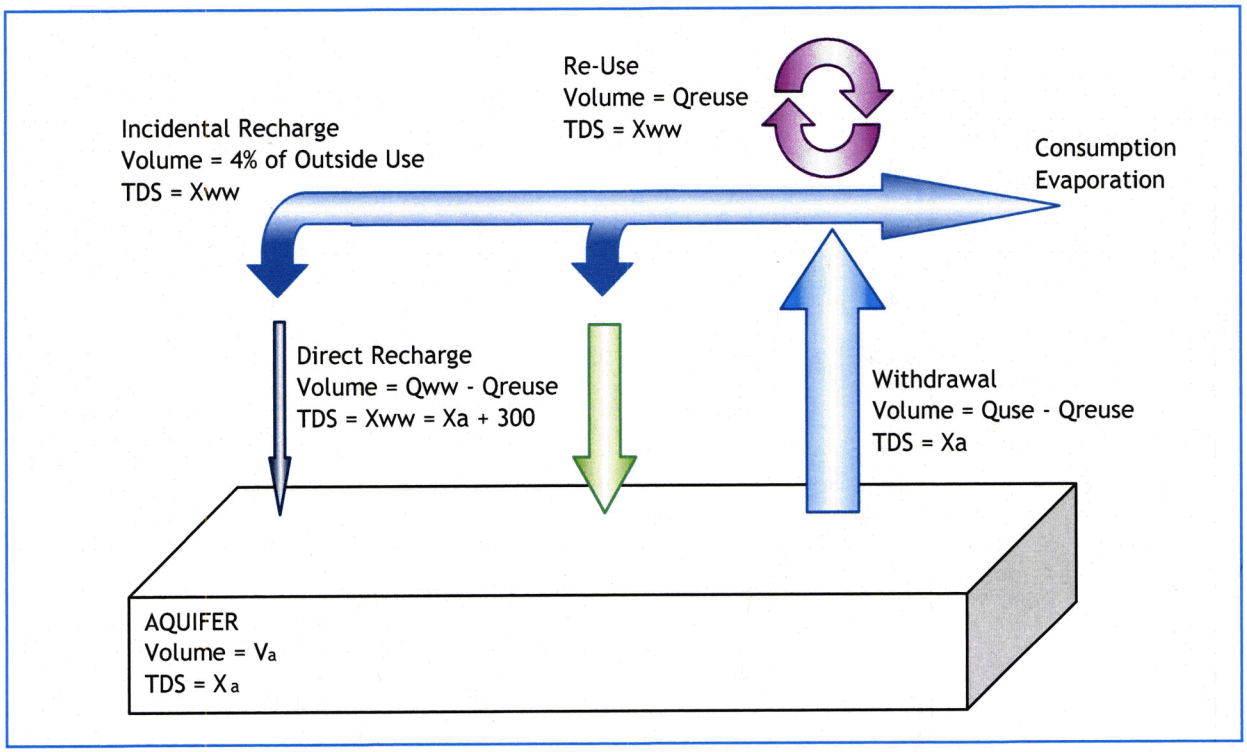
The model evaluates the impact of the above scenarios on total dissolved solids (TDS) in the aquifer and the impact on the overall available volume of the aquifer. This analysis is based on mass balance and volumetric considerations. The output of the model is termed the Impact

Factor, which represents the sum of the absolute values of the TDS and volume impacts. The model is run in a time sequence of EDU-days.[1]

The model employs volumetric consumptions derived from empirical data collected from Global Water's Santa Cruz Water Company system located in Maricopa, AZ. This system is presently operating in the "Basic Re-Use" mode.

Model Architecture

The model architecture for the four scenarios is shown in the accompanying figures. The control volume for the model is depicted below:



[1] The impact experienced over 1 EDU-day is equal to the effect of one EDU operating for one day. 1000 EDU-days is equivalent to one EDU operating for 1000 days, or 1000 EDUs operating for 1 day.

Model Results

The model shows that the water resources management plan that has the least impact on aquifer water levels and TDS is that of Advanced Re-Use. This can be explained simplistically by examining the impact of recharge versus re-use. Under the recharge model, the volume removed from the aquifer is larger than under the re-use model. All of the water in the recharge case is consumed or produced reclaimed water of a higher TDS than the original supplied water (in the case of the model, 300 mg/L higher). This high TDS water is injected directly into the aquifer, with the resultant increase in aquifer TDS.

The various total impacts on the water resources can be combined to develop an Impact Factor. This factor is simply the change in percentage of TDS in the aquifer, combined with the absolute value of the reduction in aquifer volume. When plotted against time, it is apparent that the recharge model results in a greater overall impact. The least impact is determined to be that of Advanced Re-Use where smaller volumes are removed from the aquifer, correspondingly smaller volumes are recharged, with the concomitant reduction in mass loading of TDS on the aquifer.

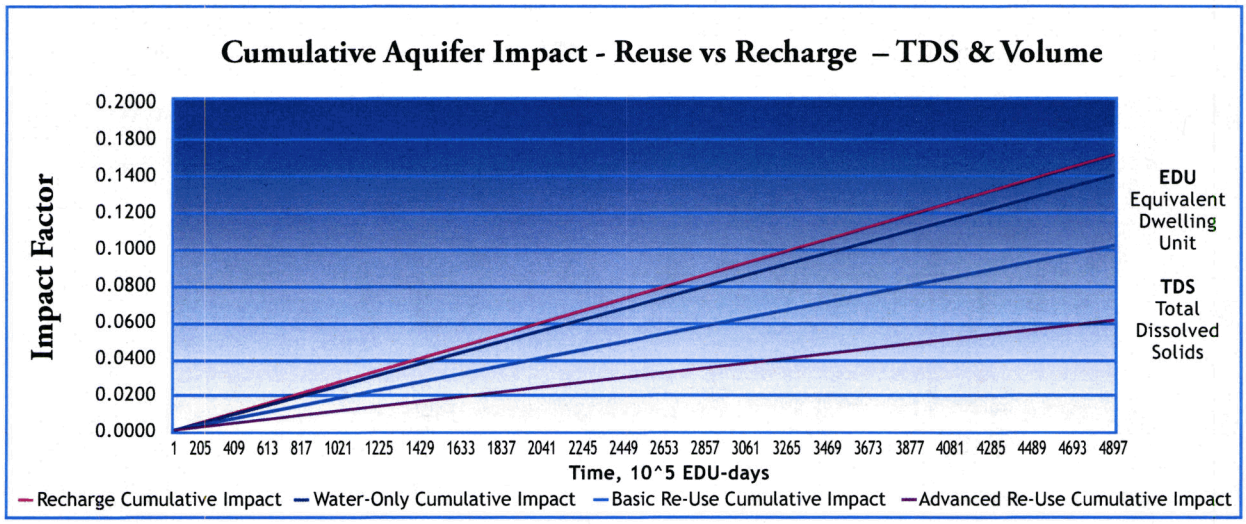


Table 1

Specifically:

1. The volume of high TDS water recharged directly to the aquifer under the Recharge scenario is significantly higher than under the Basic or Advanced Re-Use scenarios. This increases the mass loading on the aquifer.
2. The volume of water required to be withdrawn from the aquifer under the Recharge scenario versus the Advanced Re-Use scenario is significantly higher. This effectively removes low TDS-water from the aquifer at a greater rate and replaces it with a higher TDS water.

Direct Impact on Aquifer TDS

The following graph shows the impact of the four scenarios on the TDS concentrations in the Aquifer:

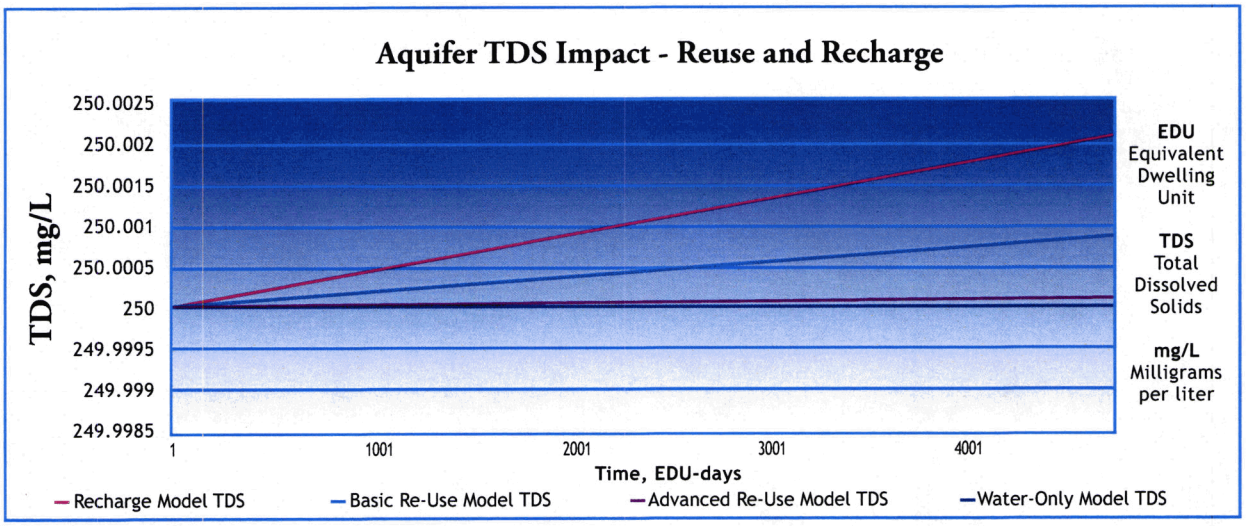


Table 2

Direct Impact on Aquifer Levels

The following graph shows the impact of the four scenarios on the water volume in the Aquifer[2]:

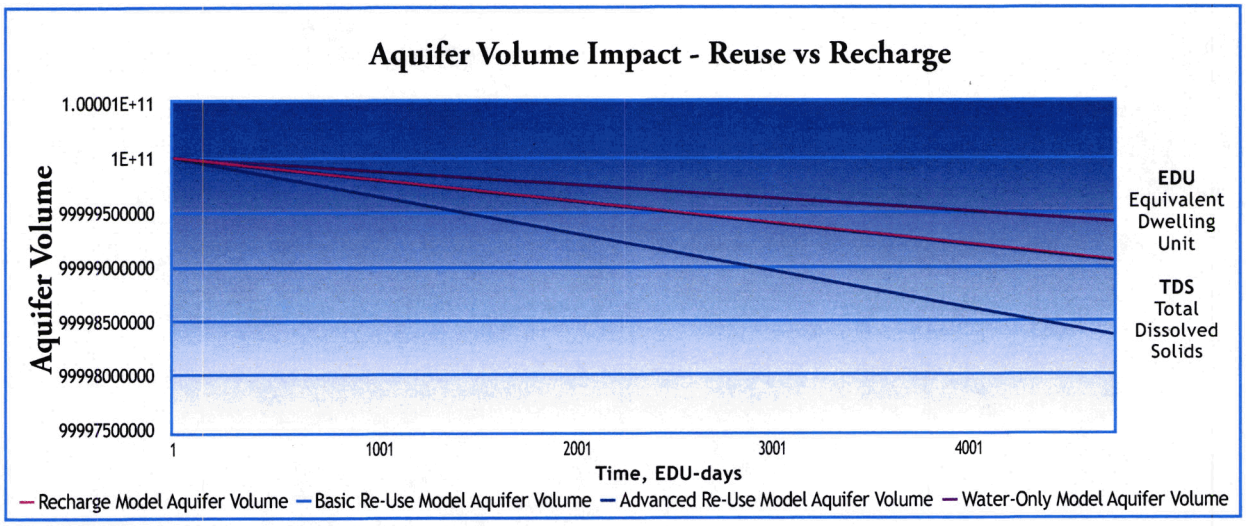


Table 3

[2] In the case of Recharge and Basic Re-Use, the aquifer volume impact is the same – only one line can be seen on the graph, but the results are coincident.

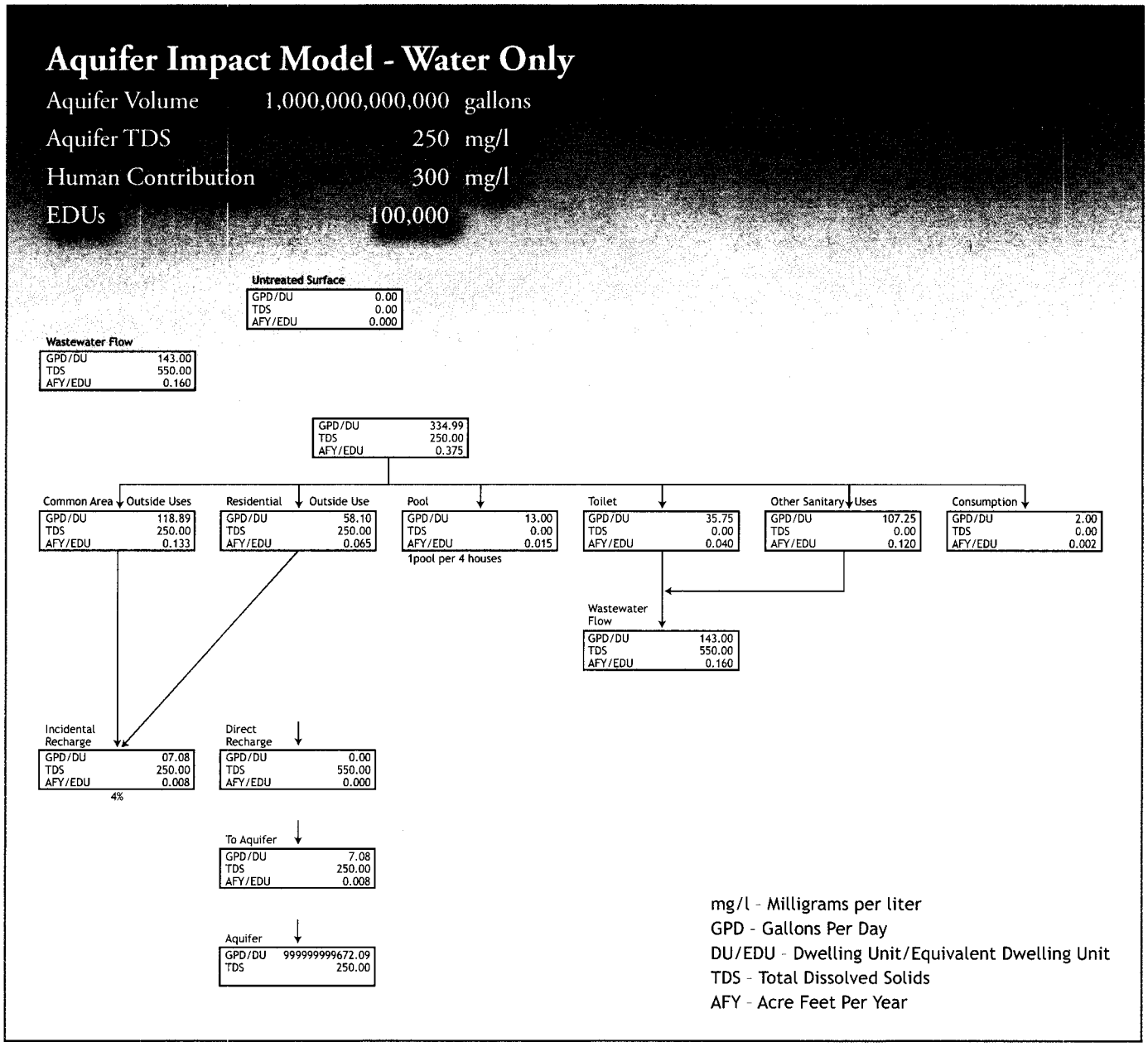

Aquifer Impact Model - Water Only
Aquifer Volume 1,000,000,000,000 gallons
Aquifer TDS 250 mg/l
Human Contribution 300 mg/l
EDUs 100,000
Untreated Surface
GPD/DU 0.00
TDS 0.00
AFY/EDU 0.000
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
GPD/DU 334.99
TDS 250.00
AFY/EDU 0.375
Common Area Outside Uses
GPD/DU 118.89
TDS 250.00
AFY/EDU 0.133
Residential Outside Use
GPD/DU 58.10
TDS 250.00
AFY/EDU 0.065
Pool
GPD/DU 13.00
TDS 0.00
AFY/EDU 0.015
1pool per 4 houses
Toilet
GPD/DU 35.75
TDS 0.00
AFY/EDU 0.040
Other Sanitary Uses
GPD/DU 107.25
TDS 0.00
AFY/EDU 0.120
Consumption
GPD/DU 2.00
TDS 0.00
AFY/EDU 0.002
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
Incidental Recharge
GPD/DU 07.08
TDS 250.00
AFY/EDU 0.008
4%
Direct Recharge
GPD/DU 0.00
TDS 550.00
AFY/EDU 0.000
To Aquifer
GPD/DU 7.08
TDS 250.00
AFY/EDU 0.008
Aquifer
GPD/DU 999999999672.09
TDS 250.00
mg/l - Milligrams per liter
GPD - Gallons Per Day
DU/EDU - Dwelling Unit/Equivalent Dwelling Unit
TDS - Total Dissolved Solids
AFY - Acre Feet Per Year

Table 4

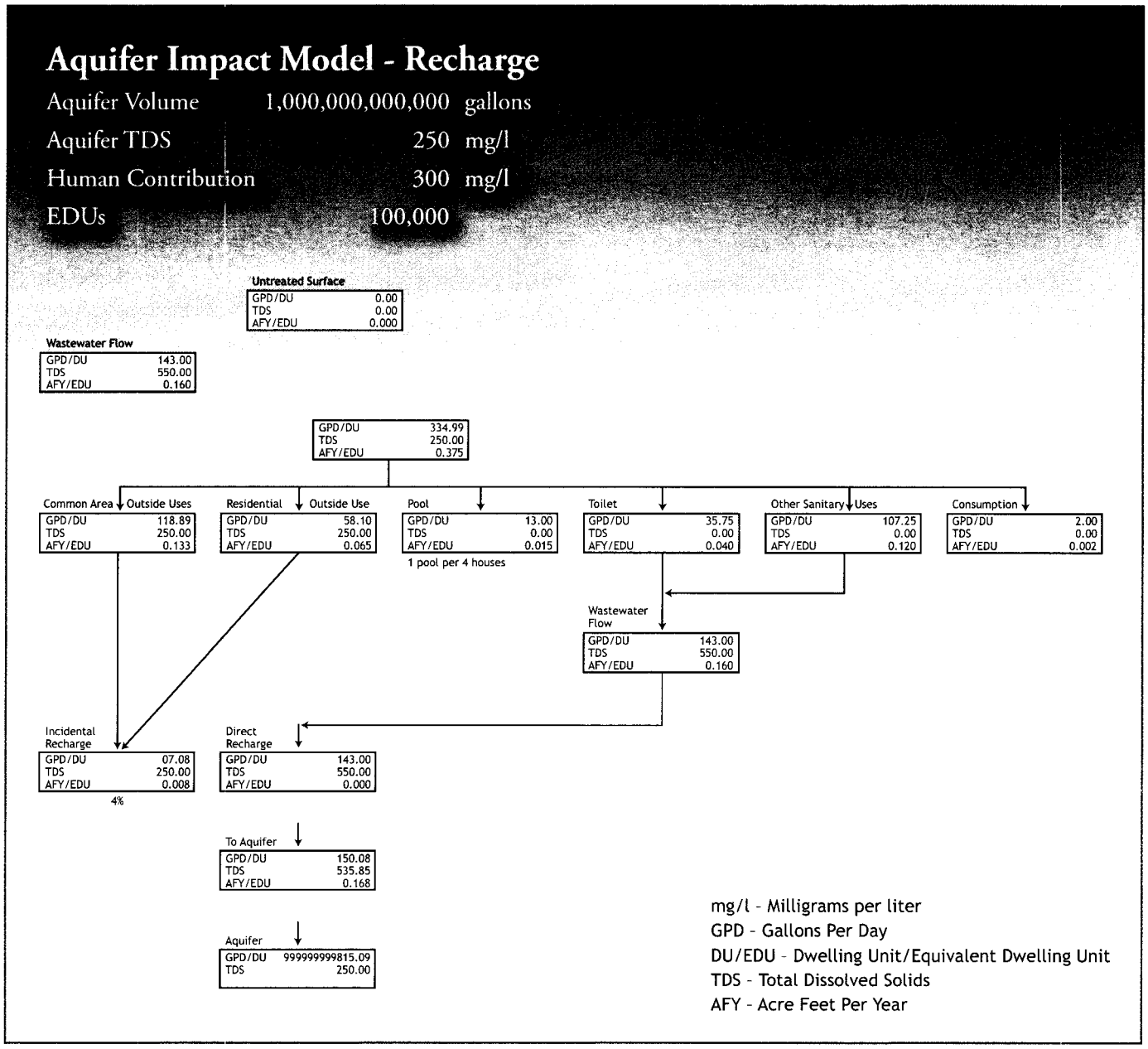

Aquifer Impact Model - Recharge
Aquifer Volume 1,000,000,000,000 gallons
Aquifer TDS 250 mg/l
Human Contribution 300 mg/l
EDUs 100,000
Untreated Surface
GPD/DU 0.00
TDS 0.00
AFY/EDU 0.000
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
GPD/DU 334.99
TDS 250.00
AFY/EDU 0.375
Common Area Outside Uses
GPD/DU 118.89
TDS 250.00
AFY/EDU 0.133
Residential Outside Use
GPD/DU 58.10
TDS 250.00
AFY/EDU 0.065
Pool
GPD/DU 13.00
TDS 0.00
AFY/EDU 0.015
1 pool per 4 houses
Toilet
GPD/DU 35.75
TDS 0.00
AFY/EDU 0.040
Other Sanitary Uses
GPD/DU 107.25
TDS 0.00
AFY/EDU 0.120
Consumption
GPD/DU 2.00
TDS 0.00
AFY/EDU 0.002
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
Incidental Recharge
GPD/DU 07.08
TDS 250.00
AFY/EDU 0.008
4%
Direct Recharge
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.000
To Aquifer
GPD/DU 150.08
TDS 535.85
AFY/EDU 0.168
Aquifer
GPD/DU 999999999815.09
TDS 250.00
mg/l - Milligrams per liter
GPD - Gallons Per Day
DU/EDU - Dwelling Unit/Equivalent Dwelling Unit
TDS - Total Dissolved Solids
AFY - Acre Feet Per Year

Table 5

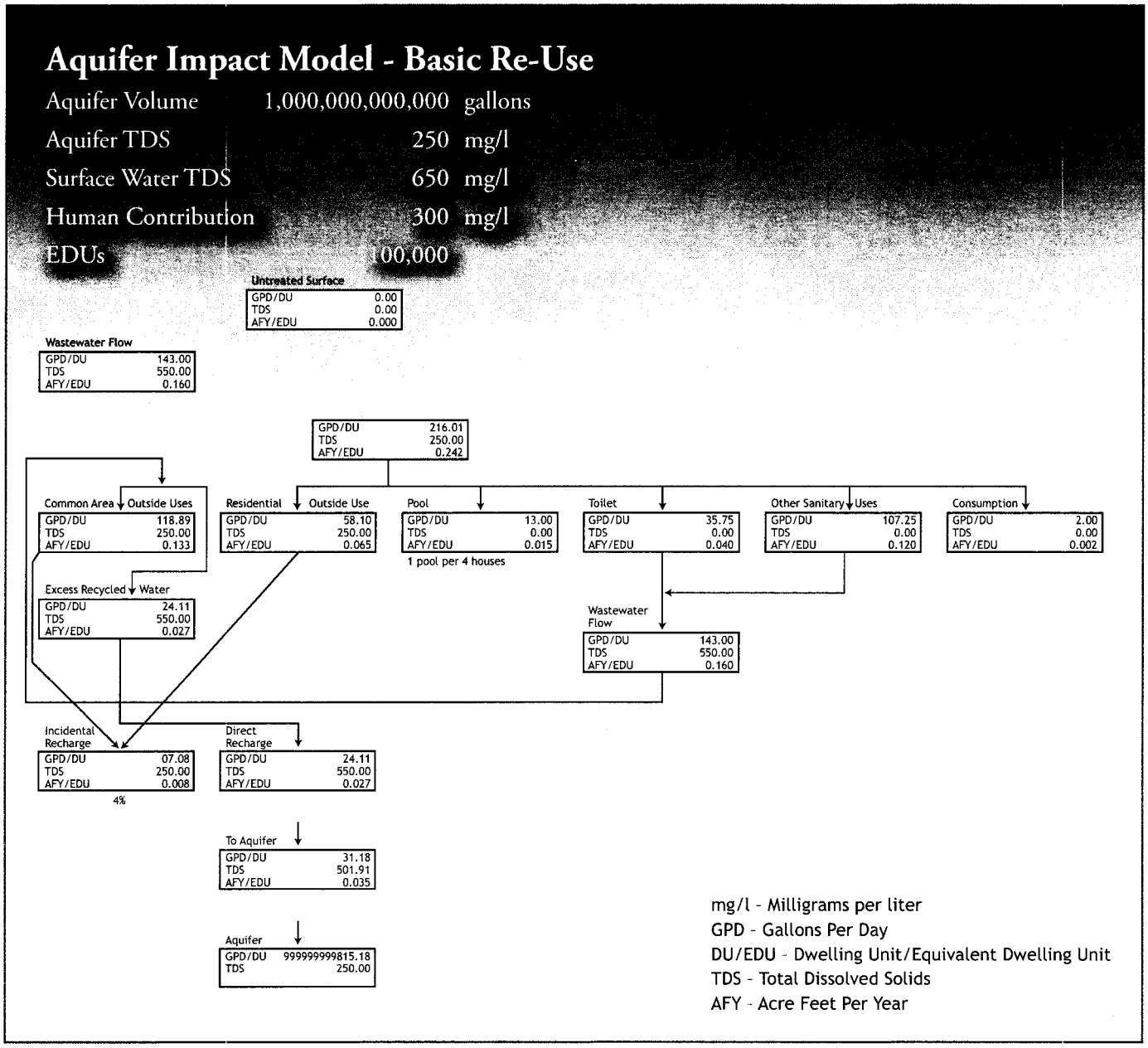

Aquifer Impact Model - Basic Re-Use
Aquifer Volume 1,000,000,000,000 gallons
Aquifer TDS 250 mg/l
Surface Water TDS 650 mg/l
Human Contribution 300 mg/l
EDUs 100,000
Untreated Surface
GPD/DU 0.00
TDS 0.00
AFY/EDU 0.000
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
GPD/DU 216.01
TDS 250.00
AFY/EDU 0.242
Common Area Outside Uses
GPD/DU 118.89
TDS 250.00
AFY/EDU 0.133
Residential Outside Use
GPD/DU 58.10
TDS 250.00
AFY/EDU 0.065
Pool
GPD/DU 13.00
TDS 0.00
AFY/EDU 0.015
1 pool per 4 houses
Toilet
GPD/DU 35.75
TDS 0.00
AFY/EDU 0.040
Other Sanitary Uses
GPD/DU 107.25
TDS 0.00
AFY/EDU 0.120
Consumption
GPD/DU 2.00
TDS 0.00
AFY/EDU 0.002
Excess Recycled Water
GPD/DU 24.11
TDS 550.00
AFY/EDU 0.027
Wastewater Flow
GPD/DU 143.00
TDS 550.00
AFY/EDU 0.160
Incidental Recharge
GPD/DU 07.08
TDS 250.00
AFY/EDU 0.008
4%
Direct Recharge
GPD/DU 24.11
TDS 550.00
AFY/EDU 0.027
To Aquifer
GPD/DU 31.18
TDS 501.91
AFY/EDU 0.035
Aquifer
GPD/DU 999999999815.18
TDS 250.00
mg/l - Milligrams per liter
GPD - Gallons Per Day
DU/EDU - Dwelling Unit/Equivalent Dwelling Unit
TDS - Total Dissolved Solids
AFY - Acre Feet Per Year

Table 6

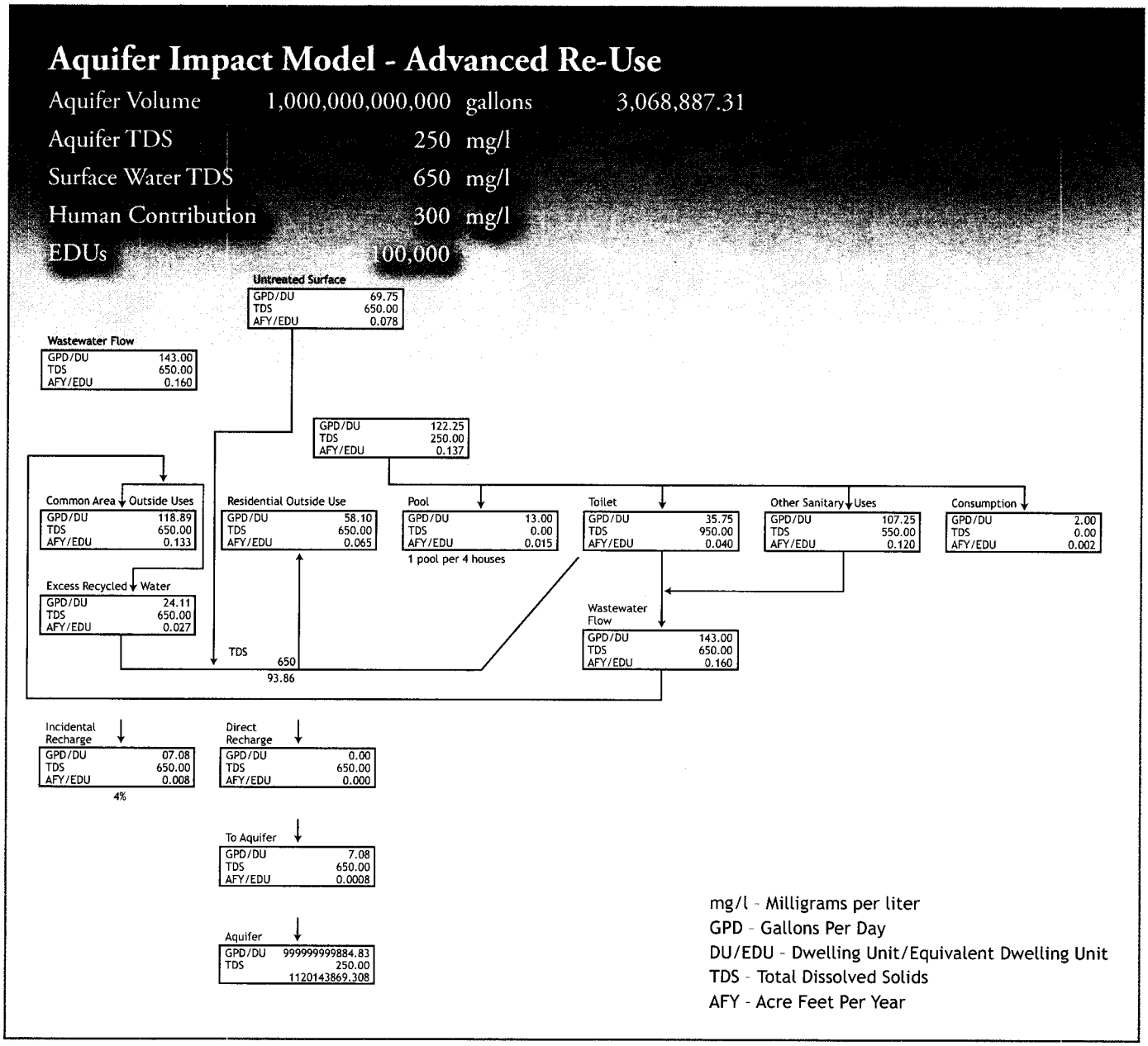

Aquifer Impact Model - Advanced Re-Use
Aquifer Volume 1,000,000,000,000 gallons 3,068,887.31
Aquifer TDS 250 mg/l
Surface Water TDS 650 mg/l
Human Contribution 300 mg/l
EDUs 100,000
Untreated Surface
GPD/DU 69.75
TDS 650.00
AFY/EDU 0.078
Wastewater Flow
GPD/DU 143.00
TDS 650.00
AFY/EDU 0.160
GPD/DU 122.25
TDS 250.00
AFY/EDU 0.137
Common Area Outside Uses
GPD/DU 118.89
TDS 650.00
AFY/EDU 0.133
Residential Outside Use
GPD/DU 58.10
TDS 650.00
AFY/EDU 0.065
Pool
GPD/DU 13.00
TDS 0.00
AFY/EDU 0.015
1 pool per 4 houses
Toilet
GPD/DU 35.75
TDS 950.00
AFY/EDU 0.040
Other Sanitary Uses
GPD/DU 107.25
TDS 550.00
AFY/EDU 0.120
Consumption
GPD/DU 2.00
TDS 0.00
AFY/EDU 0.002
Excess Recycled Water
GPD/DU 24.11
TDS 650.00
AFY/EDU 0.027
TDS
650
93.86
Wastewater Flow
GPD/DU 143.00
TDS 650.00
AFY/EDU 0.160
Incidental Recharge
GPD/DU 07.08
TDS 650.00
AFY/EDU 0.008
4%
Direct Recharge
GPD/DU 0.00
TDS 650.00
AFY/EDU 0.000
To Aquifer
GPD/DU 7.08
TDS 650.00
AFY/EDU 0.0008
Aquifer
GPD/DU 999999999884.83
TDS 250.00
1120143869.308
mg/l - Milligrams per liter
GPD - Gallons Per Day
DU/EDU - Dwelling Unit/Equivalent Dwelling Unit
TDS - Total Dissolved Solids
AFY - Acre Feet Per Year

Table 7

APPENDIX C – CONTAMINANTS OF EMERGING CONCERN

There is a significant volume of work focused on contaminants of emerging concern (CEC), including endocrine disrupting compounds (EDC) and pharmaceuticals and personal care products (PPCP) in municipal effluents and recycled water. While the direct health effects of these constituents remains uncertain, there is no doubt that they exist in wastewater, see Table 8.

Environmental EDCs have varying routes of exposure depending on their inherent physicochemical properties, as well as external conditions such as their specific use, and environmental conditions such as temperature, UV-radiation, and microbial content.[1]

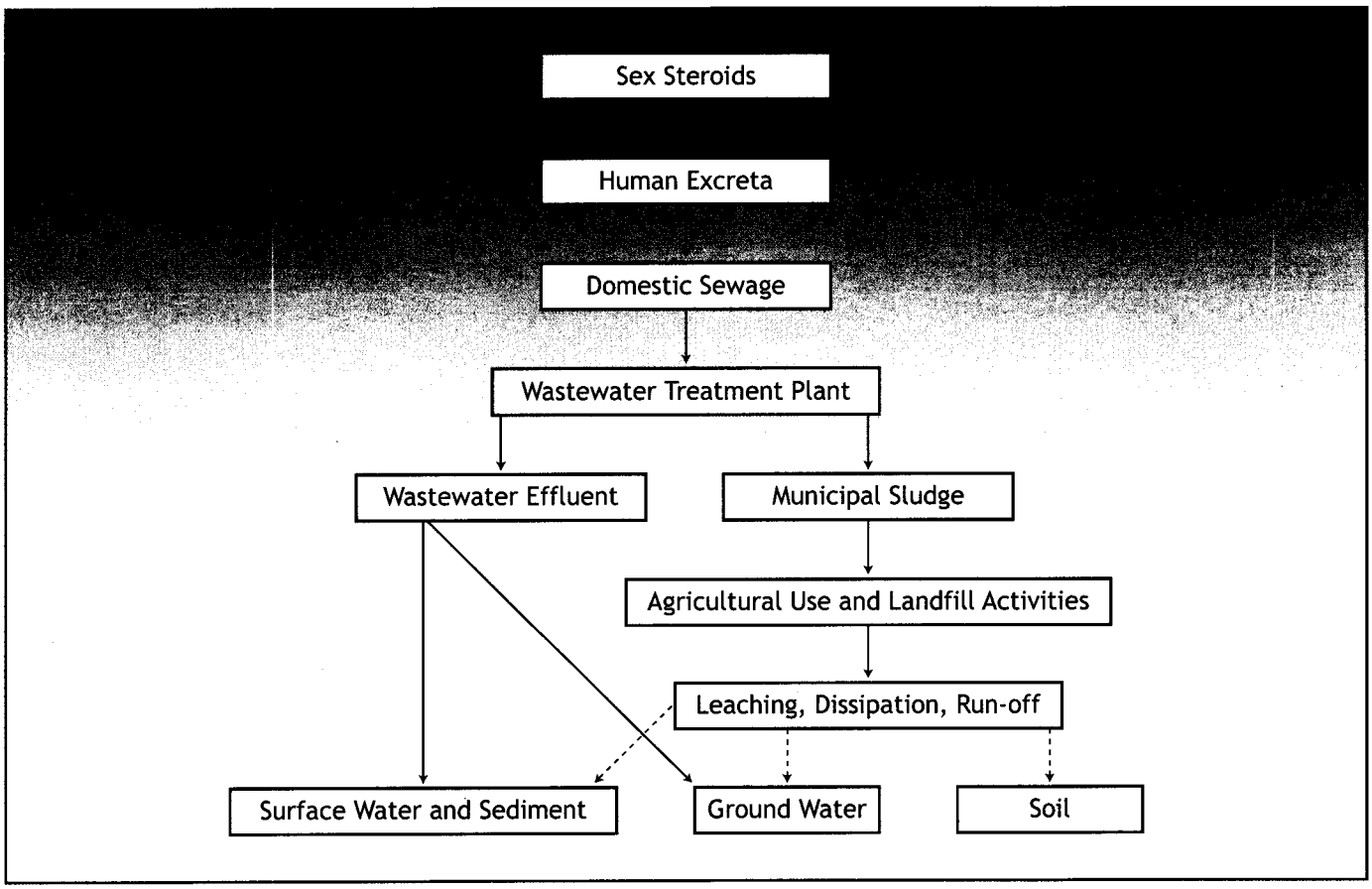


Table 8

EDC & PPCP REDUCTION STRATEGIES

Water reclamation facilities can be effective at achieving some removal of these CECs, but without specific targeted treatment will likely not be capable of removing 100%. There is some evidence that these compounds may be deactivated under normal irrigation uses through a combination of solar UV and upper soil layer metabolic effects.

Biological Treatment Processes

The extent of removal of EDCs in activated sludge sewage treatment has been reviewed and studied extensively with emphasis given to the fate of alkylphenol polyethoxylates (APEs) and steroid estrogens. While APEs such as nonylphenol polyethoxylates (NPEs) could represent a significant fraction (up to 10%) of the DOC (dissolved organic carbon) entering sewage treatment plants, these compounds are successfully eliminated in an activated sludge environment by biodegradation.[2]

Soil-Aquifer Treatment

In a study at Lawrence Livermore National Laboratories, the impact of the vadose zone and saturated zone on attenuating EDCs was significant[3]:

> NP[4] [4-nonylphenol] was not detected in LPGC [Las Positas Golf Course] groundwater (detection limit, 11 ng/L) despite average concentrations of 3000 ng/L in the irrigation water (i.e., LWRP [Livermore Water Reclamation Plant] tertiary-treated effluent)...

[1] ENDOCRINE DISRUPTORS IN THE ENVIRONMENT (IUPAC Technical Report) Prepared for publication by J. LINTELMANN, A. KATAYAMA, N. KURIHARA, L. SHORE, AND A. WENZEL.
[2] Endocrine Disrupting Chemicals (EDCs) and Pharmaceuticals and Personal Care Products (PPCPs) in Reclaimed Water in Australia. Guang-Guo Ying, Rai Kookana1 and TD Waite.
[3] Environmental transport and fate of endocrine disruptors from non-potable reuse of municipal wastewater B. Hudson, H. Beller, C. M. Bartel, S. Kane, C.Campbell, A. Grayson, N. Liu, S. Burastero, November 16, 2005.
[4] The hormonal and toxicological properties of NP have resulted in the banning of NPEOs for domestic and industrial use in many parts of Europe. Ibid.

> Maximum concentrations of the APEO[5] [Alkylphenol ethoxylates] metabolites AP1EC and AP2EC in LPGC groundwater were from 130- to 360-fold lower than in irrigation water. Since hydrological modeling indicates that irrigation water was diluted only 33 to 73% with local precipitation in the aquifer, attenuation of these compounds during transport through the vadose zone and saturated zone (e.g., by sorption of the APEO metabolites) must have been very substantial. High sorptive attenuation of NP is consistent with laboratory column studies and modeling conducted for this project.

A similar study performed in Germany found when soils were loaded with double deionised water, digested sludge, EDC spiked digested sludge, or solely a mixed EDC solution containing 4-nonylphenol, 4-tert-octylphenol (OP), bisphenol A, 17â-estradiol, and 17á-ethynylestradiol, in most cases, EDC concentrations decreased with increasing soil depths.

It was concluded that "adsorption to the soil matrix and/or biodegradation prevented a direct EDC transport to groundwater."[6]

Direct Photolysis

Direct exposure to sunlight has been found to be effective in EDC degradation in some instances with almost complete degradation within 100 hours.[7]

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[5] Alkylphenol ethoxylates (APEOs), a class of nonionic surfactants, and their metabolites are the most prominent group of EDCs identified in wastewater and treated wastewater. In particular, nonylphenol ethoxylates (NPEOs) constitute the largest subgroup of the APEOs (encompassing more than 80% of the world market). Municipal wastewater treatment (including biological treatment) tends to result in efficient elimination of the parent APEOs but formation of biologically refractory metabolites including the following: alkylphenol mono- and diethoxylates, alkylphenol carboxylic acids (e.g., NP1EC and NP2EC; Figure 1), and 4-nonylphenol (NP). NP is a metabolite and representative of the APEO (and specifically, NPEO) class of endocrine disruptors that has recently been reported to have a wide distribution in surface waters and is well documented to be present in effluents of wastewater treatment plants (WWTP) at mg/L concentrations. Ibid.

[6] Mobility and fate of endocrine disrupting compounds (EDCS) in soil after application of sewage sludge to agricultural land. Dipl.-Ing. Dirk Vogel, Dr.-Ing. Martin Gehring, Dr.-Ing. Lars Tennhardt, Dr.-Ing. Diethelm Weltin, Prof. Dr.-Ing. habil. Bernd Bilitewski.

[7] Endocrine Disrupting Chemicals (EDCs) and Pharmaceuticals and Personal Care Products (PPCPs) in Reclaimed Water in Australia. Guang-Guo Ying, Rai Kookana1 and TD Waite.

SUMMARY

The beneficial reduction of EDCs in the soil matrix means that fewer EDCs and PPCPs reach the aquifer under direct re-use than would be found under direct recharge. Accordingly, it is a better management strategy to keep CECs from the aquifer by encouraging the use of recycled water as a continuous loop of non-potable water, or as an irrigation source.

APPENDIX D – BASELINE PARAMETERS

Underlying Regional Conditions

Analysis was based on the regional planning developed and currently being implemented by Global Water and its utilities within the Maricopa/Casa Grande Region (MCGR) in Pinal County, Arizona. The planning area represented by the region is roughly 300 square miles and will be serviced by multiple facilities. A far reaching network of collection and distribution pipelines will extend throughout. The region is on the fringes of the Phoenix metropolitan area so development, for the most part, is new. Installation of infrastructure has and will continue to be completed without the impediments traditionally encountered in built-up urban areas.

Global Water has constructed, or has plans to construct, standardized facilities within the region. Each well site, water distribution center, treatment plant, etc. is similar in design and functionality and is modified only to accommodate conditions related to a particular location. All planning is regional so pipelines are sized to service the area at full build out.

Population Density

A population density of **3.5 Equivalent Development Units (EDU) per acre** was used. That factor applied to a section of land (640 acres) results in 2,240 EDU to be constructed and serviced.

Consumptive Demands

Consumptive data from Santa Cruz Water Company provided an indication of total water resource demand within the service area and its distribution, see Table 9. The following parameters were developed based on four years of operation within the Maricopa/Casa Grande Region (MCGR):

Description	Consumption (Gal/Day/EDU)
Residential/Commercial Potable Water Demand	216
Wastewater Production (Equates to Inside Uses of Potable Water)	143
Outside Uses of Potable Water	73 (34% of Potable Water Demand)
Common Area Irrigation Requirements	118

EDU - Equivalent Dwelling Unit

Table 9

It should be noted that the original development for Rancho El Dorado did not contemplate the provision of recycled water for some of the developments – as a result, some of the developments in the test area use potable water for irrigation. Since 2004, Global has required all new development common areas to be irrigated by recycled water exclusively.

Overall, Santa Cruz Water Company exhibits one of the lowest per unit water consumptions in the state. The Potable Water Portion of the Common Area Irrigation decreases as a function of EDU's over time because this mode of operation is no longer supported in the MCGR.

Availability of Recycled Water

Empirical data derived from treatment operations in the Maricopa/Casa Grande Region (from Palo Verde Utilities Company) indicates wastewater flow averages **143 gallons per EDU per day**. This quantity converts to 0.160 ac-ft/EDU/year and, once treated, can be distributed as A+ Reclaimed Water throughout the region.

Capital Expenditures & AIAC

Unit costs for capital expenditure items were derived from standard industry norms and from actual project costs. Costs are based on a Global-typical facility or installation similar to infrastructure

designed and constructed within the Maricopa/Casa Grande Region, see Table 10. The following cost categories have been included:

- Permitting Costs – Front end permitting activities such as 208, CC&N, APP, AZPDES, USF, AWS, and IUP. It includes costs for hydrologic studies, well testing, etc. For purposes of this analysis it is anticipated that roughly $1,000,000 of cost will be expended in developing and obtaining the necessary permits for a region. The size of the region will vary but, in this analysis, the region is set at ten sections. Roughly 20,000 EDU's will be developed in the ten sections. $1,000,000/20,000 EDU's calculates to **$50 per EDU**.

- Groundwater Rights Acquisition – Acquirement of water rights from the market to support a perpetual supply. Global Water currently works with developers to obtain associated groundwater rights at no expense to the Utility. For purposes of this analysis, acquisition costs are set at **$0 per EDU**.

- Well Sites – Conversion of existing agricultural wells to domestic use facilities including new casings, seals, equipment, and electrical upgrades. Also includes raw water pipelines to deliver well water to water distribution centers. Unit cost is based on costs associated with a standard well conversion in MCGR, along with an estimate for pipeline installation (one mile for purposes of this analysis) to convey well water from the Well Site to a Water Distribution Center (WDC).

	Capitol Cost	Well Capacity (GPM)	Average Daily Flow (GPM)	Average Daily Flow (MGD)	Cost per Gallon
Standard Well Site	$500,000	2,000	1,000	1.440	$0.35
Pipeline	$250,000				
Total	$750,000				$0.52
Use					$0.55

GPM - Gallons Per Minutes • MGD - Million Gallons/Day

Table 10

• Surface Water Rights Acquisition – Acquisition of water rights from the market to support a perpetual supply. From the Water Strategist, January 2007, a snapshot of recent surface water transactions in the southwestern United States revealed the following Table 11:

System	Location	Cost of Water Right / ac-ft	Cost of Water Right / ac-ft	5 Year Increase
Colorado-Big Thompson	Northern Colorado	$10,554	$5,000	190%
Truckee River	Reno, Nevada	$27,867	$3,500	696%
Middle Rio Grande	Albuquerque, New Mexico	$7,500	$4,000	88%

ac-ft - Acre Foot

Table 11

It must be noted that water markets are still in their infancy and lack any centralized exchange. The value of water is dependent on a number of factors including reliability of the underlying water right, quantity, quality, uses, and availability of competing sources of supply. With the future water market in Arizona filled with uncertainty, an acquisition price was set at **$11,000 per acre-foot** for purposes of this analysis.

• Surface Water Treatment – Design, permitting, and construction of surface water treatment facilities including all civil, structural, mechanical, process equipment, and electrical components. Santa Cruz Water Company has designed and permitted a surface water treatment facility in MCGR, see Table 12.

Facility	Capitol Cost	Treatment Capacity (MGD)	Cost per Gallon
Maricopa Groves WTF	$15,000,000 (budget)	2.5	$6.00
Use			$6.00

WTF - Water Treatment Facility • MGD - Million Gallons/Day

Table 12

- Arsenic Treatment – Design, permitting, and construction of facilities to remove arsenic. Includes all civil, structural, mechanical, process equipment, and electrical components. Valencia Water Company (a Global Water company located in Buckeye, Arizona) is constructing a regional arsenic treatment facility and unit costs are based on budget for that project divided by average daily treatment capacity permitted at the facility. In this case treatment capacity is equal to the facility's designated peak hour flow (to accommodate fire flow).

Facility	Capitol Cost	Treatment Capacity	Calculated Average Daily Flow	Calculated Average Daily Flow	Cost per Gallon
Sonoran Vista WDC	$2,000,000 (Budget)	3,500	1,029	1.482	$1.35
Use					**$1.35**

GPM - Gallons Per Minute • MGD - Million Gallons/Day

Table 13

- Water Distribution (Storage & Pumping) – Design, permitting, and construction of treated water storage reservoirs and distribution pumping stations. Includes all civil, structural, mechanical, and electrical components. Unit cost is based on the current budget to design, permit, and construct two Water Distribution Centers (WDC's) currently being completed in the MCGR divide by the WDC's average daily flow, see Tables 13 & 14. In this case daily capacity is equal to the facilities' designated peak hour flow (to accommodate fire flow).

Facility	Capitol Cost	Booster Capacity	Calculated Average Daily Flow	Calculated Average Daily Flow	Cost per Gallon
Rancho Mirage WDC	$5,800,000 (Budget)	6,500	1,912	2.753	$2.11
Terrazo WDC	$6,000,000 (Budget)	8,000	2,358	3.388	$1.77
Use					**$2.00**

GPM - Gallons Per Minute • MGD - Million Gallons/Day

Table 14

- Water Backbone Pipeline – Water transmission mains typically 12" to 16" in diameter installed between the water distribution center and the development. Within the MCGR, backbone pipelines are installed along section lines. At build-out, two miles of pipeline will be installed to service each section of land. In determining an appropriate value, $100 per linear foot was used for water backbone. $100 per linear foot x 5,280 feet per mile x 2 miles of pipeline per section totals $1,056,000 per section of land. Assuming 2,240 EDU's per section, cost calculates to $471 per EDU. This value was modified to **$500 per EDU**.

- Onsite Water Pipelines – Water transmission pipelines installed from the point of connection with the Water Backbone Pipeline to the EDU's and includes the cost of a meter. Typically installed by the developer. Cost of construction escalated quickly during the period extending over 2003 to 2006 but, beginning in 2006, prices began to flatten and even decreased in some instances. The following Table 15 illustrates in-parcel water infrastructure cost for developments in the MCGR.

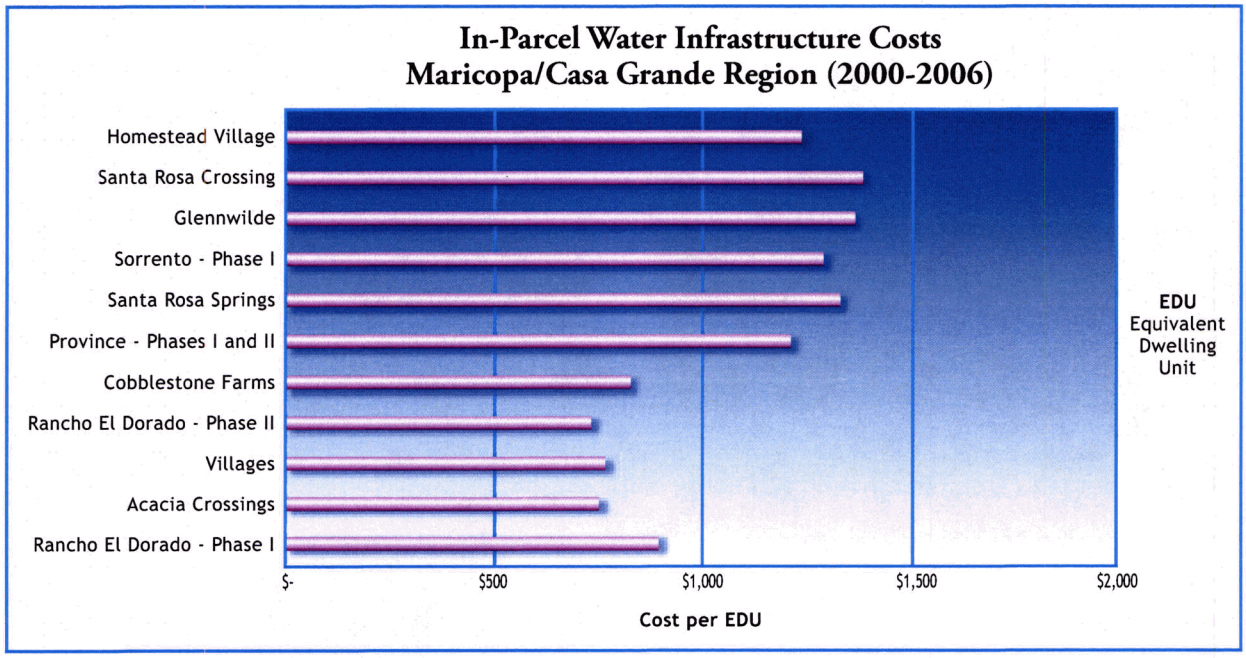

Table 15

A value of $1,400 per EDU was used for pipelines, valves and services. An additional $400 per EDU was added to account for the cost of a meter. Total calculates to **$1,800 per EDU**.

- Onsite Wastewater Pipeline – Wastewater collection pipelines installed from the EDU's to the point of connection with the Wastewater Backbone Pipeline. Typically installed by the developer. Cost of construction escalated quickly during the period extending over 2003 to 2006 but, beginning in 2006, prices began to flatten and even decreased in some instances. The following Table 16 illustrates in-parcel wastewater infrastructure cost for developments in the MCGR.

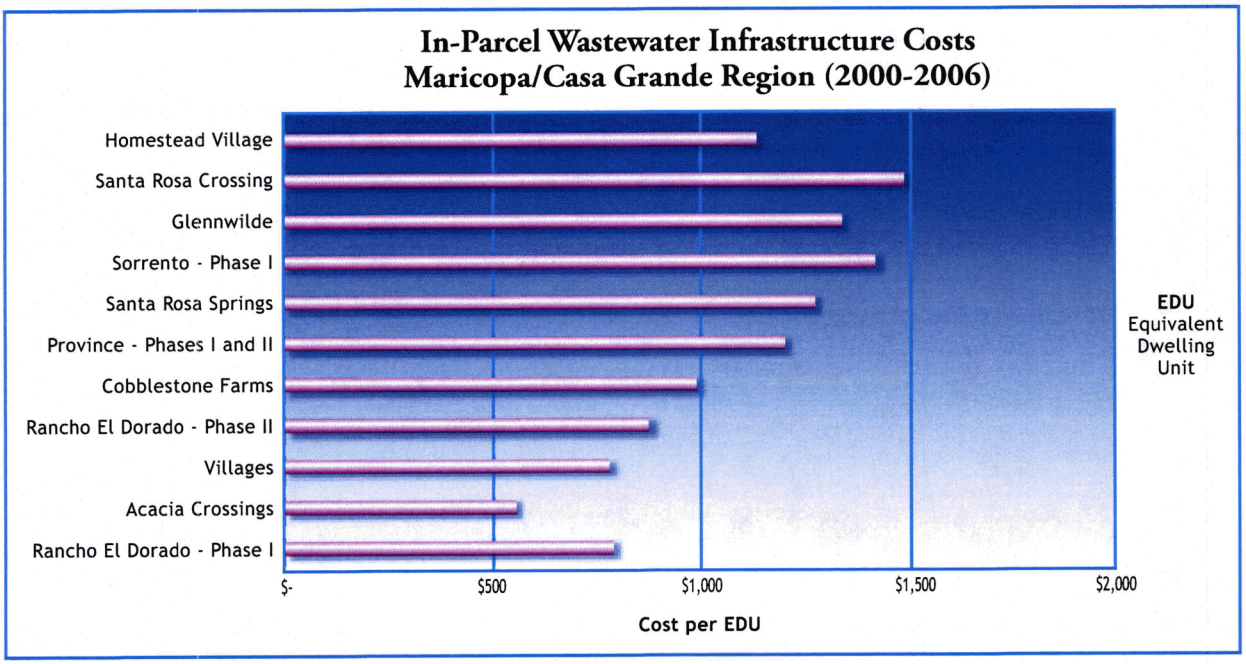

Table 16

For purposes of analysis, a value of **$1,400 per EDU** was used for in- parcel wastewater infrastructure.

- Wastewater Backbone Pipeline – Wastewater collection pipelines typically 18" to 48" in diameter installed between the development and the water reclamation center. Within the MCGR, backbone pipelines are installed along section lines. At build-out, two miles of pipeline will be installed to service each section of land. In determining an appropriate value, $150 per linear foot was used for wastewater backbone. $150 per linear foot x 5,280 feet per mile x 2 miles of pipeline per section totals $1,584,000 per section of land. Assuming 2,240 EDU's per section, cost calculates to $707 per EDU.

This value was modified to **$750 per EDU**.

- Water Reclamation – Treatment – Design, permitting, and construction of water reclamation facilities including all civil, structural, mechanical, process equipment, and electrical components. Includes influent pump station and post treatment storage and pumping (to discharge, reuse, etc.). Unit cost for analysis was developed using actual and estimated costs of current treatment infrastructure in MCGR adjusted to reflect a 3 MGD facility, see Table 17.

Project	Capacity (MGD)	Capitol Cost Total	Capitol Cost Adjusted to 3 MGD	Cost per Gallon
Campus No. 2 - Phase 1 (Excluding Headworks)	1	$10,318,945 (Budget)	$10,318,945	
Campus No. 1 - Phase 2 Expansion	+2	$11,303,675	$11,303,675	
Campus No. 2 - Headworks	6	$1,587,000 (Budget)	$1,126,070	
Campus No. 1 - Influent Pump Station	12	$2,007,000	$1,229,000	
Total	3		$23,978,440	$7.99
Use				**$8.00**

MGD - Million Gallons/Day

Table 17

- Recycled Water Backbone Pipelines – Pipelines typically 12" to 24" in diameter installed between the water reclamation center and recycled water retention structures (lakes) within the development. These pipelines run parallel with wastewater lines in MCGR. At build-out, two miles of pipeline will be installed to service each section of land. In determining an appropriate value, $100 per linear foot was used for recycled water backbone. $100 per linear foot x 5,280 feet per mile x 2 miles of pipeline per section totals $1,056,000 per section of land. Assuming 2,240 EDU's per section, cost calculates to $471 per EDU. This value was modified to **$500 per EDU**.

- Reclaimed Water Storage and Pressurization – Design, permitting, and construction of recycled water storage reservoirs and distribution pumping stations. Includes all civil, structural, mechanical, and electrical components. Although not identical to potable Water Distribution Center (WDC), unit cost is based on the current budget to design, permit, and construct two WDC's currently being completed in the MCGR divided by the WDC's average daily flow. In this case, because the reclaimed water distribution center will not accommodate fire flow, daily capacity is equal to the facilities' designated maximum daily flow, see Table 18.

Facility	Capitol Cost	Booster Capacity	Calculated Average Day	Calculated Average Day	Cost per Gallon
Rancho Mirage WDC	$5,800,000 (Budget)	6,500	3,250	4.680	$1.24
Terrazo WDC	$6,000,000 (Budget)	8,000	4,000	5.760	$1.04
Use					$1.15

WDC - Water Distribution Center • GPM - Gallons Per Minute • MGD - Million Gallons/Day

Table 18

- Onsite Recycled Water Pipelines – Pressurized recycled water transmission pipelines installed from the Reclaimed Water Storage and Pressurization facilities to the EDU's. Installed by the developer during construction of onsite infrastructure. For purpose of this analysis, installation of onsite recycled pipelines is anticipated to make use of a trench common to the wastewater pipeline. It is estimated that 80% of the cost covers materials and miscellaneous labor to install while the remaining 20% covers trenching. Because recycled water piping is similar to potable water piping, $1,400 per EDU is used as a base (determined above for onsite potable pipelines) and is multiplied by 80%, equaling $1,120 per EDU. Because the recycled water pipelines will distribute less capacity than the potable pipelines, they will be of a smaller diameter and the value has been decreased slightly to $1,100 per EDU. An additional $400 per EDU was added to account for the cost of a meter. The total calculates to **$1,500 per EDU**.

Operations and Maintenance

Unit costs for operations and maintenance were derived from industry norms or are based on values calculated from the Santa Cruz Water Company and Palo Verde Utilities Company financial statements. The following categories have been included:

- Well Sites – All rents, utility payments (power), labor, supplies, taxes, and miscellaneous expenses. Includes monitoring and compliance (sampling, testing, and lab work), see Table 19.

2006 O&M Expenses	Quantity Pumped	Cost per
$413,453	1,690,346	$0.24
Use		**$0.25**

Table 19

- Surface Water Treatment – All rents, utility payments (power), taxes, and miscellaneous expenses. Labor and supplies for oil changes, lubrications, and replacement of consumable components (belts, air filters, media, etc). Includes mechanical and electrical repairs, outside rentals (cranes, pumps, etc) and procurement of chemicals. Also includes monitoring and compliance (sampling, testing, and laboratory work). Budget Operations and Maintenance costs were developed for the Maricopa Groves 2.5 MGD Facility, see Table 20.

Category	Estimated Annual O&M Cost	Cost per 1,000 Gallons
Chemical Cost	$290,776	$0.32
Other Cost (Disposal, Module Replacement, Etc.)	$60,311	$0.07
Labor, Maintenance Materials, Testing	$100,000	$0.11
MSIDD Wheeling Charge		$0.13
Total		$0.70
Use		**$0.70**

MSIDD - Maricopa-Stanfield Irrigation and Drainage District

Table 20

- Arsenic Treatment – All rents, utility payments (power), labor, supplies, taxes, and miscellaneous expenses. Includes monitoring and compliance (sampling, testing, and laboratory work). Depending on size and technology, Operations and Maintenance cost associated with Arsenic treatment within a regional system ranges from $0.50 to $2.00 per 1,000 gallons of treated water. For this analysis a value of **$1.50 per 1,000 Gallons** was used.

- Water Distribution (Storage and Pumping) – All rents, utility payments (power), labor, supplies, taxes, and miscellaneous expenses. Includes monitoring and compliance (sampling, testing, and laboratory work), see Table 21.

2006 O&M Expenses	Quantity Pumped	Cost per
$1,229,387	1,286,414	$0.96
Use		**$1.00**

Table 21

- Water Backbone Pipeline – Valve and hydrant programs. Maintenance of PRV's. System flushing as required, see Table 22.

2006 O&M Expenses	Quantity Pumped	Cost per
$122,117	1,286,414	$0.09
Use		**$0.10**

Table 22

- Onsite Water Pipelines – Valve and hydrant programs. Maintenance of PRV's. System flushing as required, see Table 23.

2006 O&M Expenses	Quantity Pumped	Cost per
$122,117	1,286,414	$0.09
Use		**$0.10**

Table 23

- Onsite Wastewater Pipeline – Flushing and cleaning of collection system, see Table 24.

2006 O&M Expenses	Quantity Pumped	Cost per
$38,096	447,979	$0.09
Use		**$0.10**

Table 24

- Wastewater Backbone Pipeline – Flushing and cleaning of collection system, see Table 25.

2006 O&M Expenses	Quantity Pumped	Cost per
$38,096	447,979	$0.09
Use		**$0.10**

Table 25

- Water Reclamation (Treatment) – All rents, utility payments (water and power), taxes, and miscellaneous expenses. All labor and supplies for cleanings, oil changes, lubrications, replacement of consumable components (belts, air filters, media, etc). Includes mechanical and electrical repairs, outside rentals (cranes, pumps, etc), sludge hauling, and procurement of chemicals. Also includes monitoring and compliance (sampling, testing, and lab work), see Table 26.

2006 O&M Expenses	Quantity Pumped	Cost per
$1,949,554	447,979	$4.35
Use		**$4.35**

Table 26

- Recycled Water Backbone Pipelines – Valve program. Maintenance of PRV's. Since the recycled pipelines are similar to the potable water pipelines, a similar Operations and Maintenance unit cost of **$0.10 per 1,000 Gallons** is used.

- Reclaimed Water Storage and Pressurization – All rents, utility payments (power), labor, supplies, taxes, and miscellaneous expenses. Includes monitoring and compliance

(sampling, testing, and laboratory work). For purpose of this analysis it is anticipated that economies of scale will be recognized within the labor component of Operations and Maintenance expenses. With a support structure in place to operate and maintain water and wastewater systems, the addition of a third recycled water system can be facilitated by expanding the labor force incrementally. The incremental labor component of recycled water Operations and Maintenance is estimated at 33% of the value calculated for potable water, see Table 27.

Category	Potable O&M Cost	Adjusted Recycled O&M Cost	Quantity Pumped (x 1,000 Gallons)	Cost per 1,000 Gallons
Utilities	$90,952	$90,952		
Supplies	$93,328	$93,328		
Labor	$915,877	**$302,239**		
Other	$129,230	$129,230		
Total	$1,229,387	$615,749	1,286,414	$0.48
Use				**$0.50**

Table 27

- Onsite Recycled Water Pipelines – Valve program. Maintenance of PRV's. Since the recycled pipelines are similar to the potable water pipelines, a similar Operations and Maintenance unit cost of **$0.10 per 1,000 Gallons** is used.

Financial Parameters

Relevant financial parameters were assigned for purposes of this analysis (capital structure, profit and loss expectations, etc).

Table of Values

The following Table 28 indicates the parameter values entered into the model for analysis.

Table of Values		Input	
Consumption Information	Water to Residential Customers (Total)	0.242	ac-ft/EDU/year
	Water to Commercial Customers (Total)	-	ac-ft/EDU/year
	Water to Res & Comm Customers for Irrigation	34%	as a % of Total ac-ft/EDU/year
	Water to HOA's for Irrigation	0.132	ac-ft/EDU/year
	Water to Miscellaneous Irrigation	-	ac-ft/EDU/year
Wastewater Available for Treatment		0.160	ac-ft/EDU/year
Population Density		3.50	per Acre
Rate Base Information (Capital Expenditures)	Permitting Costs	$ 50.00	per EDU
	Groundwater Rights Acquisition	$ -	per Ac-Ft
	Well Sites	$ 0.55	per Gallon
	Surface Water Rights Acquisition	$ 11,000	per Ac-Ft
	Surface Water Treatment	$ 6.00	per Gallon
	Arsenic Treatment	$ 1.35	per Gallon
	Water Distribution (Storage & Pumping)	$ 2.00	per Gallon
	Water Backbone Pipelines	$ 500.00	per EDU
	Wastewater Backbone Pipelines	$ 750.00	per EDU
	Water Reclamation - Treatment	$ 8.00	per Gallon
	Recycled Water Backbone Pipelines	$ 500.00	per EDU
	Reclaimed Water Storage & Pressurization	$ 1.15	per Gallon
AIAC Components	Onsite Water Pipelines	$ 1,800.00	per EDU
	Onsite Wastewater Pipelines	$ 1,400.00	per EDU
	Onsite Recycled Water Pipelines	$ 1,500.00	per EDU
Operational Expenses	Well Sites	$ 0.25	per 1000 Gallons
	Surface Water Treatment	$ 0.70	per 1000 Gallons
	Arsenic Treatment	$ 1.50	per 1000 Gallons
	Water Distribution (Storage & Pumping)	$ 1.00	per 1000 Gallons
	Water Backbone Pipelines	$ 0.10	per 1000 Gallons
	Wastewater Backbone Pipelines	$ 0.10	per 1000 Gallons
	Water Reclamation - Treatment	$ 4.35	per 1000 Gallons
	Recycled Water Backbone Pipelines	$ 0.10	per 1000 Gallons
	Reclaimed Water Storage & Pressurization	$ 0.50	per 1000 Gallons
	Onsite Water Pipelines	$ 0.10	per 1000 Gallons
	Onsite Wastewater Pipelines	$ 0.10	per 1000 Gallons
	Onsite Recycled Water Pipelines	$ 0.10	per 1000 Gallons
Rate Base Breakdown	Equity	50.00%	
	Debt	50.00%	
Monthly Wastewater Rate		$ 35.00	per Month
Cost of Recycled Water (as a % of Potable)		85.00%	
Depreciation		2.50%	
Interest		7.00%	
Tax Rate		42.00%	
Return on Equity		11.00%	

EDU - Equivalent Dwelling Unit • Ac-Ft - Acre Foot • HOA - Home Owners Association • AIAC - Advances In Aid of Construction

Table 28

APPENDIX E – CALCULATION SHEETS

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	Yes	Surface	No	Arsenic	No
LEVEL OF RECLAMATION	Basic	No	+ Advanced	No		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
	Total Water Use	334	Gallons/day	0.374	ac-ft/EDU/year
	Recycled Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	143	Gallons/day	0.160	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 183.64	$ 411,347
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 668	$ 1,495,808
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ -
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 6,494	$ 14,546,826

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ -
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 1.45	$ 4.55	$ -

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 7,171,155	$ 7,375,671	$ -	$ 14,546,826
Costs per EDU	$ 3,201	$ 3,293	$ -	$ 6,494
	49.30%	50.70%	0.00%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	10,017	4,285	-	
Monthly Ops Expense per EDU	$ 14.52	$ 19.50	$ -	$ 34.02

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 7,378,826	$ 7,168,000	$ 14,546,826
Costs per EDU	$ 3,294	3,200	$ 6,494
	50.72%	49.28%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	272,984,934	116,784,998	-
	100.00%		0.00%

Equivalent Swimming Pools 10,919 of Potable Water Use Each Year

Rate Base Breakdown		Total	
Equity	$	3,689,413	50.00%
Debt	$	3,689,413	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	2,236,144	
Expenses	$	(914,499)	
EBITDA	$	1,321,646	
Depreciation	$	(363,671)	2.50%
Interest	$	(258,259)	7.00%
Taxable Income	$	699,716	
Tax	$	(293,881)	42.00%
Net Income	$	405,835	
Return on Equity		11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 6.08	$ 709,216	$ 26.38
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	96,347,624	RATE @:	$ 6.08	$ 586,129	$ 21.81
Recycled Water to Com Areas	-	85.00%	$ 5.17	$ -	$ -
Recycled Water to Homes	-		$ 5.17	$ -	$ -
Total Revenue				$ 2,236,144	$ 83.19
Revenue from Water Sales		57.93%		$ 1,295,344	
Revenue from Wastewater Sales		42.07%		$ 940,800	
Rev from Recycled Water Sales		0.00%		$ -	

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Table 29

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	**Yes**	Surface	**No**	Arsenic	**No**
LEVEL OF RECLAMATION	Basic	**Yes**	+ Advanced	**No**		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Total Water Use	216	Gallons/day	0.242	ac-ft/EDU/year

Recycled Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
Re. Water To Discharge/Recharge	25	Gallons/day	0.028	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 118.82	$ 266,166
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 432	$ 967,876
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 6,694	$ 14,993,713

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 1.45	$ 4.55	$ 0.10

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 6,498,041	$ 7,375,671	$ 1,120,000	$ 14,993,713
Costs per EDU	$ 2,901	$ 3,293	$ 500.00	$ 6,694
	43.34%	49.19%	7.47%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	6,481	4,285	3,535	
Monthly Ops Expense per EDU	$ 9.40	$ 19.50	$ 0.35	$ 29.25

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 7,825,713	$ 7,168,000	$ 14,993,713
Costs per EDU	$ 3,494	3,200	$ 6,694
	52.19%	47.81%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	176,637,310	116,784,998	96,347,624
	64.71%		35.29%

Equivalent Swimming Pools 7,065 of Potable Water Use Each Year

Rate Base Breakdown		Total	
Equity	$	3,912,856	50.00%
Debt	$	3,912,856	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	2,177,047	
Expenses	$	(786,211)	
EBITDA	$	1,390,836	
Depreciation	$	(374,843)	2.50%
Interest	$	(273,900)	7.00%
Taxable Income	$	742,093	
Tax	$	(311,679)	42.00%
Net Income	$	430,414	
Return on Equity		11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 6.23	$ 726,145	$ 27.01
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	-	RATE @:	$ 6.23	$ -	$ -
Recycled Water to Com Areas	96,347,624	85.00%	$ 5.29	$ 510,102	$ 18.98
Recycled Water to Homes	-		$ 5.29	$ -	$ -
Total Revenue				$ 2,177,047	$ 80.99
Revenue from Water Sales		33.35%		$ 726,145	
Revenue from Wastewater Sales		43.21%		$ 940,800	
Rev from Recycled Water Sales		23.43%		$ 510,102	

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Table 30

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	Yes	Surface	No	Arsenic	No
LEVEL OF RECLAMATION	Basic	Yes	+ Advanced	Yes		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density	3.5	per Acre	2,240	EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	-	Gallons/day	-	ac-ft/EDU/year
	Total Water to Customers	143	Gallons/day	0.160	ac-ft/EDU/year
	Water to Common Areas	48	Gallons/day	0.054	ac-ft/EDU/year
	Total Water Use	191	Gallons/day	0.214	ac-ft/EDU/year
	Recycled Water to Common Areas	69	Gallons/day	0.078	ac-ft/EDU/year
	Recycled Water to Customers	73	Gallons/day	0.082	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	-	Gallons/day	-	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 105,08	$ 235,370
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 382	$ 855,890
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ 84,47	$ 189,220
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ 3,360,000
TOTAL			$ 8,214	$ 18,400,151

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ 0.50
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ 0.10
	$ 1.45	$ 4.55	$ 0.70

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 6,355,260	$ 7,375,671	$ 4,669,220	$ 18,400,151
Costs per EDU	$ 2,837	$ 3,293	$ 2,084,47	$ 8,214
	34.54%	40.08%	25.38%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	5,731	4,285	4,285	
Monthly Ops Expense per EDU	$ 8.31	$ 19.50	$ 3,00	$ 30.81

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 7,872,151	$ 10,528,000	$ 18,400,151
Costs per EDU	$ 3,514	4,700	$ 8,214
	42.78%	57.22%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	156,199,935	116,784,998	116,784,998
	57.22%		42.78%
Equivalent Swimming Pools	6,248	of Potable Water Use Each Year	

Rate Base Breakdown		Total	
Equity	$	3,936,075	50.00%
Debt	$	3,936,075	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	2,310,136	
Expenses	$	(828,110)	
EBITDA	$	1,482,026	
Depreciation	$	(460,004)	2.50%
Interest	$	(275,525)	7.00%
Taxable Income	$	746,497	
Tax	$	(313,529)	42.00%
Net Income	$	432,968	
Return on Equity		11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 5.36	$ 624,887	$ 23.25
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	39,619,311	RATE @:	$ 5.36	$ 212,364	$ 7.90
Recycled Water to Com Areas	56,728,313	85.00%	$ 4.56	$ 258,460	$ 9.62
Recycled Water to Homes	60,056,685		$ 4.56	$ 273,625	$ 10.18
Total Revenue				$ 2,310,136	$ 85.94
Revenue from Water Sales		36.24%		$ 837,251	
Revenue from Wastewater Sales		40.72%		$ 940,800	
Rev from Recycled Water Sales		23.03%		$ 532,085	

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Table 31

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	**No**	Surface	**Yes**	Arsenic	**No**
LEVEL OF RECLAMATION	Basic	**No**	+ Advanced	**No**		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
	Total Water Use	334	Gallons/day	0.374	ac-ft/EDU/year
	Recycled Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
	Re, Water To Discharge/Recharge	143	Gallons/day	0.160	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ -	$ -
Surface Water Rights Acquisition		$ 11,000.00	$ 4,114.00	$ 9,215,360
Surface Water Treatment	$ 6.00		$ 2,003.31	$ 4,487,424
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 668	$ 1,495,808
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ -
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 12,428	$ 27,838,263

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ -		
Surface Water Treatment	$ 0.70		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ -
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 1.90	$ 4.55	$ -

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 20,462,591	$ 7,375,671	$ -	$ 27,838,263
Costs per EDU	$ 9,135	$ 3,293	$ -	$ 12,428
	73.51%	26.49%	0.00%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	10,017	4,285	-	
Monthly Ops Expense per EDU	$ 19.03	$ 19.50	$ -	$ 38.53

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 20,670,263	$ 7,168,000	$ 27,838,263
Costs per EDU	$ 9,228	3,200	$ 12,428
	74.25%	25.75%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	272,984,934	116,784,998	-
	100.00%		0.00%

Equivalent Swimming Pools 10,919 of Potable Water Use Each Year

Rate Base Breakdown		Total	
Equity	$	10,335,131	50.00%
Debt	$	10,335,131	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	4,415,186	
Expenses	$	(1,035,659)	
EBITDA	$	3,379,527	
Depreciation	$	(695,957)	2.50%
Interest	$	(723,459)	7.00%
Taxable Income	$	1,960,111	
Tax	$	(823,247)	42.00%
Net Income	$	1,136,864	
Return on Equity		11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 16.32	$ 1,902,266	$ 70.77
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	96,347,624	RATE @:	$ 16.32	$ 1,572,120	$ 58.49
Recycled Water to Com Areas	-	85.00%	$ 13.87	$ -	$ -
Recycled Water to Homes	-		$ 13.87	$ -	$ -
Total Revenue				$ 4,415,186	$ 164.26
Revenue from Water Sales		78.69%		$ 3,474,386	
Revenue from Wastewater Sales		21.31%		$ 940,800	
Rev from Recycled Water Sales		0.00%		$ -	

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Table 32

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	No	Surface	Yes	Arsenic	No
LEVEL OF RECLAMATION	Basic	Yes	+ Advanced	No		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Total Water Use	216	Gallons/day	0.242	ac-ft/EDU/year
	Recycled Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
	Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	25	Gallons/day	0.028	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ -	$ -
Surface Water Rights Acquisition		$ 11,000.00	$ 2,662.00	$ 5,962,880
Surface Water Treatment	$ 6.00		$ 1,296.26	$ 2,903,627
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 432	$ 967,876
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 10,533	$ 23,594,054

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ -		
Surface Water Treatment	$ 0.70		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 1.90	$ 4.55	$ 0.10

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 15,098,383	$ 7,375,671	$ 1,120,000	$ 23,594,054
Costs per EDU	$ 6,740	$ 3,293	$ 500.00	$ 10,533
	63.99%	31.26%	4.75%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	6,481	4,285	3,535	
Monthly Ops Expense per EDU	$ 12.31	$ 19.50	$ 0.35	$ 32.17

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 16,426,054	$ 7,168,000	$ 23,594,054
Costs per EDU	$ 7,333	$ 3,200	$ 10,533
	69.62%	30.38%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	176,637,310	116,784,998	96,347,624
	64.71%		35.29%

Equivalent Swimming Pools 7,065 of Potable Water Use Each Year

Rate Base Breakdown		Total	
Equity	$	8,213,027	50.00%
Debt	$	8,213,027	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	3,587,015	
Expenses	$	(864,609)	
EBITDA	$	2,722,406	
Depreciation	$	(589,851)	2.50%
Interest	$	(574,912)	7.00%
Taxable Income	$	1,557,643	
Tax	$	(654,210)	42.00%
Net Income	$	903,433	
Return on Equity		11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 13.33	$ 1,554,330	$ 57.82
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	-	RATE @:	$ 13.33	$ -	$ -
Recycled Water to Com Areas	96,347,624	85.00%	$ 11.33	$ 1,091,885	$ 40.62
Recycled Water to Homes	-		$ 11.33	$ -	$ -
Total Revenue				$ 3,587,015	$ 133.45
Revenue from Water Sales		43.33%		$ 1,554,330	
Revenue from Wastewater Sales		26.23%		$ 940,800	
Rev from Recycled Water Sales		30.44%		$ 1,091,885	

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Table 33

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	**No**	Surface	**Yes**	Arsenic	**No**
LEVEL OF RECLAMATION	Basic	**Yes**	+ Advanced	**Yes**		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	-	Gallons/day	-	ac-ft/EDU/year
	Total Water to Customers	143	Gallons/day	0.160	ac-ft/EDU/year
	Water to Common Areas	48	Gallons/day	0.054	ac-ft/EDU/year
	Total Water Use	191	Gallons/day	0.214	ac-ft/EDU/year
	Recycled Water to Common Areas	69	Gallons/day	0.078	ac-ft/EDU/year
	Recycled Water to Customers	73	Gallons/day	0.082	ac-ft/EDU/year
	Re, Water To Discharge/Recharge	-	Gallons/day	-	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ -	$ -
Surface Water Rights Acquisition		$ 11,000.00	$ 2,354.00	$ 5,272,960
Surface Water Treatment	$ 6.00		$ 1,146.28	$ 2,567,670
Arsenic Treatment	$ 1.35		$ -	$ -
Water Distribution (Storage & Pumping)	$ 2.00		$ 382	$ 855,890
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ 84.47	$ 189,220
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ 3,360,000
TOTAL			$ 11,610	$ 26,005,411

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ -		
Surface Water Treatment	$ 0.70		
Arsenic Treatment	$ -		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ 0.50
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ 0.10
	$ 1.90	$ 4.55	$ 0.70

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 13,960,520	$ 7,375,671	$ 4,669,220	$ 26,005,411
Costs per EDU	$ 6,232	$ 3,293	$ 2,084.47	$ 11,610
	53.68%	28.36%	17.95%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	5,731	4,285	4,285	
Monthly Ops Expense per EDU	$ 10.89	$ 19.50	$ 3.00	$ 33.39

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 15,477,411	$ 10,528,000	$ 26,005,411
Costs per EDU	$ 6,910	4,700	$ 11,610
	59.52%	40.48%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	156,199,935	116,784,998	116,784,998
	57.22%		42.78%

Equivalent Swimming Pools 6,248 of Potable Water Use Each Year

Rate Base Breakdown	Total	
Equity	$ 7,738,706	50.00%
Debt	$ 7,738,706	50.00%

Hypothetical Profit & Loss		
Total Revenue	$ 3,556,967	
Expenses	$ (897,437)	
EBITDA	$ 2,659,530	
Depreciation	$ (650,135)	2.50%
Interest	$ (541,709)	7.00%
Taxable Income	$ 1,467,686	
Tax	$ (616,428)	42.00%
Net Income	$ 851,258	
Return on Equity	11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 10.24	$ 1,193,869	$ 44.41
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	39,619,311	RATE @:	$ 10.24	$ 405,730	$ 15.09
Recycled Water to Com Areas	56,728,313	85.00%	$ 8.70	$ 493,798	$ 18.37
Recycled Water to Homes	60,056,685		$ 8.70	$ 522,770	$ 19.45
Total Revenue				$ 3,556,967	$ 132.33
Revenue from Water Sales		44.97%		$ 1,599,599	
Revenue from Wastewater Sales		26.45%		$ 940,800	
Rev from Recycled Water Sales		28.58%		$ 1,016,568	

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Table 34

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	**Yes**	Surface	**No**	Arsenic	**Yes**
LEVEL OF RECLAMATION	Basic	**No**	+ Advanced	**No**		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
	Total Water Use	334	Gallons/day	0.374	ac-ft/EDU/year
	Recycled Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	143	Gallons/day	0.160	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 183.64	$ 411,347
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ 450.75	$ 1,009,670
Water Distribution (Storage & Pumping)	$ 2.00		$ 668	$ 1,495,808
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ -
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 6,945	$ 15,556,497

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ 1.50		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ -
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 2.95	$ 4.55	$ -

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 8,180,825	$ 7,375,671	$ -	$ 15,556,497
Costs per EDU	$ 3,652	$ 3,293	$ -	$ 6,945
	52.59%	47.41%	0.00%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	10,017	4,285	-	
Monthly Ops Expense per EDU	$ 29.55	$ 19.50	$ -	$ 49.05

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 8,388,497	$ 7,168,000	$ 15,556,497
Costs per EDU	$ 3,745	3,200	$ 6,945
	53.92%	46.08%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	272,984,934	116,784,998	-
	100.00%		0.00%

Equivalent Swimming Pools 10,919 of Potable Water Use Each Year

Rate Base Breakdown		Total	
Equity	$	4,194,248	50.00%
Debt	$	4,194,248	50.00%

Hypothetical Profit & Loss			
Total Revenue	$	2,796,337	
Expenses	$	(1,318,367)	
EBITDA	$	1,477,971	
Depreciation	$	(388,912)	2.50%
Interest	$	(293,597)	7.00%
Taxable Income	$	795,461	
Tax	$	(334,094)	42.00%
Net Income	$	461,367	
Return on Equity		11.00%	

Annual Volume			$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 8.71	$ 1,015,928	$ 37.79
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	96,347,624	RATE @:	$ 8.71	$ 839,610	$ 31.24
Recycled Water to Com Areas	-	85.00%	$ 7.41	$ -	$ -
Recycled Water to Homes	-		$ 7.41	$ -	$ -
Total Revenue				$ 2,796,337	$ 104.03
Revenue from Water Sales		66.36%		$ 1,855,537	
Revenue from Wastewater Sales		33.64%		$ 940,800	
Rev from Recycled Water Sales		0.00%		$ -	

GLOBAL WATER
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Table 35

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	Yes	Surface	No	Arsenic	Yes
LEVEL OF RECLAMATION	Basic	Yes	+ Advanced	No		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	73	Gallons/day	0.082	ac-ft/EDU/year
	Total Water to Customers	216	Gallons/day	0.242	ac-ft/EDU/year
	Water to Common Areas	-	Gallons/day	-	ac-ft/EDU/year
	Total Water Use	216	Gallons/day	0.242	ac-ft/EDU/year
	Recycled Water to Common Areas	118	Gallons/day	0.132	ac-ft/EDU/year
	Recycled Water to Customers	-	Gallons/day	-	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	25	Gallons/day	0.028	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 118.82	$ 266,166
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ 291.66	$ 653,316
Water Distribution (Storage & Pumping)	$ 2.00		$ 432	$ 967,876
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ -	$ -
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ -
TOTAL			$ 6,985	$ 15,647,029

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ 1.50		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ -
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ -
	$ 2.95	$ 4.55	$ 0.10

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 7,151,358	$ 7,375,671	$ 1,120,000	$ 15,647,029
Costs per EDU	$ 3,193	$ 3,293	$ 500.00	$ 6,985
	45.70%	47.14%	7.16%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	6,481	4,285	3,535	
Monthly Ops Expense per EDU	$ 19.12	$ 19.50	$ 0.35	$ 38.97

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 8,479,029	$ 7,168,000	$ 15,647,029
Costs per EDU	$ 3,785	3,200	$ 6,985
	54.19%	45.81%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	176,637,310	116,784,998	96,347,624
	64.71%		35.29%

Equivalent Swimming Pools 7,065 of Potable Water Use Each Year

Rate Base Breakdown	Total	
Equity	$ 4,239,514	50.00%
Debt	$ 4,239,514	50.00%

Hypothetical Profit & Loss		
Total Revenue	$ 2,539,525	
Expenses	$ (1,047,537)	
EBITDA	$ 1,491,988	
Depreciation	$ (391,176)	2.50%
Interest	$ (296,766)	7.00%
Taxable Income	$ 804,046	
Tax	$ (337,699)	42.00%
Net Income	$ 466,347	
Return on Equity	11.00%	

	Annual Volume		$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 8.05	$ 939,057	$ 34.94
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	-	RATE @:	$ 8.05	$ -	$ -
Recycled Water to Com Areas	96,347,624	85.00%	$ 6.85	$ 659,668	$ 24.54
Recycled Water to Homes	-		$ 6.85	$ -	$ -
Total Revenue				$ 2,539,525	$ 94.48
Revenue from Water Sales		36.98%		$ 939,057	
Revenue from Wastewater Sales		37.05%		$ 940,800	
Rev from Recycled Water Sales		25.98%		$ 659,668	

GLOBAL WATER
RELIABLE. RENEWABLE. REUSABLE.

Table 36

THE ECONOMICS OF RECLAMATION

SCENARIO	Groundwater	**Yes**	Surface	**No**	Arsenic	**Yes**
LEVEL OF RECLAMATION	Basic	**Yes**	+ Advanced	**Yes**		

Consumption

Water to Residential Customers	216	Gallons/day	0.242	ac-ft/EDU/year
Water to Commercial Customers	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - HOMES	216	Gallons/day	0.242	ac-ft/EDU/year
Water to HOA's for Irrigation	118	Gallons/day	0.132	ac-ft/EDU/year
Water to Miscellaneous Irrigation	-	Gallons/day	-	ac-ft/EDU/year
SUBTOTAL - COMMON AREAS	118	Gallons/day	0.132	ac-ft/EDU/year
TOTAL	334	Gallons/day	0.374	ac-ft/EDU/year

Recycled Water

Wastewater Available for Treatment	143	Gallons/day	0.160	ac-ft/EDU/year

Population Density 3.5 per Acre 2,240 EDU/Section

Supply (factoring in utilization of recycled water)

	Water to Customers (Inside)	143	Gallons/day	0.160	ac-ft/EDU/year
34%	Water to Customers (Outside)	-	Gallons/day	-	ac-ft/EDU/year
	Total Water to Customers	143	Gallons/day	0.160	ac-ft/EDU/year
	Water to Common Areas	48	Gallons/day	0.054	ac-ft/EDU/year
	Total Water Use	191	Gallons/day	0.214	ac-ft/EDU/year
	Recycled Water to Common Areas	69	Gallons/day	0.078	ac-ft/EDU/year
	Recycled Water to Customers	73	Gallons/day	0.082	ac-ft/EDU/year
	Re. Water To Discharge/Recharge	-	Gallons/day	-	ac-ft/EDU/year

	Unit Cost ($ per Gal)	Unit Cost ($ per Ac-ft)	Unit Cost ($ per EDU)	Total per Section ($)
Rate Base				
Permitting Costs			$ 50.00	$ 112,000
Groundwater Rights Acquisition		$ -	$ -	$ -
Well Sites	$ 0.55		$ 105.08	$ 235,370
Surface Water Rights Acquisition		$ 11,000.00	$ -	$ -
Surface Water Treatment	$ 6.00		$ -	$ -
Arsenic Treatment	$ 1.35		$ 257.91	$ 577,726
Water Distribution (Storage & Pumping)	$ 2.00		$ 382	$ 855,890
Water Backbone Pipelines			$ 500.00	$ 1,120,000
Wastewater Backbone Pipelines			$ 750.00	$ 1,680,000
Water Reclamation - Treatment	$ 8.00		$ 1,143	$ 2,559,671
Recycled Water Backbone Pipelines			$ 500.00	$ 1,120,000
Reclaimed Water Storage & Pressurization	$ 1.15		$ 84.47	$ 189,220
AIAC				
Onsite Water Pipelines			$ 1,800.00	$ 4,032,000
Onsite Wastewater Pipelines			$ 1,400.00	$ 3,136,000
Onsite Recycled Water Pipelines			$ 1,500.00	$ 3,360,000
TOTAL			$ 8,472	$ 18,977,877

	Total Operating Costs (Water) ($/1000)	Total Operating Costs (WW) ($/1000)	Total Operating Costs (Recycled) ($/1000)
Operational Expenses			
Well Sites	$ 0.25		
Surface Water Treatment	$ -		
Arsenic Treatment	$ 1.50		
Water Distribution (Storage & Pumping)	$ 1.00		
Water Backbone Pipelines	$ 0.10		
Wastewater Backbone Pipelines		$ 0.10	
Water Reclamation - Treatment		$ 4.35	
Recycled Water Backbone Pipelines			$ 0.10
Reclaimed Water Storage & Pressurization			$ 0.50
Onsite Water Pipelines	$ 0.10		
Onsite Wastewater Pipelins		$ 0.10	
Onsite Recycled Water Pipelines			$ 0.10
	$ 2.95	$ 4.55	$ 0.70

Breakdown of Capital Costs	Water	Wastewater	Recycled	Total
Costs per Section	$ 6,932,986	$ 7,375,671	$ 4,669,220	$ 18,977,877
Costs per EDU	$ 3,095	$ 3,293	$ 2,084.47	$ 8,472
	36.53%	38.86%	24.60%	100.00%

Breakdown of Operational Expenses	Water	Wastewater	Recycled	Total
Average Monthly quantities per EDU	5,731	4,285	4,285	
Monthly Ops Expense per EDU	$ 16.91	$ 19.50	$ 3.00	$ 39.40

Capital Structure	Rate Base	AIAC	Total
Costs per Section	$ 8,449,877	$ 10,528,000	$ 18,977,877
Costs per EDU	$ 3,772	4,700	$ 8,472
	44.52%	55.48%	100.00%

Annual Volumes	Water	Wastewater	Recycled
Per Section	156,199,935	116,784,998	116,784,998
	57.22%		42.78%

Equivalent Swimming Pools 6,248 of Potable Water Use Each Year

Rate Base Breakdown	Total	
Equity	$ 4,224,938	50.00%
Debt	$ 4,224,938	50.00%

Hypothetical Profit & Loss		
Total Revenue	$ 2,630,674	
Expenses	$ (1,059,200)	
EBITDA	$ 1,571,474	
Depreciation	$ (474,447)	2.50%
Interest	$ (295,746)	7.00%
Taxable Income	$ 801,281	
Tax	$ (336,538)	42.00%
Net Income	$ 464,743	
Return on Equity	11.00%	

Annual Volume			$/1000 Gallons	Annual Total	$/EDU/Month
Water to Homes	116,580,625		$ 6.61	$ 771,162	$ 28.69
Wastewater	116,784,998		Monthly Rate	$ 940,800	$ 35.00
Water to HOA and Com Areas	39,619,311	RATE @:	$ 6.61	$ 262,075	$ 9.75
Recycled Water to Com Areas	56,728,313	85.00%	$ 5.62	$ 318,961	$ 11.87
Recycled Water to Homes	60,056,685		$ 5.62	$ 337,675	$ 12.56
Total Revenue				$ 2,630,674	$ 97.87
Revenue from Water Sales		39.28%		$ 1,033,237	
Revenue from Wastewater Sales		35.76%		$ 940,800	
Rev from Recycled Water Sales		24.96%		$ 656,637	

GLOBAL WATER
RELIABLE. RENEWABLE. REUSABLE.

Table 37

EXHIBIT
tabbies
CT-117
ADMITTED

EXHIBIT
CT-118
ADMITTED

EXHIBIT
exhibit CT-119
ADMITTED

ARIZONA WATER COMPANY

WATER SERVICE INFORMATION REQUEST

PLEASE PROVIDE THE FOLLOWING PRELIMINARY INFORMATION FOR ARIZONA WATER COMPANY TO DETERMINE HOW YOUR PROPERTY MAY BE SERVED AND TO PROVIDE A PRELIMINARY COST ESTIMATE TO SERVE YOUR PROPERTY:

POTENTIAL APPLICANT NAME	MAILING ADDRESS (IF DIFFERENT FROM PROPERTY ADDRESS)	
	STREET	
	CITY, STATE, ZIP	
ADDRESS OF PROPERTY TO BE SERVED	COUNTY	TAX ASSESSOR PARCEL NUMBER(S)
STREET		
CITY, STATE, ZIP	TELEPHONE	

WILL THIS PROPERTY BE SPLIT INTO 2 OR MORE PARCELS?

☐ YES ☐ NO (IF YES, PROVIDE A RECORD OF SURVEY, PLAT MAP OR ASSESSOR MAP SHOWING THE PROPOSED SPLIT AND THE DESIRED LOCATION OF EACH WATER METER.)

INTENDED PROPERTY USE: (PLEASE CHECK ONE)

- ☐ SINGLE FAMILY RESIDENTIAL
- ☐ COMMERCIAL / INDUSTRIAL
- ☐ OFFICE BUILDING
- ☐ MEDICAL FACILITY
- ☐ APARTMENT / CONDO / DUPLEX
- ☐ MIXED USE

FIXTURES: (LIST THE TOTAL NUMBER OF EACH FIXTURE)

_____ TOILET(S)	_____ KITCHEN SINK(S)
_____ BATHROOM SINK(S)	_____ DISHWASHER(S)
_____ BATH TUB(S) W/SHOWER	_____ GARBAGE DISPOSAL(S)
_____ STAND ALONE SHOWER(S)	_____ WASHING MACHINE(S)
_____ LAUNDRY ROOM SINK(S)	_____ OTHER (DESCRIBE)
_____ HOSE CONNECTION(S)	

NEW OR EXISTING CUSTOMER: (PLEASE CHECK ONE)

- ☐ NEW CUSTOMER (CURRENTLY HAS NO METER AT PROPERTY)
- ☐ EXISTING CUSTOMER (CURRENTLY HAS A METER AT PROPERTY), WOULD LIKE A SECOND METER TO PROPERTY
- ☐ RELOCATE EXISTING SERVICE
- ☐ UPSIZE/DOWNSIZE AN EXISTING SERVICE, AND METER
  CURRENT METER SIZE _____
  REQUESTED METER SIZE: _____

TYPE, SIZE AND NUMBER OF METERED SERVICE(S):

☐ DOMESTIC	☐ COMMERCIAL	☐ INDUSTRIAL
☐ 5/8" _____	☐ 3" _____	
☐ 1" _____	☐ 4" _____	
☐ 2" _____	☐ OTHER (SPECIFY SIZE) _____	

- ☐ TEMPORARY WATER SERVICE
  NUMBER AND SIZE(S) _____
- ☐ LANDSCAPE SERVICE
  NUMBER AND SIZE(S) _____
- ☐ PRIVATE FIRE SERVICE (SPRINKLERS)
  NUMBER AND SIZE(S) _____

FIRE HYDRANTS:

- ☐ PUBLIC FIRE HYDRANT (PLACED IN RIGHT OF WAY OR PUBLIC UTILITY EASEMENT)
  NUMBER AND SIZE _____
- ☐ PRIVATE FIRE HYDRANT (PLACED ON CUSTOMERS PROPERTY)
  NUMBER AND SIZE _____

NOTE:
When service involves fire hydrants, the public fire protection agency that has the responsibility for fire protection must determine the number and location of the fire hydrants, the minimum required fire flow rate (gpm) and flow duration (hours).

FOR DIVISION OFFICE USE ONLY

PERMIT COST $_____ **BORE AND SLEEVE REQUIRED** ☐ YES ☐ NO

LIST ANY SPECIAL CONDITIONS THAT MAY AFFECT THE INSTALLATION

ARIZONA WATER COMPANY

WATER SERVICE INFORMATION REQUEST

NOTE: The determination of the method of service and the preliminary cost estimate to serve this property are based on the information you provide. If the property is split in a manner different than that indicated on the Water Service Information Request form, the method of service and preliminary cost estimate may need to be revised. Water service to your property may require easements, a main extension agreement, a conditional water service agreement, a temporary service agreement and backflow prevention devices. By signing below you certify to the best of your knowledge that the information provided by you is true and accurate.

DISCLAIMER: The method of service determinations and preliminary cost estimates are preliminary in nature and may not represent actual costs of method of service. Please be advised that the actual cost of establishing service to your property can only be determined upon receiving an application for service, payment of all required deposits and fees and receipt of bids from contractors.

_____
Print Name

_____
Signature

_____
Date

ARIZONA WATER COMPANY CC&N EXTENSION
(DOCKET NO. W-01445A-03-0559)

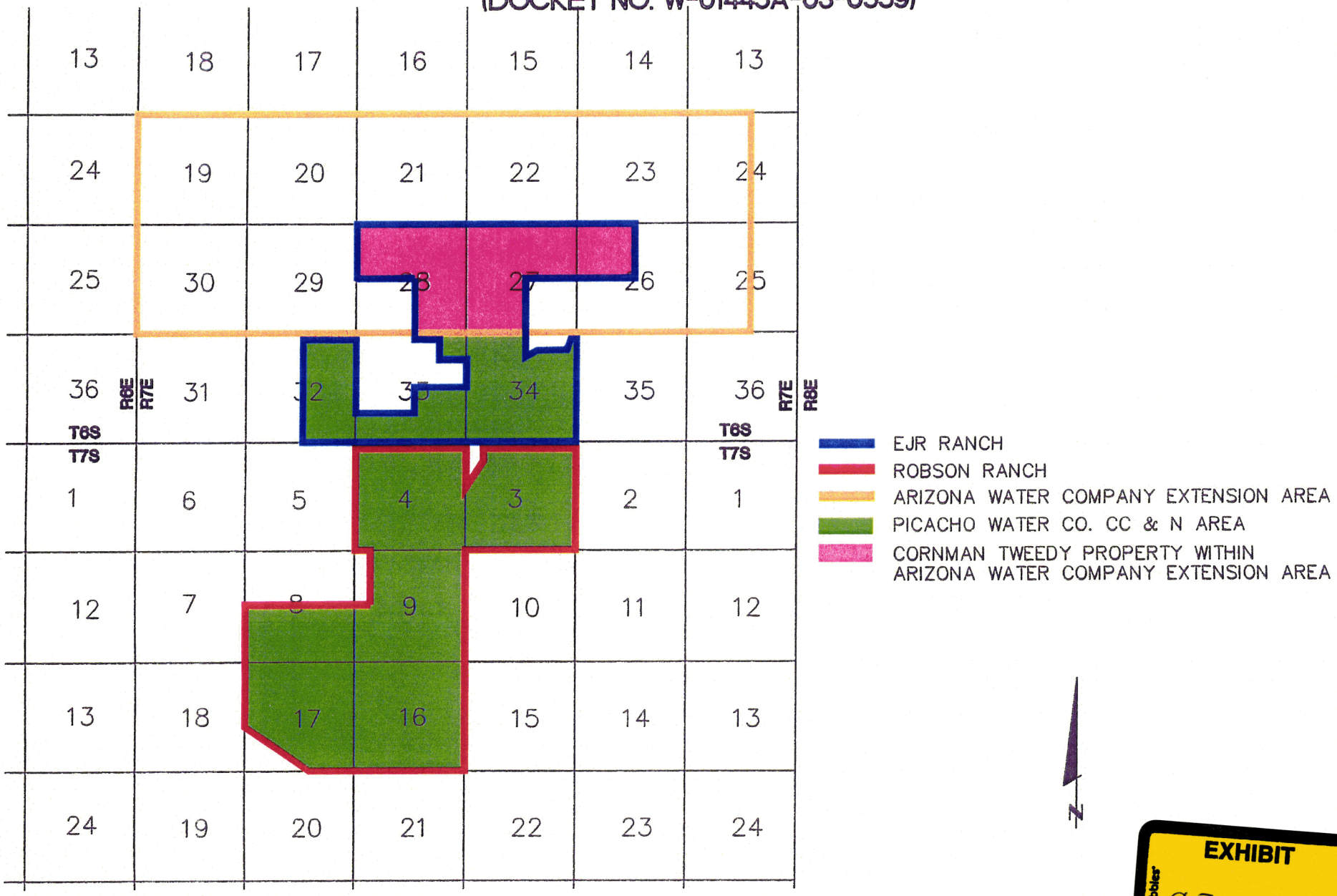

EXHIBIT
CT-120
ADMITTED

ORIGINAL

BEFORE THE ARIZONA CORPORATION

30nf

COMMISSIONERS

MIKE GLEASON, Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

EXHIBIT
CT-122
ADMITTED

IN THE MATTER OF THE APPLICATION OF THE COMMISSION ON ITS OWN MOTION INVESTIGATING THE FAILURE OF CARL HARVEY DBA GOLDEN CORRIDOR WATER COMPANY, TO COMPLY WITH COMMISSION RULES AND REGULATIONS.	DOCKET NO. W-02497A-06-0580

NOTICE OF FILING

At the March 19, 2007 evidentiary hearing in the above captioned matter, Administrative Law Judge Yvette Kinsey verbally directed Staff of the Arizona Corporation Commission ("Staff") to docket and mail notice when an interim operator agreement had been reached with the prospective interim operator, Arizona Water Company ("AWC"). Staff hereby provides notice that on May 14, 2007, Staff and AWC entered an interim operator agreement for management of the Golden Corridor Water Company system.

RESPECTFULLY SUBMITTED this 14th day of May, 2007.

Charles H. Hains
Attorney, Legal Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007
(602) 542-3402

The original and thirteen (13) copies of the foregoing were filed this 14th day of May, 2007 with:

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copy of the foregoing mailed this 14th day of May, 2007 to:

Arizona Corporation Commission
DOCKETED
MAY 14 2007
DOCKETED BY nr

RECEIVED
2007 MAY 14 P 3:30
AZ CORP COMMISSION
DOCUMENT CONTROL

Carl Harvey
GOLDEN CORRIDOR WATER COMPANY, INC.
P.O. Box 486
Rushville, IN 46173
CERTIFIED MAIL AND U.S. MAIL

Carl Harvey
GOLDEN CORRIDOR WATER COMPANY, INC.
2880 East Mopar Drive
Casa Grande, Arizona 85222
CERTIFIED MAIL AND U.S. MAIL

George Moya
5249 South Roughcut Drive
Casa Grande, Arizona 85222

Nancy Hawkins
7471 West Jackpot Lane
Casa Grande, Arizona 85222

Craig Sampson
7450 West Jackpot Lane
Casa Grande, Arizona 85222

Lewis McKenzie Larkin
7380 West Cornman Road
Casa Grande, Arizona 85222

John A. Chadwick
16623 South 33rd Street
Phoenix, Arizona 85048

Sheryln Begay

ORIGINAL

BEFORE THE ARIZONA CORPORATION COMMISSION

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2015 NOV 23 P 12: 58

AZ CORP COMMISSION
DOCKET CONTROL

COMMISSIONERS

Susan Bitter Smith, Chairman
Bob Burns
Tom Forese
Doug Little
Bob Stump

EXHIBIT
Number CT-123
ADMITTED

IN THE MATTER OF THE APPLICATION OF THE COMMISSION ON ITS OWN MOTION INVESTIGATING THE FAILURE OF CARL HARVEY DBA GOLDEN CORRIDOR WATER COMPANY TO COMPLY WITH COMMISSION RULES AND REGULATIONS.	DOCKET NO. W-02497A-06-0580 **CERTIFICATE OF FILING PROGRESS REPORT**

The May 23, 2007 Interim Management Agreement entered into by Staff and Arizona Water Company pursuant to Decision No. 69166 required, among other things, that Arizona Water Company, as Interim Manager of Golden Corridor Water Company, file Progress Reports after taking over the operation, maintenance, and management of Golden Corridor Water Company's water system. In response, Arizona Water Company now files its seventeenth Progress Report, which is attached hereto as Attachment A.

RESPECTFULLY SUBMITTED this 23rd day of November, 2015.

ARIZONA WATER COMPANY

Arizona Corporation Commission
DOCKETED
NOV 23 2015
DOCKETED BY

By: _____
Joseph D. Harris
Vice President and Treasurer
ARIZONA WATER COMPANY
3805 North Black Canyon Highway
Phoenix, AZ 85015
Phone: 602-240-6860

...

...

...

ERS:HAC | 11/23/2015 11:51 AM

ORIGINAL and thirteen (13) copies of the foregoing filed this 23rd day of November, 2015, with:

Docketing Supervisor
Docket Control Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

I hereby certify that I have this day served the foregoing documents on all parties of record in this proceeding by delivering a copy thereof in person to:

Honorable Dwight D. Nodes
Chief Administrative Law Judge
Hearing Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Janice Alward, Directory
Legal Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Thomas M. Broderick, Director
Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

I hereby certify that I have this day served the foregoing documents on all parties of record in this proceeding by mailing a copy thereof, properly addressed with first class postage prepaid to:

Carl Harvey
GCWC/Golden Corridor Water Company, Inc.
179 S. Airport Rd.
Rushville, IN 46173

Dated at Phoenix, Arizona, this 23rd day of November, 2015.

ATTACHMENT A

Interim Manager Progress Report
Concerning Operation of Golden Corridor Water Company

Operations and Environmental Compliance

Arizona Water Company ("the Company") is currently billing 57 Golden Corridor Water Company ("Golden Corridor") customers pursuant to Golden Corridor's approved tariff. There are currently no formal customer complaints on file with the Arizona Corporation Commission.

No further sampling for nitrate is needed as Golden Corridor customers are now served water produced by the Company's Pinal Valley water system which complies with all Safe Drinking Water Act requirements.

Water delivered to Golden Corridor is being chlorinated with an average of 0.94 mg/L per month. Chlorination results in better protection against bacteria and protection of public health. The Company takes two chlorine residuals monthly at the same locations as the bacteriological samples. There have been no positive bacteriological tests since chlorination.

The Company filed a Disinfectants and Disinfection By-Product Plan for Stage 1 and Stage 2 with the Arizona Department of Environmental Quality in August 2008. As noted, Golden Corridor's water is being chlorinated and sampling for TTHM/HAA5s began in August 2008. Two samples were taken in 2008, 2009, 2012 and 2015 and all results have been below the maximum contaminant level. The next samples will be taken in August of 2018.

Lead and copper samples were taken in June 2014 and all results were below the action level. Lead and copper samples will be taken again in June 2017.

Golden Corridor Water Company
Operating Fund Report
For the Period April 2015 -September 2015

	April	May	June	July	August	September
Revenues	2,273	2,865	2,793	3,609	3,463	3,412
Operating Expense:						
Purchased Water	1,594	1,213	1,097	1,300	1,363	1,117
Management Fee	1,000	1,000	1,000	1,000	1,000	1,000
Repairs:						
Labor	-	-	-	-	-	-
Materials	-	-	-	-	-	-
Sales tax on revenues	153	194	189	244	234	236
Property Taxes - Pre AWC						
Property Taxes	159	159	159	159	159	159
Total Expenses	2,906	2,566	2,445	2,703	2,756	2,512
Interest Charges @ 6.32%	-	-	-	-	-	-
Monthly Result	(633)	299	348	906	707	900
Contract to Date Balance	11,292	11,591	11,939	12,845	13,552	14,452

EXHIBIT
CT-124
ADMITTED

MASTER WATER SYSTEM FACILITIES AGREEMENT

THIS AGREEMENT is made and entered into as of the 9th day of September 1999 by and between ARIZONA WATER COMPANY, an Arizona corporation, (the "Company"), which operates under and is subject to the jurisdiction of the Arizona Corporation Commission (the "Commission"), and ROBSON RANCH MOUNTAINS, LLC, an Arizona limited liability company, ("Developer").

RECITALS

A. Developer is preparing a master plan for a mixed-use development of approximately 6,000 residential lots, or their equivalent to be located in an area generally in the vicinity of the town of Oracle, Arizona, as shown on the map in Attachment "A-1" hereto, and more particularly described on Attachment "A-2" hereto, which are by this reference incorporated herein (the "Development").

B. The Company is a public service corporation which owns and operates a water system which provides water service to the town of Oracle, Oracle Junction, and much of the surrounding area, but not, at the present time, any portion of the Development.

C. Developer has requested that the Company make available and provide, and the Company is willing and able to make available and provide, all water service necessary for the entire Development, as set forth in this Agreement ("Water Service"), in accordance with the Company's tariffs on file with the Arizona Corporation Commission (the "Commission"), and the rules, regulations and orders of the Commission, and any other governmental agency having jurisdiction, including, from time to time, any amendments thereto.

D. Developer's master plan for the Development, which may be amended from time to time by Developer, is attached hereto as Attachment "B" (as amended from time to time, the "Master Plan"). Developer shall notify the Company if Developer amends the Master Plan and shall provide the Company with copies of the amendments. The parties acknowledge that it may be necessary to modify the planned water system, such as without limitation the routings and system capacities, from time to time to meet changing development and regulatory requirements, and the parties agree to cooperate reasonably in making any necessary modifications. For example, Developer is attempting to expand its property by purchasing certain parcels from the Arizona State Land Department, and such additional property is included in Attachment "B". If Developer is unable to procure all or part of such property, the parties agree to make appropriate modifications to routings and system capacities to reflect changes in the Development.

E. The parties understand, and agree that, in order for the Company to provide Water Service to the Development, it will be necessary for the parties' respective representatives to meet from time to time as to the design, construction, installation, and subsequent conveyance to the Company of water system facilities which will include, but are not limited to, wells, other water production facilities, water storage reservoirs, booster pump stations, easements and real property parcels, on-site and off-site water transmission and distribution mains and other

facilities, equipment, appurtenances, related electrical and telephone installations, hook-ups and controls, and telemetering equipment necessary or required by the Company to provide water service to the Development, including but not limited to those listed in Attachment "C" hereto, which by this reference is incorporated herein (the "Water System Facilities"). Developer further understands that the Water System Facilities are to be constructed and designed according to the Company's specifications and requirements. The parties agree that the Water System Facilities shall be constructed in accordance with applicable regulatory requirements.

F. A portion of the Development is within the Company's Certificate of Convenience and Necessity ("Certificated Area") and a portion is contiguous to the Company's Certificated Area. The Company is willing and able to make the appropriate filings with the Commission and Developer agrees to support the Company in modifying its Certificated Area to include the entire Development as set forth in paragraph 8 of this Agreement.

In consideration of the mutual agreements, covenants, promises, representations and understandings contained in this Agreement and other good and valuable consideration, the parties hereto have entered into the following Agreement.

1. Water Service; Water System Facilities. The Company and Developer agree that the Company will provide Water Service to the Development, and Developer will construct and provide Water System Facilities, in accordance with this Agreement, the Company's tariffs on file with the Commission, and the rules, regulations and orders of the Commission and any other governmental agency having jurisdiction. The parties specifically agree that at the option of Developer, water: (a) for the golf courses planned by Developer for the Development, and (b) for construction water used by Developer or at its direction or by its contractors and subcontractors during the construction phase of the Development only for dust control, compaction, trench settling, commercial construction, and similar construction purposes, may be provided, and all facilities necessary to provide such water may be constructed, owned, and operated, by Developer. Such water shall be limited to golf course use and construction water. Construction water will not be provided to or used by any person or entity on any portion of the Development following the construction phase of that portion of the Development. The parties agree that Developer may serve golf course and construction water by any legal means, including without limitation effluent, recovered effluent, CAP water, recovered CAP water, or groundwater withdrawn under a general industrial use permit, type 2 non-irrigation grandfathered right or any other valid groundwater withdrawal permit or right. The Company agrees to cooperate reasonably with Developer in its efforts to obtain any such permits or rights. Developer and Company agree to cooperate reasonably in designing and constructing facilities to provide interconnects for emergency backup as may be prudent under good engineering standards. To the extent reasonably feasible and necessary to accommodate such interconnections, Developer agrees that it will attempt to obtain permits and approvals necessary to allow its wells to be used as drinking water wells and to allow the Company to perform necessary tests on such wells to maintain such status.

2. Design of Water System Facilities.

A. The Company has made an initial determination of the Water System Facilities necessary to provide Water Service to the entire Development, except as limited by Paragraph 1. Such initial determination is the basis of the cost estimate of the Water System Facilities referred to in Paragraph 3, below. The Company may change or supplement its initial determination of the Water System Facilities required for the Development as subdividing and construction occurs. The specific design of the Water System Facilities shall be determined solely by the Company. Developer will maintain detailed records showing the cost of the Water System Facilities actually installed by Developer or its agents or contractors.

B. All Water System Facilities shall be designed and constructed in accordance with the Company's design standards and specifications. Except for plans for all booster pump installations and storage tanks, which shall be prepared by the Company, plans for the installation of the Water System Facilities shall be prepared by Developer and shall be subject to the Company's prior written approval. Said approvals shall not be unreasonably withheld, and shall be completed within ten (10) business days of the completion of the submittal of such plans by Developer. The construction of all Water System Facilities must be approved in writing by the Company before the Company's acceptance of such facilities for connection to the Company's water system. Such approval shall not be unreasonably withheld and such approval, together with final inspection, an engineer's certificate of completion, and a request to the Arizona Department of Environmental Quality (the "ADEQ") (or other applicable agency) for an approval of construction shall be completed by Company within fifteen (15) days of a written request by Developer unless the Company determines and gives Developer written notice during the first ten days of that fifteen-day period that such construction is not complete. Developer may install any portion of the Water System Facilities in which case the Company's "General Conditions of Contract" (including but not limited to the warranty provisions therein) and "Construction Specifications for the Installation of Water Distribution Systems", copies of which have been provided to Developer and are attached hereto as Attachments "E" and "F", respectively, and by this reference are incorporated in this Agreement, shall apply to all such installations. In addition, all such installations of Water System Facilities shall be subject to the inspection, approval and acceptance by the Company in all respects, which inspection, approval and acceptance shall not be unreasonably withheld or delayed. If Developer engages a contractor or subcontractor to install any portion of the Water System Facilities, then Developer's contract with such contractor or subcontractor, will include the provisions of the Company's "General Conditions of Contract" (including but not limited to the warranty provisions therein) and "Construction Specifications for the Installation of Water Distribution Systems," along with a clause providing that installation of all Water System Facilities shall be subject to the inspection, approval, and acceptance by the Company in all respects, which inspection, approval and acceptance shall not be unreasonably withheld or delayed. Developer and Company further agree that waterlines 12" and greater will be constructed with ductile iron pipe, and PVC class C900 pipe may be used for all other waterlines. Upon completion of construction and as a condition of the Company's acceptance of all or any part of the Water System Facilities, Developer shall convey such facilities to the Company by a bill of sale acceptable to the Company in the form attached hereto (Attachment "J"), free and clear of liens, encumbrances,

claims, assessments, and any other item not acceptable to the Company together with any and all rights owned or claimed by the Developer which are necessary or required in connection with the Company's use of the facilities.

C. Prior to the Company accepting all or any part of the Water System Facilities, and before water service can be provided therefrom to a particular phase of the Development, Developer must satisfy the following conditions:

(1) All of the Water System Facilities required by the Company to provide water service to a particular phase of the Development must have been completed by Developer and conveyed to the Company in accordance with the phasing plan portion of Attachment "C." Developer and Company intend by the phasing plan to allow for an orderly development of the Development by adding facilities as necessary based on the number of lots in recorded plats so that with each conveyance of facilities the Company will have a functional system allowing it to serve platted lots and other properties that have been connected or may be connected to the Company's water system, and that, if development ceases, the Company will not be required to make significant capital expenditures (i.e., Backbone Distribution Facilities, as referenced in paragraph 3, below) for new system facilities in order to continue service to then existing customers.

(2) Developer must have satisfactorily performed all of its obligations under paragraphs 3B, 3C, 5, 7, 9, and 10 of this Agreement as of the date of such conveyance.

3. Refund Agreement for Backbone Distribution Facilities.

A. Backbone Distribution Facilities, consisting of certain Water System Facilities listed and identified in Attachment "C," will be installed by or at the direction of Developer for the purpose of providing Water Service to the Development. Such Backbone Distribution Facilities shall be installed in accordance with the phasing requirements described in Attachment "C."

B. Company shall reimburse to Developer, without interest, the following amounts except for the cost of any real property, other than improvements installed pursuant to this Agreement (collectively, the "Reimbursable Cost"): (i) all costs of construction of the Backbone Distribution Facilities properly includible in the utility plant accounts as listed and defined in the National Association of Regulatory Utility Commission Uniform System of Accounts for Class A Water Utilities ("NARUC Principles"), and (ii) all amounts paid to the Company related to the establishment of service, including without limitation all plan review fees, inspection fees, hookup fees and similar fees, however denominated. The Reimbursable Cost shall be reimbursed to Developer in semi-annual payments on a per house basis. The amount of each semi-annual payment shall be the product of the number of new active residential connections to the system in the prior six-month period and the reimbursement amount per house as reflected on Attachment "D," as modified from time to time in accordance with the procedure described below. The reimbursement amount with respect to the six month period between January 1 and June 30 of each year shall be due and payable in arrears on or before the first day of September of each year. The reimbursement amount with respect to the six

month period between July 1 and December 31 of each year shall be due and payable in arrears on or before the first day of March of each year. The parties have prepared an initial estimate of the Reimbursable Cost, the projected number of houses in the Development and reimbursement amount per house, which is the estimate of the Reimbursable Cost divided by the projected number of houses, and this estimate is attached as Attachment "D" Whenever required by either party, but not more frequently than annually, the parties agree to cooperate reasonably to update Attachment "D" to reflect actual Reimbursable Cost expended, estimates of Reimbursable Cost remaining to be expended during the course of the Development, actual amounts Company has reimbursed to Developer under this Agreement, and estimates of the total number of units in the Development built and to be built. For purposes of this calculation, the "remaining Reimbursable Cost" shall be the revised estimate of Reimbursable Cost (expended and remaining to be expended) less amounts already reimbursed, and "remaining number of houses" shall be an estimate of the total number of houses built or to be built in the Development less the number of houses for which a reimbursement has already been paid. The new reimbursement amount per house shall be the remaining Reimbursable Cost divided by the remaining number of houses. The intent of this Agreement is that the Developer will receive a refund of the Reimbursable Cost, based on estimates of the reimbursement amount per house, and that the estimate of reimbursement amount per house will be adjusted from time to time so that Developer receives a full refund of Reimbursable Cost by the first semi-annual payment date following the time the last house is sold. Developer agrees to provide the Company copies of all bid requests covering Backbone Distribution Facilities, bids and awards at the time they are issued or received. The Company may obtain bids on the construction of all or portions of the Backbone Distribution Facilities from contractors regularly used by the Company and on the Company's regular bid list. It is the Company's responsibility to keep informed of construction status and timely notify Developer if it wishes to obtain bids on a particular project. If the Company obtains and submits a conforming bid on a project from a contractor regularly used by the Company and on the Company's regular bid list, and Developer selects a higher bid, then Company's lower bid shall be the basis for future refund determinations. Developer agrees to keep and provide to the Company, detailed evidence of payment and supporting documents for all Backbone Distribution Facilities.

C. Prior to Developers' commencement of any construction for the installation of any of the Backbone Distribution Facilities, Developer will deposit with the Company the amount of the Company's estimated cost of engineering, inspection, supervision, overheads, and related costs, such deposit not to exceed 10% of the estimated cost of such facility. Developer will make the deposit prior to the construction and installation of any such Backbone Distribution Facilities.

D. Any amount so deposited for the Backbone Distribution Facilities shall be adjusted to actual cost after installation of the Backbone Distribution Facilities is completed and all costs are known. If the amount of the deposit is less than the Company's actual costs, Developer will pay the difference within sixty (60) days of presentation of an invoice therefor. If the amount of the deposit exceeds the Company's actual costs, the Company shall refund the difference to Developer within sixty (60) days after the Company's actual costs have been determined.

E. Refunds of the cost of the Backbone Distribution Facilities shall terminate at the earlier of:

(1) Full refund of Reimbursable Cost, or

(2) Forty (40) years following the date of this Agreement.

4. Agreement for Extension of Water Facilities

A. The Company agrees to refund to Developer the cost of the Water System Facilities determined in accordance with NARUC Principles, other than the Backbone Distribution Facilities, pursuant to the terms of the Company's Agreement for Extension of Water Facilities in the form attached as Attachment I or such other form as is acceptable to both Developer and the Company and approved by the Commission, which Agreement provides for refund of 10% of revenue for 10 years. For each Agreement for Extension of Water Facilities, the refund period will begin on a date selected by Developer, at Developer's option, but not later than four years after the Commission approves such agreement.

B. Prior to entering into any Agreement for Extension of Water System Facilities Developer will deposit with the Company the amount of the Company's estimated cost of engineering, inspection, supervision, overheads, and related costs, such deposit not to exceed 10% of the estimated cost of such facilities. Developer will make the deposit prior to the construction and installation of any such Water System Facilities.

C. Any amount so deposited for the Water System Facilities shall be adjusted to actual cost after installation of the Water System Facilities is completed and all costs are known. If the amount of the deposit is less than the Company's actual costs, Developer will pay the difference within sixty (60) days of presentation of an invoice therefor. If the amount of the deposit exceeds the Company's actual costs, the Company shall refund the difference to Developer within sixty (60) days after the Company's actual costs have been determined.

5. Easements and Real Property Parcels.

A. Developer shall grant or cause to be granted to the Company, upon the Company's request, all easements the Company requires as part of the Water System Facilities, on forms supplied by the Company, subject to approval by Developer in its reasonable discretion, as well as easements for ingress and egress purposes. The value of such easements shall not be subject to refund. The Company agrees that such easements shall be non-exclusive and shall be used by the Company only for water system use, and may not be conveyed or assigned by the Company to other parties for other utilities or any other use.

B. Developer shall convey or cause to be conveyed to the Company in fee by a deed or deeds in form and content acceptable to the Company the necessary parcels of real property required by the Company as part of the Water System Facilities free and clear of all conditions, covenants, restrictions, claims, liens, charges, encumbrances, easements or other matters affecting the title thereof which are not expressly approved in writing by the Company in

its reasonable discretion. Developer further agrees to provide at its expense good and sufficient A.L.T.A. Standard Owner's Policies of Title Insurance, in the amount of the value of such real property (not including the value of any improvements thereon). The value of such real property parcels shall not be subject to refund, but the value of the improvements thereon may be subject to refund pursuant to Paragraph 3 above. Developer and the Company further agree that the initial parcels are identified on Attachment "G" hereto, and that, for additional parcels, Developer and the Company agree to meet and confer at least once a year following the date of execution of this Agreement, concerning the identification of such additional parcels, and to amend Attachment "G" to list and identify them, at the earliest possible time.

6. Exclusive Water Service. Except for water for the golf courses in the Development, and construction water used during the construction phase of the Development, as provided in Paragraph 1, above, Developer expressly agrees that, to the extent it is within Developer's power and control and provided the Company remains ready, willing and able to provide Water Service to the Development in accordance with this Agreement, the Company shall be the sole purveyor of all Water Service to the Development.

7. Title to Facilities; Governmental Authorizations. In addition to the conveyance of title to all Water System Facilities as provided in Paragraphs 3, 4 and 5, Developer further agrees to transfer to the Company and/or to use reasonable efforts to assist the Company in obtaining any and all permits, licenses, franchises, or other governmental authorizations which may be required for the installation and operation of any Water System Facilities.

8. Arizona Corporation Commission Application. Promptly following the execution of this Agreement by both parties, the Company will make the appropriate application with the Commission requesting a new certificate of convenience and necessity ("CC&N") for the Development in place of the existing CC&N which covers a portion of the Development. In connection with such application, the parties shall cause a copy of this Agreement to be filed with the Commission. Developer will fully cooperate with and support this application, provided, however, that the Company's and Developer's obligations under this Agreement are subject to their receipt of a final order of the Commission approving a CC&N for the entire Development and authorizing the Company to serve the entire Development. For the purpose of this paragraph, a "final order" shall be understood to mean an order concerning which all appeal periods have expired or in the event of an appeal then upon the entry of the final order, judgment or decision of the Commission or the courts, as the case may be.

9. Other Government Approvals. Developer shall apply to the ADEQ or the Arizona Department of Water Resources, as applicable, for the following permits and approvals, the cost of which shall be reimbursable under applicable portions of this Agreement: well drilling permits, approval to construct and approval of construction on all well improvements including pumps, discharge piping and site improvements. The Company shall apply to the ADEQ for approval to construct and approval of construction for all booster pump installations and storage tanks. With respect to line extensions and the transmission lines for the Backbone Distribution Facilities, the Developer shall apply to the ADEQ for the approval to construct, and the Company shall apply to the ADEQ for the approval of construction.

10. Insurance Required of Developer.

A. During the period beginning with the date of this Agreement, continuing for the duration of construction of the Water System Facilities, and terminating not earlier than twelve months following final acceptance of the same by the Company, the following insurance will be maintained in full force and effect by Developer (without cost or expense to the Company):

(1) Comprehensive general liability insurance, including bodily injury and property damage liability insurance, with limits of not less than One Million Dollars ($1,000,000) per person and Two Million Dollars ($2,000,000) in the aggregate, insuring Developer and the Company against claims and liability, including without limitation claims and liability for the death of or injury to any person or for the loss of or damage to any property, which may arise in connection with the construction and/or installation of the Water System Facilities, and further insuring Developer and the Company against all costs and expenses incurred by them in resisting any claim which may be made against either of them for any such liability, injury, or damage to any person or property.

(2) Comprehensive automobile liability insurance with a combined single limit of not less than One Million Dollars ($1,000,000) and excess coverage of not less than an additional One Million Dollars ($1,000,000) protecting the Developer and the Company against all claims for injuries to persons and damage to property of others arising from the Developer's use of motor vehicles in the construction or installation of the Water System Facilities, and shall cover operation on or off the site of all motor vehicles, whether they are owned, nonowned, or hired.

(3) Builder's Risk insurance of the "all risks" type, which shall be written in completed value form, and shall protect Developer and the Company against risks of damage to the Water System Facilities including, without limitation, buildings, structures, and materials and equipment. The amount of such insurance shall be not less than the insurable value of the Water System Facilities then under construction. Builder's Risk insurance shall provide for losses to be payable to Developer, and Developer shall use such funds to pay for the completion of the Water System Facilities. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against Developer and the Company. The Builder's Risk policy shall insure against all risks of physical loss or damage to property from any insurable external cause customarily insured against in an "all risk" policy. Notwithstanding anything to the contrary in this Agreement, the cost of Builder's Risk insurance properly charged to the Water System Facilities is subject to reimbursement under paragraph 3 of this Agreement.

(4) Workers' Compensation and Employers' Liability insurance in accordance with statutory requirements and an endorsement thereto shall be written providing that the underwriter thereof waives all right of subrogation against the Company by reason of

any claim arising directly or indirectly from any work on or associated with the Water System Facilities.

B. Each such policy procured by Developer shall: (1) be issued by an insurance company approved in writing by the Company, which is qualified to do, and is doing, business in the State of Arizona; (2) name the Company as an additional insured; (3) specify that it acts as primary insurance; (4) provide that the policy shall not be canceled or altered without thirty (30) days' prior written notice to the Company; and (5) otherwise be in form satisfactory to the Company. Each such policy or a certificate thereof shall be delivered to the Company concurrently with the execution of this Agreement.

11. Insurance Required of the Company.

A. During the period beginning with the date of this Agreement and continuing during the term of this Agreement, the following insurance will be maintained in full force and effect by the Company (without cost or expense to Developer):

(1) Comprehensive general liability insurance, including bodily injury and property damage liability insurance, with limits of not less than One Million Dollars $1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate, insuring Developer and the Company against claims and liability, including without limitation claims and liability for the death of or injury to any person or for the loss of or damage to any property, which may arise in connection with the operation and maintenance of the Water System Facilities, and further insuring Developer and the Company against all costs and expenses incurred by them in resisting any claim which may be made against either of them for any such liability, injury, or damage to any person or property.

(2) Comprehensive automobile liability insurance with a combined single limit of not less than One Million Dollars ($1,000,000) and excess coverage of not less than an additional One Million Dollars ($1,000,000), protecting the Developer and the company against all claims for injuries to persons and damage to property of others arising from the Company's use of motor vehicles in the operation and maintenance of the Water System Facilities, and shall cover operation on or off the site of all motor vehicles, whether they are owned, nonowned, or hired.

(3) Workers' Compensation and Employers' Liability insurance in accordance with statutory requirements and an endorsement thereto shall be written providing that the underwriter thereof waives all right of subrogation against the Developer by reason of any claim arising directly or indirectly from any work on or associated with the Water System Facilities.

B. Each such policy procured by the Company shall: (1) be issued by an insurance company approved in writing by Developer, which is qualified to do, and is doing, business in the State of Arizona; (2) name Developer as an additional insured; (3) specify that it acts as primary insurance; (4) provide that the policy shall not be canceled or altered without thirty (30) days' prior written notice to Developer; and (5) otherwise be in form satisfactory to

Developer. Each such policy or a certificate thereof shall be delivered to Developer concurrently with the execution of this Agreement.

12. Remedies. In the event either party breaches or defaults under this Agreement, the other party shall have all rights and remedies available under this Agreement and/or at law or in equity, except that Developer and the Company agree that all disputes, claims and controversies between them arising from this Agreement or any actions taken pursuant to this Agreement, including without limitation contract disputes and tort claims, except for disputes subject to the Commission's jurisdiction, shall be resolved by binding arbitration pursuant to the Commercial Rules of the American Arbitration Association. Any arbitration proceeding held pursuant to this arbitration provision shall be conducted in Phoenix, Arizona, or such other location as is selected by mutual agreement of the parties. The arbitrator shall have the right to make any award that could be made by a court of competent jurisdiction. Judgment upon any award rendered by an arbitrator may be entered in any court having jurisdiction. The statute of limitations, estoppel, waiver, laches and other doctrines which would otherwise be applicable in any legal action brought by a party shall be applicable in any arbitration proceeding, and the commencement of an arbitration proceeding shall be deemed the commencement of a legal action for those purposes. Notwithstanding the forgoing, neither party shall be required to arbitrate any claim, dispute or other matter to which it reasonably desires to join a third party as a party to the action or proceeding, unless the third party agrees or can be compelled to participate as a party in the action or proceeding.

13. Assured Water Supply; Conservation. A Certificate of Assured Water Supply issued by the Director of the Arizona Department of Water Resources pursuant to A.R.S. §45-576, will be necessary for portions of the Development. It shall be Developer's sole responsibility to obtain the Certificate or to make other arrangements satisfactory to Developer. The Company shall have no obligation to assist Developer in its application for said Certificate or other arrangements beyond cooperating with Developer to provide any existing data in the Company's possession, signing standard agreements in a form satisfactory to the Company, or acknowledgements required by the Arizona Department of Water Resources as may be revised, as appropriate by the Company, or executing the standard water provider's agreement with the Central Arizona Groundwater Replenishment District if Developer decides to join or pledge any portion of the Development to such District.

14. Time is of the Essence. The Company and Developer agree that time is of the essence and that each will diligently perform its obligations hereunder in a timely fashion in accordance with the provisions of this Agreement. Both parties acknowledge that both are under time constraints to meet a development schedule and milestone dates, and agree to make reasonable efforts to achieve the milestone dates set forth on Attachment "H".

15. Changes or Modifications. The parties hereto may change or modify this Agreement only upon written consent of the parties hereto.

16. Notice Provisions. Written notices to any party to this Agreement concerning this Agreement shall be sent by certified mail or by courier (such as for example by Federal Express),

or by hand-delivery (except that invoices and other similar communications may be sent by first class mail) addressed as follows:

To the Company:	Arizona Water Company 3805 North Black Canyon Highway Phoenix, Arizona 85015-5351 Post Office Box 29006 Phoenix, Arizona 85038-9006 Attention: President
To Developer:	Robson Ranch Mountains, LLC 9532 East Riggs Road Sun Lakes, Arizona 85248-7411 Attention: Karl Polen Vice President

or to such other address or addresses as either party may designate by written notice to the other party. Notices shall be deemed given, received and effective on the date of delivery, if hand-delivered or delivered by courier, or two business days after deposit in the US Mail, postage prepaid, if sent by certified mail.

17. Execution in Counterparts. This Agreement may be executed in any number of counterparts and each executed counterpart shall have the same force and effect as an original instrument.

18. Succession. This Agreement shall be binding upon and shall inure to the benefit of the successors and assigns of the parties. Developer may not assign all or any part of its rights hereunder except as follows: (a) Developer may assign this Agreement to any affiliate of Robson Communities, Inc. engaged in constructing and marketing the Development, and (b) Developer may assign this Agreement as part of the collateral used to secure financing for the Development. Any other assignment requires the Company's prior written approval, which shall not be unreasonably withheld. As a condition precedent to the Company's approval of any assignment requiring Company's approval, the assignee must be acceptable to the Company, and satisfy the Company of assignee's ability to fully perform hereunder and assignee shall assume any further obligations of Developer hereunder and, upon the Company's written approval Developer shall be released from any further obligation hereunder. Each reference to Developer hereunder shall be deemed to include a reference to its successors and assigns approved hereunder.

19. Complete Agreement. Except for the Agreement for Extension of Water Facilities called for by Paragraph 4 of this Agreement, this instrument contains the entire agreement between the parties with respect to the subject matter contained herein and no amendment or modification shall be binding unless made in the manner provided for in writing and signed by duly authorized representatives of the parties hereto.

20. Headings. Headings on each paragraph or subparagraph are merely for convenience and shall under no circumstances be used to interpret or construe this Agreement.

21. Attorney's Fees. In the event any claim, controversy, or legal action arises out of this Agreement, the prevailing party shall be entitled to recover from the other party in such action all costs, expenses and fees incurred therein by said prevailing party (including such attorney's fees as shall be fixed by the court).

22. Further Instruments. The Company and Developer agree that they shall execute any further instruments and perform any further acts which are or may become reasonably necessary to carry out the terms of this Agreement, including, but not limited to, acts or instruments related to the ADEQ.

23. Waiver. No wavier hereunder, expressed or implied, shall imply any other waiver, at the same or subsequent time, whether of the same obligation or of any other obligation. No waiver hereunder shall be deemed effective unless expressly set forth in writing.

IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective officers theretofore duly authorized as of the date first written above.

ARIZONA WATER COMPANY,
an Arizona corporation

By: _____

Its: President

ROBSON RANCH MOUNTAINS, LLC
an Arizona limited liability company

By: Arlington Property Management Company, an Arizona corporation

Its: _____, Vice President

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED STATE LAND PURCHASE

May 5, 1999

PARCEL 1
A portion of Section 7, T10S, R14E, G&SRB&M, Pinal County, Arizona, described as follows:

BEGINNING at the East quarter corner of said Section 7;

THENCE along the East line of the Southeast quarter of said Section 7, S00°10'16"E, 1,786.42;

THENCE leaving said East line S55°09'49"W, 1,582.28 feet to the Southerly line of said section;

THENCE along the South line of the Southeast quarter of said Section 7, S89°41'55"W, 435.38;

THENCE leaving said South line N07°39'14"E, 506.16 feet;

THENCE N13°48'57"W, 676.93 feet;

THENCE N00°00'00"E, 403.96 feet;

THENCE N10°30'14"W, 967.35 feet;

THENCE N31°35'23"W, 196.47 feet to the North line of the Southeast quarter of said Section 7;

THENCE along the North line of said Southeast quarter N89°41'51"E, 2,102.28 feet to the POINT OF BEGINNING.

The above-described parcel contains 99.26 acres, more or less.

PARCEL 2
A portion of Section 8, T10S, R14E, G&SRB&M, Pinal County, Arizona, described as follows:

BEGINNING at the Northwest corner of said Section 8, said corner being marked by a 5/8" rebar, with 2" aluminum cap, tagged L.S. 24530;

THENCE along the North line of the Northwest quarter of said Section 8, S89°42'52"E, 2,634.67 feet to the North quarter corner of said Section 8;

THENCE along the North line of the Northeast quarter of said Section 8, S89°43'06"E, 2,634.65 feet to the Northeast corner of said Section 8;

THENCE S54°23'24"W, 368.86 feet;

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED STATE LAND PURCHASE (Cont.)

May 5, 1999

THENCE S88°06'08"W, 600.79 feet;

THENCE S70°27'04"W, 626.15 feet;

THENCE N37°30'19"W, 185.42 feet;

THENCE S69°18'39"W, 440.01 feet;

THENCE S32°39'16"W, 790.12 feet;

THENCE S62°36'44"W, 214.75 feet;

THENCE S53°43'39"W, 357.73 feet;

THENCE S81°25'31"W, 552.49 feet;

THENCE S14°00'58"W, 395.46 feet;

THENCE S00°34'07"W, 245.06 feet;

THENCE S65°30'52"W, 370.07 feet;

THENCE S33°28'47"W, 216.79 feet;

THENCE S03°08'24"W, 212.05 feet;

THENCE S69°12'03"W, 289.75 feet;

THENCE S40°50'26"W, 201.11 feet;

THENCE S53°05'26"W, 587.67 feet;

THENCE S22°50'33"W, 109.03 feet;

THENCE S43°20'37"W, 134.92 feet;

THENCE S10°01'34"E, 436.16 feet;

THENCE S08°18'02"W, 359.21 feet;

THENCE S55°09'49"W, 292.31 feet to the West line of the Southwest quarter of said Section 8;

THENCE along the West line of said Section 8, N00°10'16"W, 4,469.82 feet to the POINT OF BEGINNING.

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED STATE LAND PURCHASE (Cont.)

May 5, 1999

The above-described parcel contains 175.67 acres, more or less.

PARCEL 3
A portion of Section 4, T10S, R14E, G&SRB&M, Pinal County, Arizona, described as follows:

BEGINNING at the Southwest corner of said Section 4, said corner being marked by a GLO Stone;

THENCE along the West line of the Southwest quarter of said Section 4, N00°31'12"W, 2,712.53 feet to the West quarter corner of said Section 4;

THENCE along the North line of said Southwest quarter, N89°06'38"E, 2,435.99 feet;

THENCE S13°35'35"W, 500.11 feet;

THENCE S83°02'51"W, 299.15 feet;

THENCE N51°20'20"W, 251.21 feet;

THENCE S09°41'13"E, 408.95 feet;

THENCE S16°54'31"E, 252.79 feet;

THENCE S36°35'10"W, 692.49 feet;

THENCE S89°26'09"W, 282.68 feet;

THENCE S46°38'27"W, 384.73 feet;

THENCE S17°50'30"W, 344.36 feet;

THENCE S55°39'15"W, 1,044.18 feet to the point of beginning.

The above-described parcel contains 90.17 acres, more or less.

PARCEL 4
A portion of the Northwest quarter of Section 3, T10S, R14E, G&SRB&M, Pinal County, Arizona, described as follows:

BEGINNING at the Northwest corner of said Section 3, said corner being marked by a GLO Stone;

THENCE along the North line of said Northwest quarter, N89°37'31"E, 2,263.93 feet;

THENCE S53°15'14"W, 494.20 feet;

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED STATE LAND PURCHASE (Cont.)

May 5, 1999

THENCE S69°28'31"W, 1,423.88 feet;

THENCE S50°48'40"W, 679.34 feet to the West line of said Northwest quarter;

THENCE along said West line, N00°22'21"W, 1,209.37 feet to the point of beginning.

The above-described parcel contains 29.97 acres, more or less.

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED PRIVATE LAND PURCHASE

May 5, 1999

PARCEL 5
A parcel of land located in the East ½ of Section 31, T9S, R14E, and the East ½ of Sections 6 and 7, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

BEGINNING at the Northeast corner of said Section 31;

THENCE S00°32'11"E, along the East line of said Section 31, 2,640.06 feet to the East ¼ corner of said Section;

THENCE S00°33'53"E along said East line 2,641.00 feet to the Southeast corner of said Section 31;

THENCE S00°39'51"E, along the East line of said Section 6, 2,671.29 feet to the East ¼ corner of said Section;

THENCE S00°39'34"E, along said East line, 2,680.64 feet to the Southeast corner of said Section 6;

THENCE S00°10'16"E, along the East line of said Section 7, 2,683.40 feet to the East ¼ corner of said Section;

THENCE S89°41'51"W, along the East-West midsection line of said Section, 2,102.28 feet;

THENCE Northerly along the following courses:

N11°37'23"E, 444.11 feet;

N02°21'39"W, 516.22 feet;

N06°04'26"E, 1,002.98 feet;

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
PROPOSED PRIVATE LAND PURCHASE (Cont.)

May 5, 1999

N24°02'57"E, 377.60 feet;

N14°49'58"E, 518.46 feet;

N08°07'55"E, 675.22 feet;

N38°39'34"E, 382.48 feet;

N53°19'55"E, 310.92 feet;

N12°17'53"E, 423.51 feet;

N17°16'32"W, 661.12 feet;

N48°32'07"W, 835.75 feet;

N09°15'20"W, 956.75 feet;

N25°27'28"E, 530.61 feet;

N53°15'32"W, 496.63 feet;

N05°23'12"W, 1,107.50 feet;

N70°49'30"W, 371.58 feet;

N28°44'43"W, 539.40 feet;

N40°09'45"E, 638.80 feet;

S84°28'25"E, 475.25 feet;

S51°50'57"E, 271.66 feet;

N35°58'41"E, 911.02 feet;

N08°37'03"E, 509.19 feet;

N38°22'26"W, 1,401.08 feet;

N63°26'25"E, 1,705.96 feet;

and N19°04'00"E, 1,044.23 feet to the POINT OF BEGINNING.

The above-described parcel contains an are of 480.17 acres, more or less.

ATTACHMENT A-2

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
CURRENT LAND OWNERSHIP

May 5, 1999

PARCEL 6
A parcel of land located in Sections 32, 33 and 34, T9S, R14E, G&SRB&M and Sections 4 and 5, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

ALL of said Section 32;

ALL of the South ½ of said Section 33 except the following:

BEGINNING at the East ¼ corner of said Section 33;

THENCE S00°33'15"E, along the East line of said Section 33, 330.12 feet;

THENCE S89°35'49"W, 662.65 feet;

THENCE N00°34'02"W, 330.16 feet to the Northerly line of said South ½ of Section 33;

THENCE N89°36'01"E, along said Northerly line, 662.73 feet to the POINT OF BEGINNING of this exception.

ALL of the South ½ of said Section 34 except the following:

BEGINNING at the West ¼ corner of said Section 34;

THENCE N89°34'21"E, along the North line of said South ½ of Section 34, 662.58 feet;

THENCE S00°32'51"E, 330.21 feet;

THENCE S89°34'46"W, 662.54 feet to the West line of said Section 34;

THENCE N00°33'15"W, along said West line, 330.12 feet to the POINT OF BEGINNING of this exception.

ALL of said Section 5;

ALL of the North ½ of said Section 4;

The above-described parcel contains an area of 2,253.03 acres, more or less.

ATTACHMENT "C"

CONSTRUCTION SCHEDULE
FOR
BACKBONE DISTRIBUTION FACILITIES

The Backbone Distribution Facilities (the tanks, wells, booster pump station and 16-inch and 12-inch pipelines shown on Attachment "B") for the Development will be constructed in phases as development progresses.

1.A The first phase will be drilling and equipping one water well and the conveyance of an existing well located on Wellsite #1, described in Attachment "G," with a minimum aggregate capacity of 1,100 gallons per minute, the construction of a .75-million gallon reservoir and installation of the associated 16 inch and 12 inch pipelines shown on Attachment "B." The first phase will provide water service to various in-tract facilities for subdivisions within the Development up to a total of not more than 1,750 homes. This phase must be completed and accepted by the Company before service to any homes will be initiated

1.B The booster pump station will be constructed at the reservoir site along with installation of the associated 16-inch and 12-inch pipelines shown on Attachment "B". The pump station may be constructed in conjunction with Phase 1.A, but not before. The booster pump station must be constructed prior to the installation of the in-tract facilities for subdivisions within the Development located above the 3,600 feet contour of elevation.

2. The second phase will be drilling and equipping one water well with a minimum capacity of 550 gallons per minute, and the installation of the associated 16 inch and 12 inch pipelines shown on Attachment "B." The second phase will provide water service to various in-tract facilities for subdivisions within the Development up to a total of not more than 1,650 additional homes. This phase must be completed and accepted by the Company before water service to any homes (other than those homes built in the first phase) will be initiated.

3. The third phase will be construction of an additional .75-million gallon reservoir, drilling and equipping of one additional water well having a minimum capacity of 550 gallons per minute, and installation of the associated 16-inch and 12-inch pipelines shown on Attachment "B." The third phase will provide water service to various in-tract facilities for subdivisions within the Development up to a total of not more than 1,300 additional homes. This phase must be completed and accepted by the Company before water service to any homes (other than those homes built in the first and second phases) will be initiated.

4. The fourth phase will be drilling and equipping one water well with a minimum capacity of 550 gallons per minute and the installation of the associated 16-inch and 12-inch pipelines shown on Attachment "B." The fourth phase will provide water service to various in-tract facilities for subdivisions within the Development up to a total of not more than 1,300 additional homes. This phase must be completed and accepted by the Company before water service to any homes (other than those homes built in first, second and third phases) will be initiated.

ATTACHMENT "D"

INITIAL COST ESTIMATE & REIMBURSEMENT PER HOUSING UNIT

Install approximately 35,500 l.f. of 12", and 16" D.I.P. & related fittings	$1,380,651
Construct Booster Pump Station to serve the upper zone	$118,839
Construct two 750,000 gallon storage tanks complete @ $303,890	$607,780
Drill and equip five wells to produce a minimum of 550 GPM at $462,852 ea.	$2,314,260
TOTAL	**$4,421,530**

Reimbursement Per Housing Unit - $4,421,530 / 6,000 units = $737/unit

Attachment "E"

ARIZONA WATER COMPANY

GENERAL CONDITIONS OF CONTRACT: E-4-1

GENERAL CONDITIONS OF CONTRACT

1. GENERAL

These General Conditions of Contract govern all works of installation and construction unless deviations are provided for on the Construction Drawings or in the Contract.

2. BONDS

The Contractor shall, upon request by the Company, furnish a performance bond and a material payment bond in the amount of 100% of the Contract price, in a form and from a surety acceptable to the Company.

3. LABOR AND/OR MATERIAL RELEASES

The Contractor shall supply labor and/or material releases satisfactory to the Company when requested to do so. Forms will be provided by the Company.

4. LICENSE

The Contractor shall have, as may be required by law, a valid license applicable to the work to be performed..

5. INSURANCE

The Contractor shall maintain in full force and effect insurance at no less than the following minimum amounts:

WORKER'S COMPENSATION	In accordance with requirements of the laws of the State of Arizona.
COMPREHENSIVE GENERAL LIABILITY (Including contractual liability covering death, bodily injury and property damage)	Combined single limit of not less than $1,000,000 for each occurrence.
AUTOMOTIVE LIABILITY (Including owned, non-owned and hired vehicles)	Combined single limit of not less than $1,000,000 for each occurrence.

Such insurance shall name the Company, its officers, agents, and employees as additional insured and be primary for all purposes.

The Company will at all times have the right to require that all of such insurance be placed with insurance companies that are satisfactory to it. The Contractor shall file with the Company a certificate evidencing that each policy of insurance for the above coverages in the minimum amounts specified has been purchased and is in good standing.

Such certificate shall provide that notice be given to the Company at least thirty (30) days prior to cancellation or material change in the form of such policies or any of them. Such certificates shall be kept on file by the Company and the Company must have current certificates on file, or a certificate must accompany any bid proposal, before that proposal will be accepted by the Company.

6. CONTRACTOR UNDERSTANDS WORK AND WORKING CONDITIONS

By executing a Contract with the Company, the Contractor warrants that it has, by careful examination, satisfied itself as to the nature and location of the work, including soil conditions, the character, quality and quantity of the materials to be encountered, the character of the equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters which can in any way be expected to affect its work under the Contract. Verbal agreements or conversations with any officer, agent or employee of the Company, either before or after the execution of the Contract, are not binding upon the Company and shall not affect or modify any of the terms or obligations herein contained.

7. SPECIFICATIONS AND DRAWINGS

The Contractor shall keep on the job a complete copy of all drawings and specifications furnished by the Company which are applicable to the Contract with the Company. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. In case of a discrepancy between the figures, drawings or specifications and physical conditions of the job, the matter shall be immediately submitted to the Company's Authorized Representative for decision as to adjustments, if any, because of the discrepancy; without a decision from the Company's Authorized Representative no discrepancy shall be adjusted by the Contractor, save only at its own risk and expense. Any deviation from the specifications must be approved in writing by the Company's Authorized Representative.

8. PROPERTY PROTECTION

Trees, fences, poles, underground structures and all other property shall be protected unless their removal is authorized on the Construction Drawings. Any property damaged shall be restored by the Contractor, at its expense, to the owner's satisfaction.

9. SPECIAL PERMITS, LICENSES AND INSURANCE

The Company shall obtain all permits for railroad, county, state, city and irrigation district rights-of-way as well as Forest Service, State Land Department and Bureau of Land Management permits. (Pipeline Contractors)

Whenever blasting is required, the Contractor shall obtain all permits, licenses and insurance required at its expense. (All Contractors)

The Contractor will be required to obtain, and shall certify in writing to the Company that it has obtained, all additional permits required to perform the work including, but not limited to, a National Pollution Discharge Elimination System Permit and/or an Aquifer Protection Permit as those permits relate to disposal of drilling, development and test waters and/or any other discharge or similar activity. (Well Drilling Contractors)

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).

B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.

C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.

D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.

E. Invitation to Bid Form. The "Invitation to Bid" form means the current copy of Arizona Water Company's Form E-3-15.

F. Contract. The word "Contract" means the written document titled "Contract" or "Pipeline Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

G. Inspector. The word "Inspector" means the Company's Authorized Representative or a person designated in writing by the Company's Authorized Representative.

10. SURVEYS

The Company shall be responsible, or arrange, for all surveys required for the work covered in the Contract, unless otherwise specified.

11. BENCH MARKS, PROPERTY STAKES AND SURVEY STAKES

Bench marks, property stakes and survey stakes shall be preserved by the Contractor; in case they are destroyed or removed by Contractor or its employees, the Company will replace them at the Contractor's expense, and the Contractor and its sureties shall be liable therefore.

12. TOOLS, EQUIPMENT AND MATERIALS

The Contractor shall furnish all of the necessary tools, equipment, and pipeline materials required for the work. All material furnished by the Contractor shall be of the quality specified by the Company in its Construction Specifications (E-8-1).

13. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall assure adequate superintendence of the work by a competent foreman or superintendent (with full authority to act on behalf of Contractor) satisfactory to the Company, who will be on the job at all times when work is in progress.

14. ORDER AND DISCIPLINE

The Contractor shall at all times enforce strict discipline and good order among its employees.

15. INDEPENDENT CONTRACTOR

The Contractor is an independent contractor and any provisions in the Contract, the specifications, or these General Conditions of Contract and Arizona Water Company's Construction Specifications which may appear to give the Company the right to direct the Contractor as to the details of the doing of any work to be performed by the Contractor, or to exercise a measure of control over said work, shall be deemed to mean and shall mean, that the Contractor shall follow the desires of the Company in the results of the work only and not in the means whereby said work is to be accomplished, and the Contractor shall use its own discretion and shall have complete and authoritative control over the work and as to the details of the doing of the work.

16. ACCIDENT PREVENTION

The Contractor shall, at all times, exercise reasonable precautions for the safety of its employees and the general public in the performance of the Contract and shall comply with all provisions of federal, state, county and city safety laws and building and construction codes.

Whenever the local conditions, laws or ordinances require, the Contractor shall furnish and maintain at its own cost and expense, necessary passageways, guard fences and lights and such other facilities and means of protection as may be required.

In the case of blasting, the Contractor shall exercise extreme caution to protect the general public and personal and public property from harm or damage.

17. CONSTRUCTION MARKING (PIPELINE ONLY)

Each job shall be marked and/or barricaded by the Contractor in such a manner that the construction is clearly visible at all times.

18. EXTRA WORK AND/OR MATERIALS

Except as otherwise herein provided, no charge for any extra work and/or material will be allowed unless the same has been ordered in writing by the Company's Authorized Representative, and the price stated in such order.

19. CHANGES

The Company shall have the right to make any changes in the work that it may determine to be necessary. If such changes affect the cost of the work, an equitable adjustment shall be negotiated. Changes shall in no way affect or void the obligations of both parties under the original Contract.

20. INSPECTION

All work and material shall be open at all times to inspection and acceptance or rejection by the Company's Inspector. Any work covered up by the Contractor prior to inspection and acceptance by the Company shall be subject to being uncovered at the expense of the Contractor for inspection by the Company. The Contractor shall give the Company reasonable notice of starting new work and shall provide, without extra charge, reasonable and necessary facilities for inspection, even to the extent of taking out portions of finished work. In case any such finished work removed is found satisfactory, however, the actual direct cost of such removal and replacement, plus 15% of such cost, will be paid by the Company; in addition, if completion of the work has been delayed thereby, the Contractor shall be granted a suitable extension of time on account of the additional work involved.

21. DEFECTIVE WORK OR MATERIAL

The Contractor shall remove, at its own expense, any work or material found defective by the Company's Inspector and shall rebuild and replace the same without extra charge; in default thereof, the same may be done by the Company at the Contractor's expense.

22. ASSIGNMENT

Neither party to the Contract may assign the Contract or sublet it in whole or in part without the written consent of the other, nor shall the Contractor assign any monies due or which may become due hereunder without the previous written consent of the Company, nor shall such consent release the Contractor from any of its obligations and liabilities under the Contract.

23. RIGHTS OF VARIOUS INTERESTS

Whenever work that is being done for the Company other than by the Contractor is contiguous to work being done by the Contractor, the respective rights of the various interests involved shall be established by the Company to secure the completion of the various portions of the work in general harmony.

24. SUSPENSION OF WORK

The Company's Authorized Representative may at any time and for any reason suspend all or any portion of the work under the Contract. This right to suspend work shall not be construed as denying the Contractor compensation for actual, reasonable and necessary expenses due to suspension to which it may be entitled.

The Company's Authorized Representative may order the Contractor to suspend any work because of certain conditions, such as inclement weather, or because the Contractor is in violation of these General Conditions of Contract or the Construction Specifications. It is understood that compensation for expenses will not be allowed for such suspension when ordered by the Company's Authorized Representative on account of such conditions.

25. PROCEDURE OF WORK (PIPELINE ONLY)

All work under the Contract shall be planned and performed so as to cause a minimum of interference with normal vehicular and pedestrian traffic. At no time shall the Contractor completely obstruct the traffic to any business establishment during normal work hours of that business. It shall be the Contractor's responsibility to maintain facilities for ingress and egress to any business establishment. When crossing any street, not more than one-half of the street may be blocked at one time. All federal, state, county and city laws, rules and regulations relating to this subject are to be obeyed.

The Contractor shall complete any portion or portions of the work in such order of time as the Company may require. The Company shall have the right to take possession of and use any completed or partially completed portions of the work. If such prior possession or use increases the cost of or delays the work, the Contractor will be entitled to extra compensation or extension of time or both, as the Company may determined.

26. DISPUTES

All questions or controversies which arise between the Contractor and the Company, under, or in reference to, the Contract, shall be decided by the Company's

Authorized Representative and a representative of the Contractor, and their decision shall be final and conclusive upon both parties.

27. CONNECTION TO EXISTING SYSTEM (PIPELINE ONLY)

Unless approved in writing by the Company's Authorized Representative, no tie-in or hot tap on the existing system shall be made unless the Company's Inspector is present. When the tie-in requires the operation of an existing valve or other control equipment, the conditions of Paragraph 29 shall be complied with. The Contractor shall notify the Company twenty-four (24) hours prior to tie-in as to the exact time the Contractor plans to make tie-in so that the Company's Inspector will have sufficient time to locate valves and make necessary preliminary arrangements for shut down.

28. PLANNED INTERRUPTION OF WATER SERVICE (PIPELINE ONLY)

No valve or other control on an existing Company water system shall be operated for any purpose by the Contractor without approval of the Company's Inspector. All of the Company's water customers whose service is interrupted by a planned interruption, other than in cases of emergency, shall be notified by the Contractor at least twenty-four (24) hours before the planned interruption and advised of the probable time when the service will be restored.

29. EXISTING UTILITY FACILITIES (PIPELINE ONLY)

The Contractor shall notify all known utilities in the area of the work to be performed under the Contract and shall make arrangements to have their facilities marked in accordance with A.R.S. §40-360.022 ("Blue Stake Law"). The Contractor shall be responsible for locating and preserving all marked facilities. Any damages to these marked facilities shall be repaired at the expense of the Contractor.

The Company will pay for the cost of relocating its or other structures when such structures are found which occupy the physical space of the proposed installation. It is understood that the Contractor will be reimbursed for such work only when written authorization from the Company has been obtained in advance of such work.

30. CLEANING UP

The Contractor shall remove from the Company's property and from all public and private property, at its own expense, all temporary structures, rubbish and waste materials resulting from its operations. In the event Contractor fails to do so, the Company may remove same at the expense of the Contractor.

31. WORKING HOURS (PIPELINE ONLY)

Unless stated to the contrary in the Invitation to Bid and/or so stated on the Construction Drawings, or agreed to by the Company during a Pre-Construction Conference, the Contractor shall not be permitted to perform work on Saturdays, Sundays, or Company holidays, or commence work such as tie-ins that cannot be completed during normal working hours.

32. INDEMNITY

The Contractor shall indemnify the Company against, and save and hold it harmless from, any and all liability, claims, demands, damages and costs of every kind and nature for injury to or death of any and all persons, including, without limitation, employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons; for damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, property of the Company or of the Contractor or of any subcontractor, or of any other person or persons, resulting from or in any manner arising out of or in connection with the performance of the work under the Contract. The Contractor shall, also, upon request by the Company, and at no expense to the Company, defend the Company in any and all suits, concerning such injury to or death of any and all persons, and concerning such damage, destruction or loss, consequential or otherwise, to or of any and all property, real or personal, including, without limitation, suits by employees or representatives of the Company or of the Contractor or of any subcontractor, or any other person or persons. Excluded from this paragraph are only those injuries to or deaths of persons and damage, destruction or loss, to or of property arising from the sole negligence or willful misconduct of the Company, or its employees or representatives.

33. LIENS

If at any time there shall be evidence of any lien or claim for which the Company might become liable and which is chargeable to the Contractor, the Company shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify the Company against such lien or claim. If the Company determines that such lien or claim is valid, the Company may pay and discharge the same, and deduct the amount so paid from any monies which may be or become due and payable to the Contractor.

34. PAYMENT

Upon completion of the installation or construction, the Company will, within thirty (30) days after receipt of proper invoice and labor and material releases, pay the amount due the Contractor. If the Company believes that additional work, such as clean up, is required, it may deduct the total cost of such additional work from the amount to be paid to Contractor.

35. COMPANY'S RIGHT TO TERMINATE CONTRACT: DAMAGES DUE TO DELAY

If the Company finds the Contractor to be in material violation of any section of these General Conditions of Contract, Construction Specifications or Standard Specification Drawings or if the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or when any other cause exists to justify such action, the Company may, without prejudice to any other right or remedy, by written notice to the Contractor, terminate its right to proceed with the work or such part of the work as to which there has been such violation, delay or other cause.

In the event the Contractor's right to proceed is terminated, the Company may take over the work and take possession of, and utilize in completing the work, such materials as may be on the site of the work and necessary therefore and prosecute said work to completion by whatever method it may deem expedient. The Contractor and its sureties shall be liable to the Company for any excess cost caused thereby.

In the event the Contractor's right to proceed with the work is terminated, the Contractor shall not be entitled to receive any further payment until the work is completed or the job is canceled. If the unpaid balance of the Contract price exceeds the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses exceed such unpaid balance, the Contractor shall pay the difference to the Company.

36. GUARANTEE

The Contractor shall guarantee all labor and workmanship and any materials it installs for a period of one year following the date of completion and acceptance by the Company. If any portion of the work or any of the materials become defective within the guarantee period, the Company will notify the Contractor of such defect. The Contractor must repair any defect within fifteen (15) days of such notification. If repairs are not completed within this time period, the Company may repair the defect, or cause such defect to be repaired, and the cost of such repairs shall be paid by the Contractor. The Company reserves the right to determine which defects are the result of poor labor and workmanship and which are caused by defective materials.

37. LIQUIDATED DAMAGES FOR NON PERFORMANCE: REQUEST FOR EXTENSION(S) OF TIME

Time is of the essence in the Contract. The time period required for completion of the work will be specified in the Contract. The Contractor agrees that the Company will suffer substantial damages in the event the Contractor fails to complete the work within the agreed upon time period. The Contractor and the Company agree that since it would be impracticable or extremely difficult to precisely fix such damages, a reasonable approximation of such actual damages suffered by the Company shall be a sum equal to 0.5% of the Contract price for each working day beyond the time period for completion of the work specified in the Contract.

Request by the Contractor for extensions of the time period shall be in writing and shall not become effective until approved in writing by the Company's Authorized Representative.

38. PAYMENT FOR REQUIRED TESTING

Whenever testing is required by any governmental agency or by the Company to assure conformance of the Contractor's work with the appropriate standard, it will be paid for as follows:

a. For testing required under permits obtained by the Company or testing specifically requested by the Company, the cost of the first test will be

paid for by the Company. In the event of failure of the first test, the cost of all further testing associated with the failure will be paid by the Contractor.

b. For testing required under permits obtained by the Contractor, all costs will be paid by the Contractor. Testing of the pipeline for pressure and leakage will be included in the Contract price.

39. CONTRACT DEADLINES AND BONDS REQUIREMENTS

The time limits to be allowed for the completion of any work covered in the Contract shall be established as follows: In the proposal submitted to the Company, in response to the Invitation to Bid, the Contractor shall state the number of calendar days required for completion of the work. The time required will become a part of the Contract. When the Company is ready to proceed with the work, a Commencement Notice will be issued by the Company to the Contractor by mail. The Commencement Notice will allow the time required in the Contract plus ten (10) calendar days and will indicate the final day of the time allowed. The work cannot begin until the Company has received a performance bond and materials payment bond for the Contract price unless the bonds have been waived under the special conditions section of the Contract. The additional ten (10) days is the allowance for time to deliver the Commencement Notice to the Contractor and for the Contractor to return the performance bond and materials payment bond to the Company. Time extensions will be granted if warranted, and only at the time of the delay, thus extending the final day of the time allowed.

If the Company elects not to require a performance bond and a material payment bond for the work, the cost of the bonds will be deducted from the proposed total cost and the Contract will reflect this reduced cost and the bonds requirements will be waived under special conditions of the Contract.

Attachment "F"

ARIZONA WATER COMPANY

CONSTRUCTION SPECIFICATIONS: E-8-1
and
STANDARD SPECIFICATION DRAWINGS: E-9-1

CONSTRUCTION SPECIFICATIONS FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS - DUCTILE IRON

DEFINITIONS

A. Company. The words "Company" or "Arizona Water Company" mean Arizona Water Company, and where applicable, any division of Arizona Water Company, whose principal place of business is located at 3805 North Black Canyon Highway, Phoenix, Arizona 85015-5351 (Post Office Box 29006, Phoenix, Arizona 85038-9006).

B. Company's Authorized Representative. The words "Company's Authorized Representative" mean any officer of the Company, and any of the Company's Engineers, any Division Manager of the Company and/or such other person(s) designated in writing as the "Company's Authorized Representative" by the President or any Vice President of the Company.

C. Contractor. The word "Contractor" means either an individual or other entity employed to do the work as shown on the Construction Drawings and as specified herein.

D. Construction Drawings. The words "Construction Drawings" mean plans prepared by or on behalf of Arizona Water Company.

E. Contract. The word "Contract" means the written document titled "Contract" or "Pipeline Contract" when such document has been signed by an officer or other authorized representative of both the Contractor and the Company.

CONSTRUCTION SPECIFICATIONS
FOR THE INSTALLATION OF WATER DISTRIBUTION SYSTEMS
- DUCTILE IRON

1. GENERAL

All work is to be completed in a safe, workmanlike manner and in accordance with these Construction Specifications; any deviation therefrom must be approved in writing by the Company.

Installations must conform with the requirements of all governmental regulating agencies and the cost of conforming to such regulations must be included in the unit bid prices. Examples of such regulations, without attempting to be inclusive, are:

a. Special compaction and paving for street crossing.
b. Shoring when required because of the trench depth.
c. Closing a trench in those areas where no open trench is allowed overnight.
d. Barricading and traffic control as required.

2. LOCATION MARKING

Alignment stakes as required in the opinion of the Company shall be furnished by the Company to the Contractor and shall be set by the Company at agreed upon intervals and offsets. Under normal circumstances these will reference the pipeline location five feet (5') into the right-of-way measured from property pins. Grade stakes will be provided only when the Construction Drawings show a pipeline depth other than covered in these Specifications. It is the responsibility of the Contractor to preserve all survey work.

3. TRENCH EXCAVATION

The trench location is to be determined by the Construction Drawings.

FOR 8-INCH OR SMALLER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between thirty-six inches (36") and forty-two inches (42") of cover unless otherwise specified on the Construction Drawings.

FOR 12-INCH AND LARGER PIPE: The depth of the trench prior to pipe laying shall be such that the finished pipeline shall have between forty-eight inches (48") and sixty inches (60") of cover unless otherwise specified on the Construction Drawings.

The width of the trench at and below the level at the top of the pipe shall be a minimum of twelve inches (12") plus the outside diameter of the pipe barrel and a maximum of twenty-four inches (24") plus the outside diameter of the pipe barrel.

The bottom of the trench shall be accurately graded to provide a uniform bearing for each length of pipe for the full length of the pipe. If the native material on the trench bottom can be reasonably dug by hand, bell holes shall be dug for the joints so that the joints in no way support the pipe. When native materials such as rock are encountered during trenching that will not provide a uniform support for the pipe, the trench will be over-

excavated an additional six inches (6") and suitable bedding material will be placed in the trench.

Bedding material will be placed by hand in four inch (4") lifts and compacted to ensure uniform compaction and to eliminate any voids under the pipe. When the space between the pipe and trench bottom varies, this must be backfilled and compacted in four inch (4") lifts to the mid-section of the pipe.

Whenever the trench is over-excavated for whatever reason, the trench bottom will be brought up to the correct depth at the Contractor's expense using either method (a) or (b) as follows:

a. A.B.C. material shall be used and compacted to a uniform density of not less than 80% of the maximum density as determined by AASHTO T-99 method A and T-191.

b. Native material 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen shall be used and compacted to a uniform density of not less than 85% of the maximum density as determined by AASHTO T-99 method A and T-191.

4. MATERIALS TO BE PROVIDED BY CONTRACTOR

Unless otherwise specified on the Construction Drawings or in the Contract, the Contractor will supply all of the necessary materials which will become a permanent and integral part of the water distribution system, including concrete blocking, anchors, backfill material, paving material and supplies used during the prosecution of the work. All materials provided by the Contractor to construct the water distribution system must be NSF Standard 61 approved. The Contractor will provide the following materials:

a. FIRE HYDRANTS: Mueller Super Centurion 200 Fire Hydrant, meets ANSI/AWWA C502 Standard, Model No. A-421, 4½" main valve opening, three way, 6" Mechanical Joint Shoe, 1½" pentagon operating nut, color - yellow, drain open, open direction - left, 4' or 4'6" bury depending on application. For pumper and hose nozzle information see below.

(1) 1 - 4" Pumper Nozzle, NST and 2 – 2½" Hose Nozzles, NST. (These locations only: Ajo, Casa Grande, Coolidge and San Manuel.)

(2) 1 – 4½" Pumper Nozzle, NST and 2 – 2½ " Hose Nozzles, NST. (These locations only: Apache Junction, Arizona City, Lakeside, Oracle, Overgaard, Pinewood, Rimrock, Sedona, Sierra Vista, White Tank and Winkelman.)

(3) 1 – 4½" Pumper Nozzle, NST and 2 – 2½" Hose Nozzles, NPT (Bisbee only.)

(4) 1 - 3" Pumper Nozzle GA 6-350 (6 threads per inch, 3.50 pitch diameter) and 2 – 2½" Hose Nozzles, NPT (Miami only.)

(5) 1 - 3½" Pumper Nozzle GA 6-411 (6 threads per inch, 4.11 pitch diameter) and 2 - 2½" Hose Nozzle, NST (Superior only.)

b. FITTINGS: Manufactured by Tyler or Union. Crosses, Elbows, Tees, Cap, Reducer, Adapter, Plug, Blind Flange and Tapped Flange; Ductile Iron, Class 350, SSB. Cast Iron Cement Lined.

c. DETECTOR CHECK VALVE: Mueller/ Hersey EDC III, iron body, including ⅝" x ¾" Trim Kit. Trim Kit Part No.: 4" = 282080, 6" = 282082, 8" = 282085, 10" = 282496.

d. GATE VALVES: Mueller Resilient Wedge Gate Valves, meets AWWA C509 specification, 250 psig, Non rising stem, Part No. A-2360, low zinc stems, epoxy coated inside and outside to meet the NSF 61 rating.

e. MEGALUG: Mechanical Joint restraint made of ductile iron conforming to ASTM 536-80, 250 psi made by EBAA Iron, Inc., series 1100 or equal.

f. METER BOXES:

(1) Concrete Box with a steel regular lid, Number 1: Tucson specification.

(2) Concrete Box with a steel regular lid, Number 2, 3, and 4: Phoenix specification.

g. PIPE, COPPER: Type K soft copper in 60 or 100 foot coils.

h. PIPE, DUCTILE IRON: Ductile Iron Pipe, Cement Lined, Push-on, conform to current ANSI/AWWA Specification A21.51/C151, Pressure Class 350 (sizes 4" through 12"), Pressure Class 250 (sizes 14" through 20"), or Pressure Class 200 for 24" pipe. Vendors:

(1) Pacific States Cast Iron Pipe Company

(2) Griffith Pipe

(3) United States Pipe and Foundry Company

i. PIPE, PLASTIC: Plastic pipe, C-900 PVC, Class 150.

j. COUPLING: Mueller, straight three part union, tested to meet ANSI/AWWA C800, H15403, 110 Conductive compression.

k. STOP, ANGLE METER , BALL: Mueller, valve, B24258R, 110 conductive compression by meter swivel nut, tested to meet ANSI/AWWA C800, size ⅝" x ¾" x ¾" for a ¾" service or size 1" for a 1" service.

Mueller, valve, B24265R, female pipe thread by meter swivel nut, tested to meet ANSI/AWWA C800, size ⅝" x ¾" x ⅝" for a ¾" service or size 1" for a 1" service.

i STOP, CORP: Mueller, ball valve, B25008, CC thread by 110 conductive compression, tested to meet ANSI/AWWA C800 specification, sizes: ¾", 1" and 2".

Mueller, on-corp valve, H15013, CC thread by 110 conductive compression, tested to meet ANSI/AWWA C800 specifications, size: 2"

m. STOP, CURB: Mueller Oriseal valve, H10291, iron pipe thread by iron pipe thread, quarter turn check, brass, tested to 300 psi working pressure, tested to meet ANSI/AWWA C800 specification, size: 2"

n. TAPPING SADDLE. Smith Blair, Cast Bronze ASTM-B584 85-5-5-5, double strap, iron pipe threads, Models 321 and 323. Washers are silicon bronze, ASTM-B36. Gaskets are grade 60 Buna N, or Mueller bronze double strap service saddle, BR 2 B series, cast bronz, ASTM-B585, 85-5-5-5, or H16084, 200 psig, meets ANSI/AWWA C800.

o. TAPPING SLEEVE: Mueller H304 Stainless Steel Tapping Sleeve, JCM 432 18-8 Type 304 Stainless Steel Tapping Sleeve, Romac "SST" Type 304 Stainless Steel Tapping Sleeve or CASCADE-style CST-EX stainless steel pressure-rated tapping sleeve.

p. U-BRANCH: Mueller, H15363, 1" 110 conductive compression by ¾" male, meets ANSI/AWWA C800 specifications, size: 1" x ¾" x 13½", straight line.

q. VALVE BOXES. Valve Box with Cover, adjustable, Tyler 562-A or equal, made of cast iron.

r VAULTS. Utility Vault Company, Chandler, AZ.

(1) 4484-WA concrete vault with a 3660 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.

(2) 575-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knock outs and adjustable frame.

(3) 612-5X-WA concrete vault with a 4874 aluminum double torsion door with a recessed padlock hasp, two - 18" x 24" center knockouts.

s. YOKES, METER. Relocator type copper meter yoke with horizontal inlet and outlet and meter thread ends, H14118, with lock wing ground key angle meter stop, sizes: 1" x 12", 5/8" x ¾" x 7", 5/8" x ¾" x 9"

t AIR RELEASE VALVE. Crispin Model AR10 with 1" NPT inlet and ½" NPT outlet, cast iron body and top flange; with a 5/64" orifice with stainless steel valve sealing faces and BUNA-N rubber and with vacuum ball check valve

The Contractor also will be required to provide the following materials, the cost of which will be included in its unit bid price:

All material and concrete for thrust blocks, other anchors, reinforcing steel; all gravel crushed stone, A.B.C., earth, sand, or screened material which may be required; all material for bracing and shoring trenches and for construction of forms; all barricades and traffic control equipment, all material for paving replacement and any water used for compaction of backfill

5. INSTALLATION OF MATERIALS

All materials are to be installed in accordance with manufacturers recommendations unless otherwise directed by these Specifications.

All pipe, fittings and valves shall be laid true to the lines, grades and locations established by the Specifications and the Construction Drawings.

The ends and inside of the pipe shall be thoroughly cleaned and inspected for damage. No damaged materials shall be installed in the water distribution system.

Whenever the work ceases for any reason, all open pipeline ends shall be tightly plugged by the Contractor.

Concrete thrust blocks of the sizes required by the plans and specifications are to be provided at all valves, changes in direction or size, or at any other point where an unbalanced thrust due to water pressure would exist. Thrust blocks are to be formed to prevent any concrete from spilling over or into a joint.

Trench curves as shown on the Construction Drawings may be made without fittings when using pipe up to twelve inches (12") in diameter, if the deflection of the pipe does not exceed five degrees (5°) or nineteen inches (19") per eighteen foot (18') length of pipe. The minimum radius of such curves will be two hundred five feet (205').

6. BACKFILL OF WATER MAIN TRENCHES

Backfill of any excavation shall conform to the requirements of any of the governmental agencies having jurisdiction over the location. If no governmental agency having such jurisdiction specifies backfill or compaction requirements, and no special requirements are shown on the Construction Drawings, the procedure set forth in this section will apply for water line trenches.

The bedding material above the pipe and backfill material shall be compacted to a minimum of 70% compaction within a utility easement and 80% compaction within a right-of-way as determined by AASHTO T-99 method A and T-191. If water settling is used for compaction, it is the responsibility of the Contractor to prevent the pipe from floating.

The bedding material shall be either native material, 100% of which will pass through a one and one-half inch (1½") screen and at least 20% of which will pass through a number-8 screen, or imported material which conforms to M.A.G. specifications for A.B.C. or type-B select materials. Bedding material shall be used below and around the pipe and a maximum, of twelve inches (12") above the pipe.

The remainder of the trench shall be backfilled with native or imported material which shall be of sound earthen material free from broken concrete, wood, broken pavement, or other unsuitable substances. Except as otherwise specified, backfill may be material containing no pieces larger than eight inches (8") in greatest dimension.

Where settlement occurs, additional backfill material shall be placed and compacted and the trench shall be brought to final grade.

7. HYDROSTATIC TESTING OF COMPLETED PIPELINES

Hydrostatic testing of water pipelines will be completed before the new system is connected into the existing water system so that all testing can be done against all new materials.

The completed section of water pipeline to be tested shall be slowly filled with water with care being taken to expel all air from the pipe. If necessary, the pipe will be tapped at high points to vent air.

The Contractor shall provide all equipment and labor necessary to accomplish this testing and the price shall be included in the unit prices. The Contractor shall notify the Company in advance of the testing so that the Company can schedule a duly authorized representative to be at the site during testing. The Contractor, at its own expense, shall make any necessary repairs to the system being tested in order to cause the section being tested to meet the test limits set below. The Contractor may request authorization of the Company to connect the new pipelines to the existing system prior to completion of pressure testing when, in the Company's sole opinion and judgment, conditions warrant such connection.

The Contractor shall assume all responsibility to complete pressure testing to Company's specifications after such connection, including, but not limited to, isolation of the new pipelines from the existing system, if necessary.

Connections prior to completion of pressure testing shall not be made unless prior Company authorization has been obtained, and any extra expenses resulting from such connections shall be the sole responsibility of the Contractor.

Leakage tests will be for a period of two hours at 200± 5 psi at the point of lowest elevation; leakage may not exceed .1 gallons per hour per one thousand feet (1,000') of pipe per inch of diameter.

8. STERILIZATION AND FLUSHING OF COMPLETED WATER PIPELINES

Sterilization and flushing will conform to recommendations of Arizona State Department of Health Services Engineering Bulletin Number 8, latest edition, or any future Arizona Department of Environmental Quality bulletins.

9. NO OTHER UTILITIES ALLOWED IN OR NEAR WATER PIPELINE TRENCHES

No other utility installations will be permitted in the water pipeline trench or within five feet (5') of the Company's water pipeline when running parallel to the water pipelines.

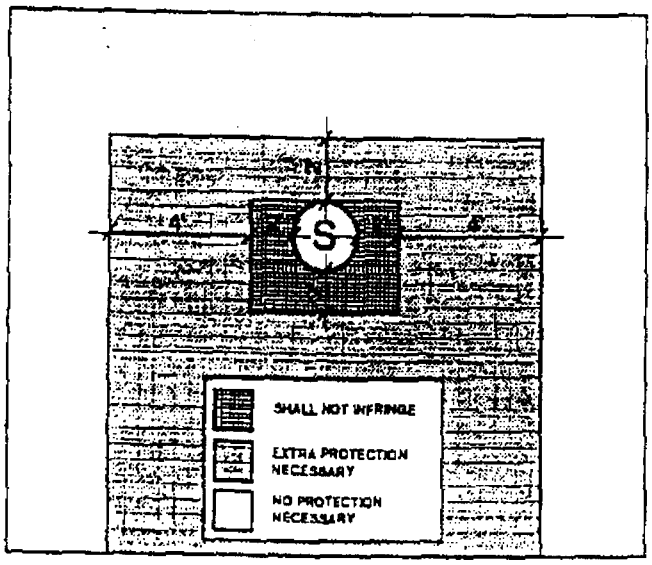
10. PROTECTION OF WATER MAINS NEAR SEWERS

In order to protect water mains from contamination by sewers, the installation of the water mains must conform to the following requirements:

a. Horizontal - When water lines and sewers are laid parallel to each other, the horizontal distance between them shall not be less than six feet (6'). Each line shall be laid on undisturbed or bedded material in

a separate trench. Where conditions prevent the minimum horizontal separation set forth above, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department. Refer to the diagram below for clarification.



Under no circumstances will the horizontal separation between sewer mains and water mains be less than two feet (2'). All distances are to be measured from the outside of the sewer main to the outside of the water main.

b. Vertical - When a water main is parallel to or crosses a sewer main within two feet (2') above the sewer or greater than two feet (2') below the sewer, extra protection will be required. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided, or encasing the sewer main in concrete. Extra protection shall consist of constructing the water main with mechanical joint ductile iron pipe or with slip-joint ductile pipe if joint restraint is provided. The water main shall not be encased in concrete.

The Construction Drawings shall indicate the installation requirements. The drawings showing these exceptions shall have been approved by the appropriate state and/or county health department.

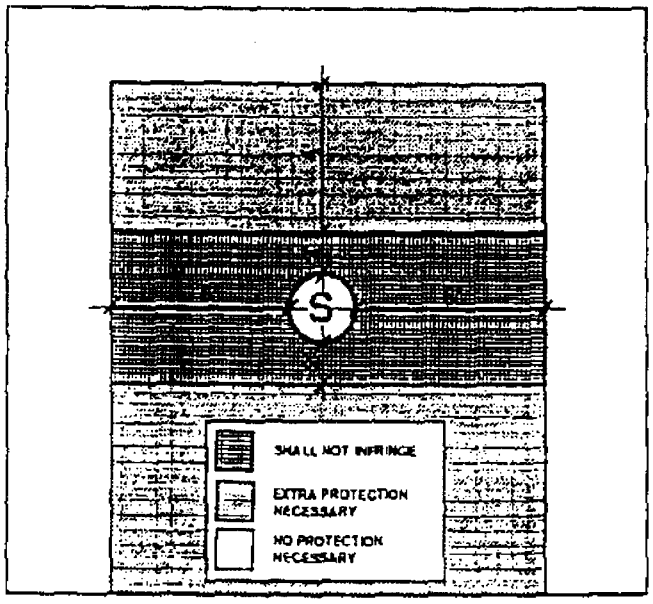
Under no circumstances will the vertical separation of a sewer main installed above a water main be less than two feet (2'). All distances are to be measured from the outside

of the sewer main to the outside of the water main. Refer to the diagram above for clarification.

c. When unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer main separations required from being met, the appropriate state and/or county health department will review and may approve requests for authorization to use alternate construction techniques, materials and joints on a case-by-case basis.

d. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six feet (6'), measured from the center of the manhole.

e. The minimum separation between force mains or pressure sewers and water mains shall be two feet (2') vertically and six feet (6') horizontally under all conditions. Where a sewer force main crosses above, or less than six feet (6') below, a water line, the sewer main shall be encased in at least six inches (6") of concrete for ten feet (10') on either side of the water main. Refer to the diagram below for clarification.



f. Sewer mains (gravity, pressure, force) shall be kept a minimum of fifty feet (50') from drinking water wells, unless the following conditions are met:

1. Water main pipe, pressure tested in place to 50 psi without excessive leakage, may be used for gravity sewers at distances greater than twenty feet (20') from drinking water wells.

2. Water main pipe, pressure tested in place to 150 psi without excessive leakage, may be used for pressure

sewers and force mains at distances greater than twenty feet (20') from drinking water wells.

g. No septic tank/disposal field system shall be constructed within one hundred feet (100') of a drinking water well.

h. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. These separation requirements do not apply to building, plumbing or individual house service connections.

11. COMPACTION

When crossing existing water mains a minimum of 95% compaction is required to the bottom of existing mains.

Arizona Water Company requires that no slurry be permitted to contact existing cement/asbestos or ductile iron pipes. Slurry may be poured in the bottom of the sewer trench stopping three inches (3") below the existing water main. The backfill used around the main should be AB in sufficient depth to prevent slurry from contacting existing main.

12. WATER MAIN MATERIAL SPECIFICATIONS

Ductile iron pipe (Pushon type) minimum class 350, cement lined and conform to AWWA C151.

All main line valves shall conform to AWWA C500 with a minimum working pressure of 200 psi.

All cast iron fittings to be cement lined in accordance with AWWA C104 and shall conform to AWWA C110 with a minimum working pressure of 250 psi.

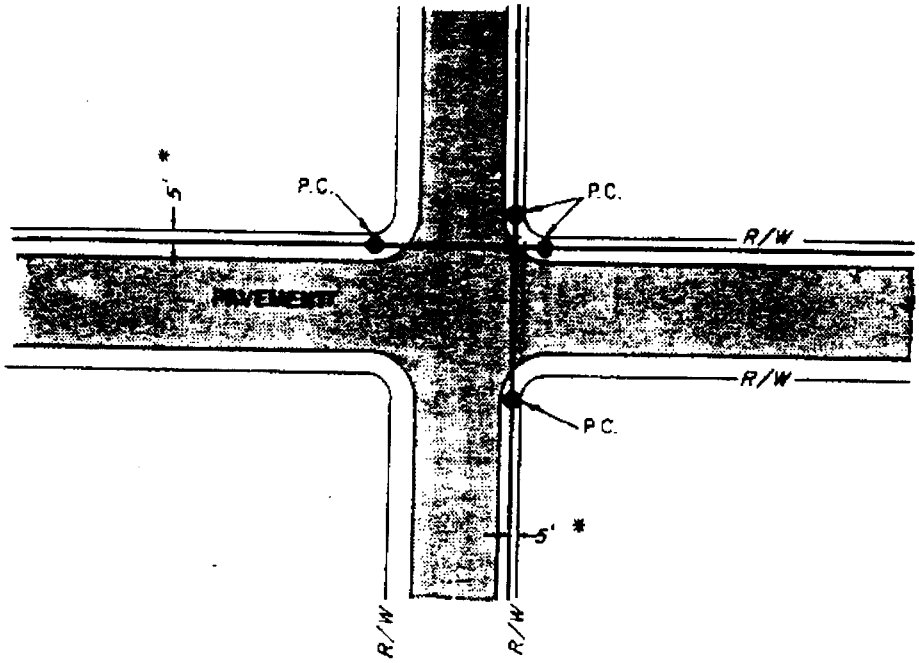
ARIZONA WATER COMPANY

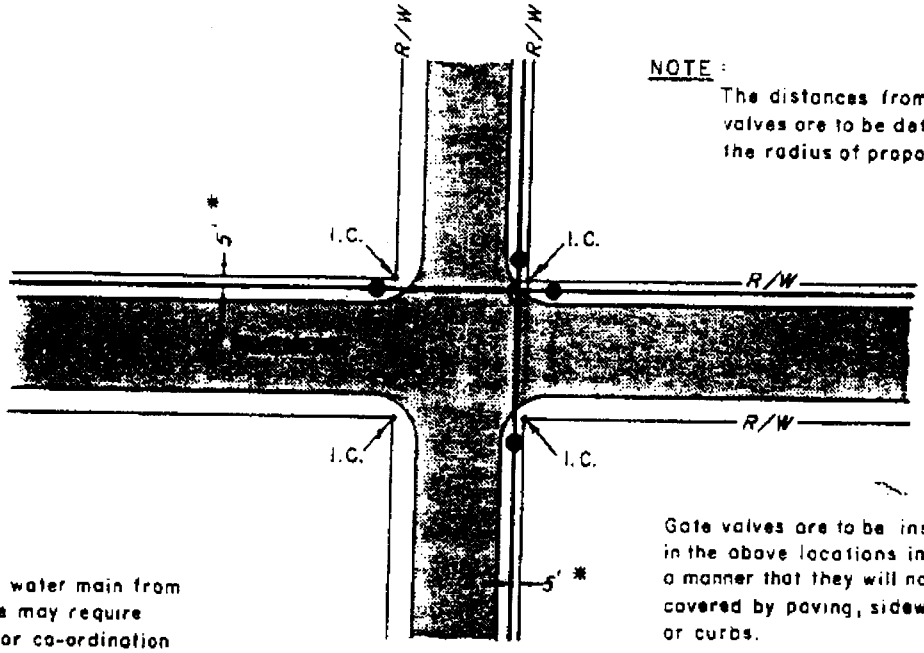
STANDARD SPECIFICATION DRAWINGS - DUCTILE IRON

INDEX (E-9)

E-9-1	TYPICAL GATE VALVE LOCATIONS
E-9-2	INSTALLATION OF TYPICAL GATE AND BUTTERFLY VALVES
E-9-3	INSTALLATION OF TYPICAL TAPPING SLEEVE AND VALVE
E-9-4	INSTALLATION OF TYPICAL VALVE SUBJECT TO NON-VEHICULAR AND VEHICULAR TRAFFIC
E-9-5	TYPICAL THRUST BLOCKING SCHEDULE AND INSTALLATION OF THRUST BLOCK FOR VERTICAL BENDS
E-9-6	INSTALLATION OF TYPICAL FIRE HYDRANTS
E-9-7	INSTALLATION OF TYPICAL FIRE HYDRANT WITH FLANGED 90° ELL
E-9-8	INSTALLATION OF TYPICAL 2" BLOWOFF DEVICE. AND INSTALLATION OF AIR RELEASE VALVE
E-9-9	INSTALLATION OF TYPICAL ¾" AND 1" SERVICE CONNECTIONS
E-9-10	INSTALLATION OF TYPICAL ¾" AND 1" SERVICE CONNECTIONS. DOUBLE SERVICES AND FROST PROTECTION
E-9-11	INSTALLATION OF TYPICAL 2" SERVICE CONNECTION
E-9-12	INSTALLATION OF 3" COMPOUND METER. INSTALLATION OF 4" COMPOUND METER. INSTALLATION OF 6" COMPOUND METER. INSTALLATION OF 6" COMPOUND SERVICE. INSTALLATION OF CONCRETE VAULT. AND INSTALLATION OF NON-POTABLE PROPELLER METER
E-9-13	INSTALLATION OF TYPICAL FIRE SERVICE ASSEMBLIES
E-9-14	INSTALLATION OF TYPICAL PRESSURE-RELIEF VALVE ASSEMBLY
E-9-15	INSTALLATION OF TYPICAL PRESSURE-REDUCING STATION
E-9-16	PAINT COLOR SELECTION
E-9-17	STEEL WATER STORAGE TANK
E-9-18	STANDARD PRESSURE TANK

E-9-19	INSTALLATION OF WELL SHELTER
E-9-20	INSTALLATION OF TYPICAL WELL WITH LINE SHAFT TURBINE PUMP
E-9-21	INSTALLATION OF TYPICAL WELL WITH SUBMERSIBLE TURBINE PUMP
E-9-22	STANDARDS FOR COLUMN PIPE, OIL TUBE AND LINE SHAFT
E-9-23	
E-9-24	INSTALLATION OF TYPICAL WATER LINE ENCASEMENT
E-9-25	INSTALLATION OF TYPICAL CHLORINATION HOUSE
E-9-26	INSTALLATION OF CHAIN LINK FENCE
E-9-27	INSTALLATION OF SIDE HUNG WATER LINE SUSPENSION





NOTE :
The distances from I.C. to gate valves are to be determined by the radius of proposed pavement.

Gate valves are to be installed in the above locations in such a manner that they will not be covered by paving, sidewalks, or curbs.

* Location of water main from property line may require alteration for co-ordination with curb, sidewalk, or paving requirements. Variations are to be approved by A.W.Co. Engineering Department

ARIZONA WATER COMPANY

● – Gate Valve

P.C. – Point of Curve

R/W – Right of Way Boundary

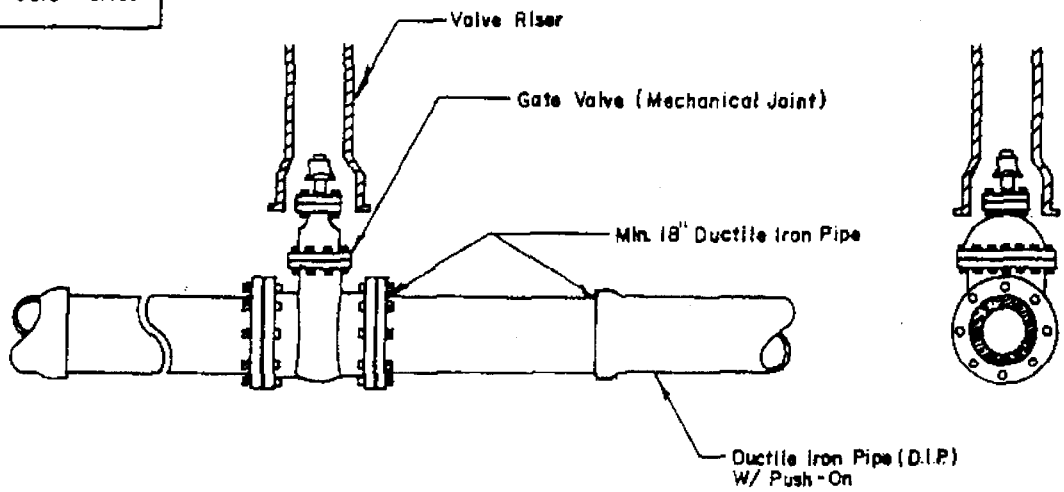
I.C. – Intersection Corner

STANDARD SPECIFICATION

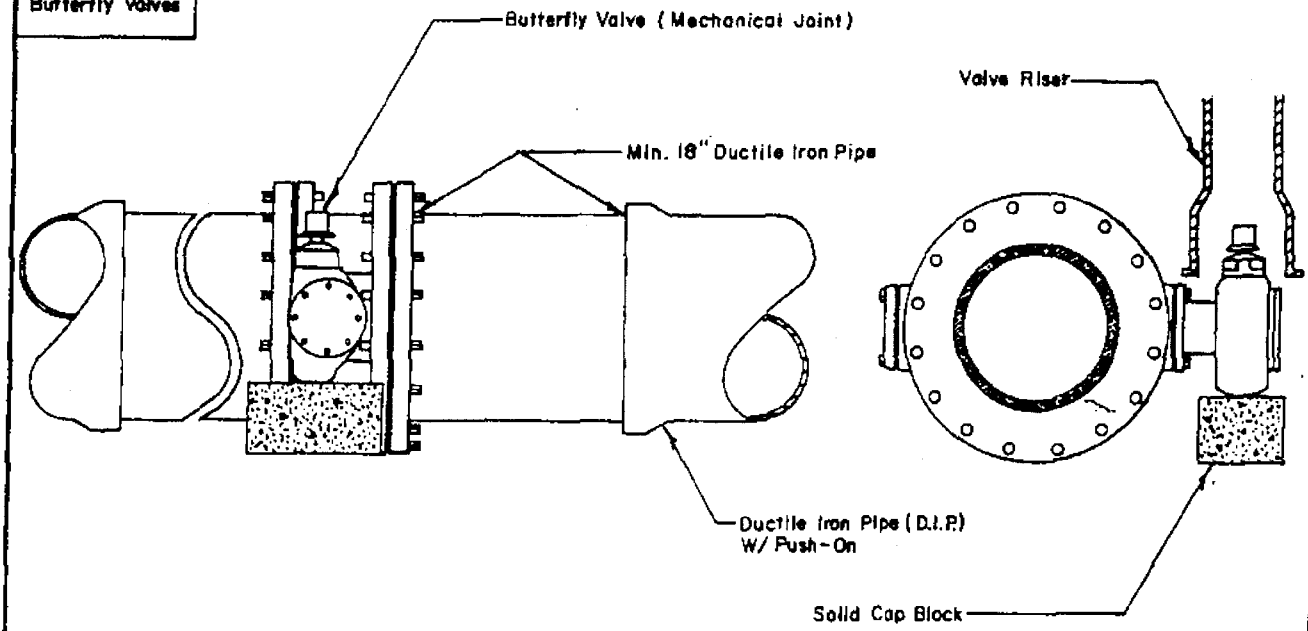
FOR

TYPICAL GATE VALVE LOCATIONS

For 6" And 16" Gate Valves



For 16" And _ Butterfly Valves

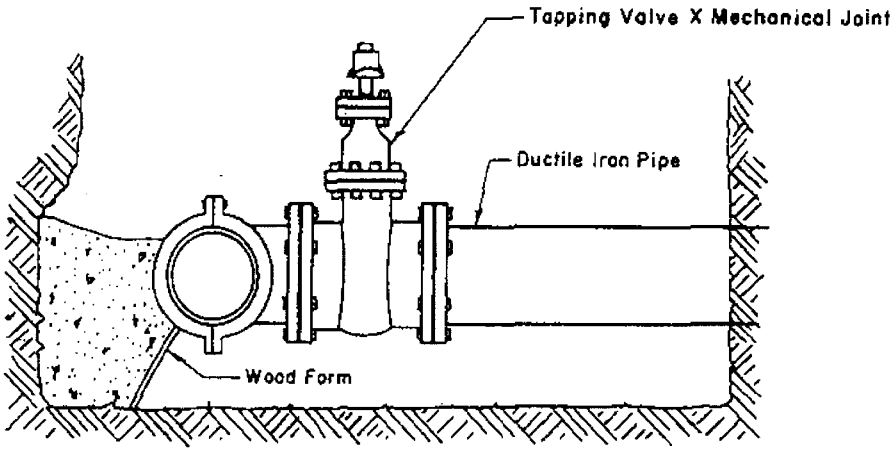


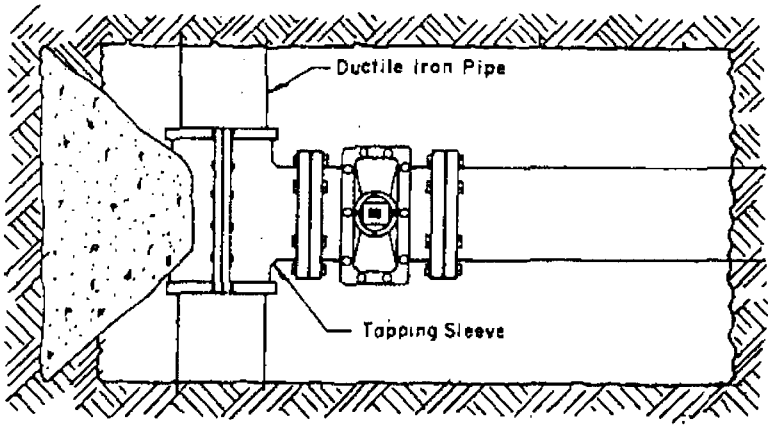
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL GATE AND BUTTERFLY VALVES



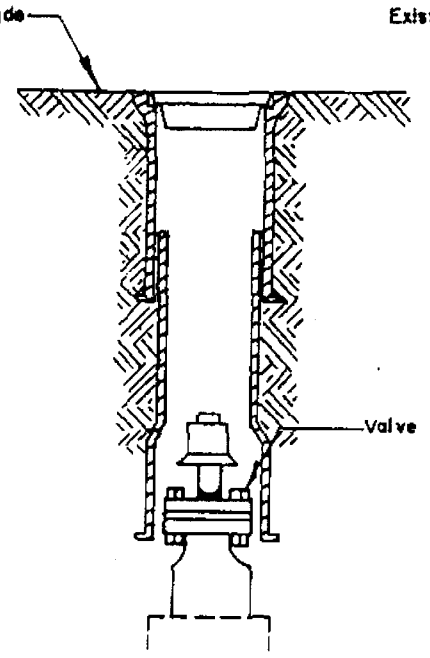


PIPE SIZE	MINIMUM THRUST BLOCKING REQ'D.
6"	4 sq. ft.
8"	6 sq. ft.
12"	13 sq. ft.
16"	23 sq. ft.
18" & UP	CALCULATE FOR EACH PROJECT

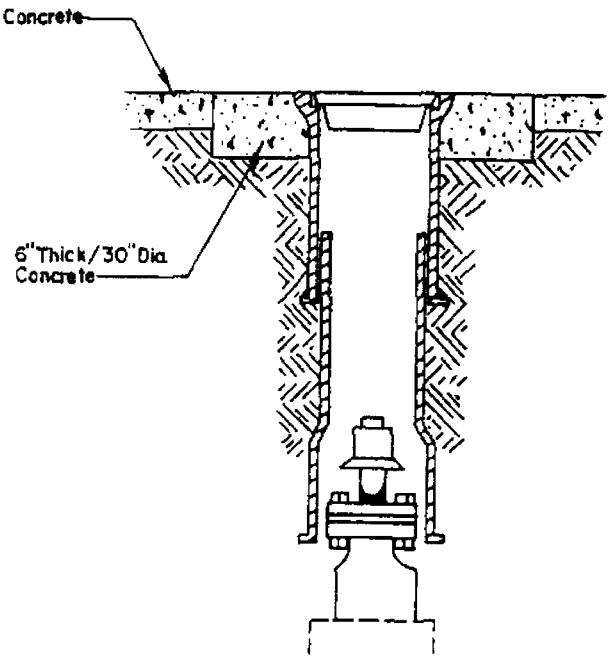
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

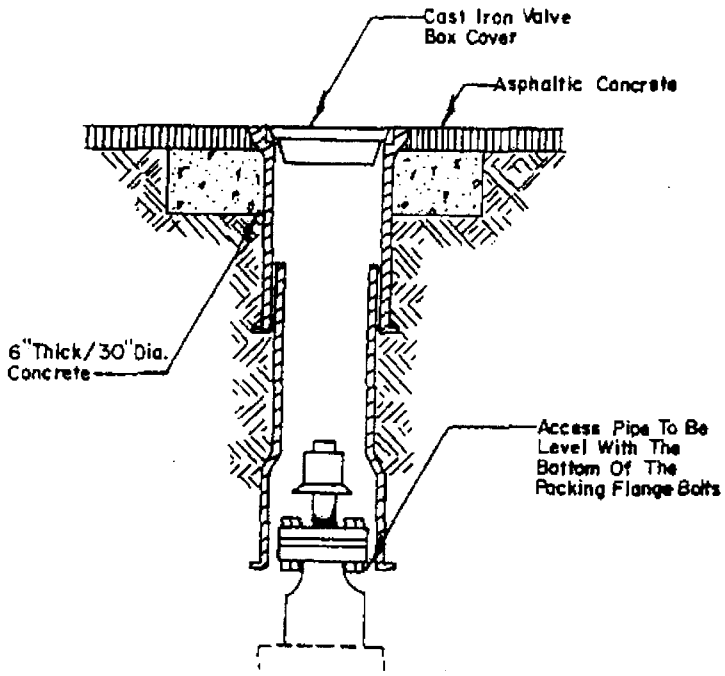
TYPICAL TAPPING SLEEVE AND VALVE



NON-VEHICULAR VALVE BOX



CONCRETE VALVE BOX



ASPHALT VALVE BOX

NOTES

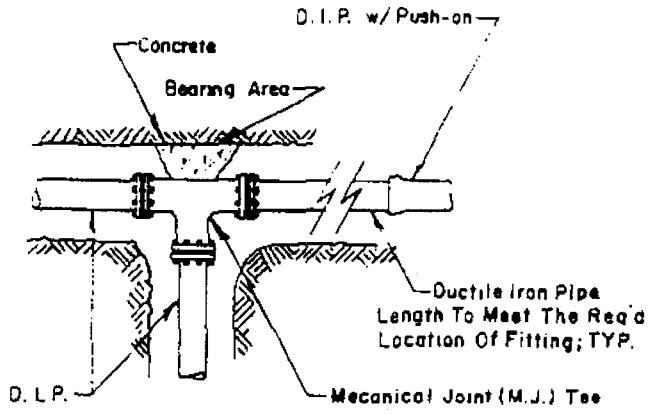
1. VALVE BOX SHALL BE ADJUSTED TO THE FINISHED GRADE PRIOR TO PLACING OF THE ASPHALT & CONC.
2. USE PARKSON TYLER 562-A, APCO, OR EQUIVALENT, SLIDING ADJUSTABLE CAST IRON VALVE BOX

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

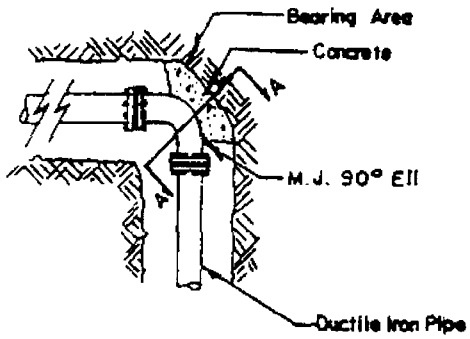
FOR THE INSTALLATION OF

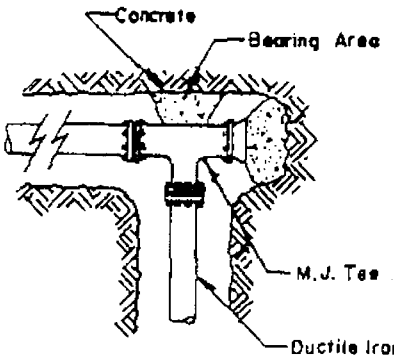
TYPICAL VALVE SUBJECT TO NON VEHICULAR & VEHICULAR TRAFFIC

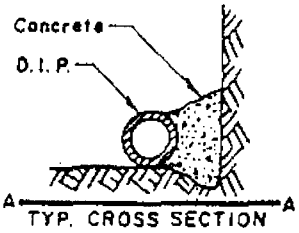


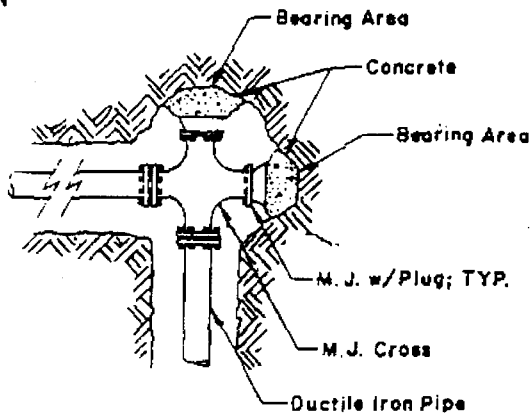
TEE, PLUG, & ELBOW THRUST BLOCK SCHEDULE

PIPE SIZE	TEE, PLUG, 22 1/2° AND 45° ELLS	90° ELL
6" and UNDER	4 sq. ft.	6 sq. ft.
8"	6 sq. ft.	9 sq. ft.
12"	13 sq. ft.	20 sq. ft.
16"	23 sq. ft.	32 sq. ft.
18" and LARGER	Calculated For Each Project	









Notes:

1. Minimum class 'C' concrete
2. Thrust blocks are to bear on undisturbed earth with minimum bearing area as shown. If not undisturbed, areas will be increased as required.
3. Form all nonbearing areas to prevent any concrete from entering any joint.
4. Construct thrust blocks so that thrust from pipe is centered on block as nearly as possible.

Note:

1. Materials To Be Supplied By The Company, Except For Blocking, Backfill, And Paving Materials.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

TYPICAL THRUST BLOCKING SCHEDULE

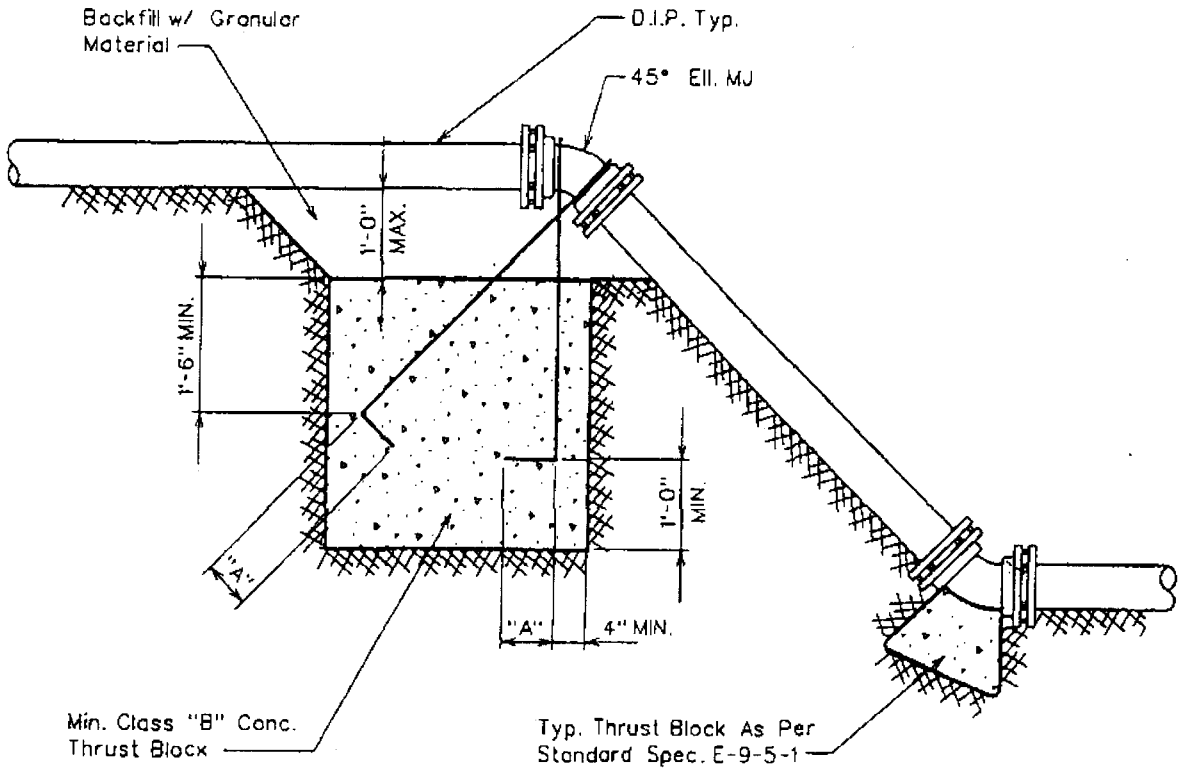
NOTES

1. Bars In Conc. Thrust Block To Be Coated w/ 2 Coats Coal Tar Epoxy or by Other Approved Method.

2. Bars To Have 90° Hook @ Their Ends, As Per Table Below.

Pipe Size	Min. Bar Size	"A" Dimension (Hook)	* Min. Block Dimension (WxHxL)
6"	#6	6"	3'x3'x3'
8"	#6	9"	4'x3'x4'
12"	#8	9"	5'x4'x5'

* For 125 P.S.I. Working Pressure

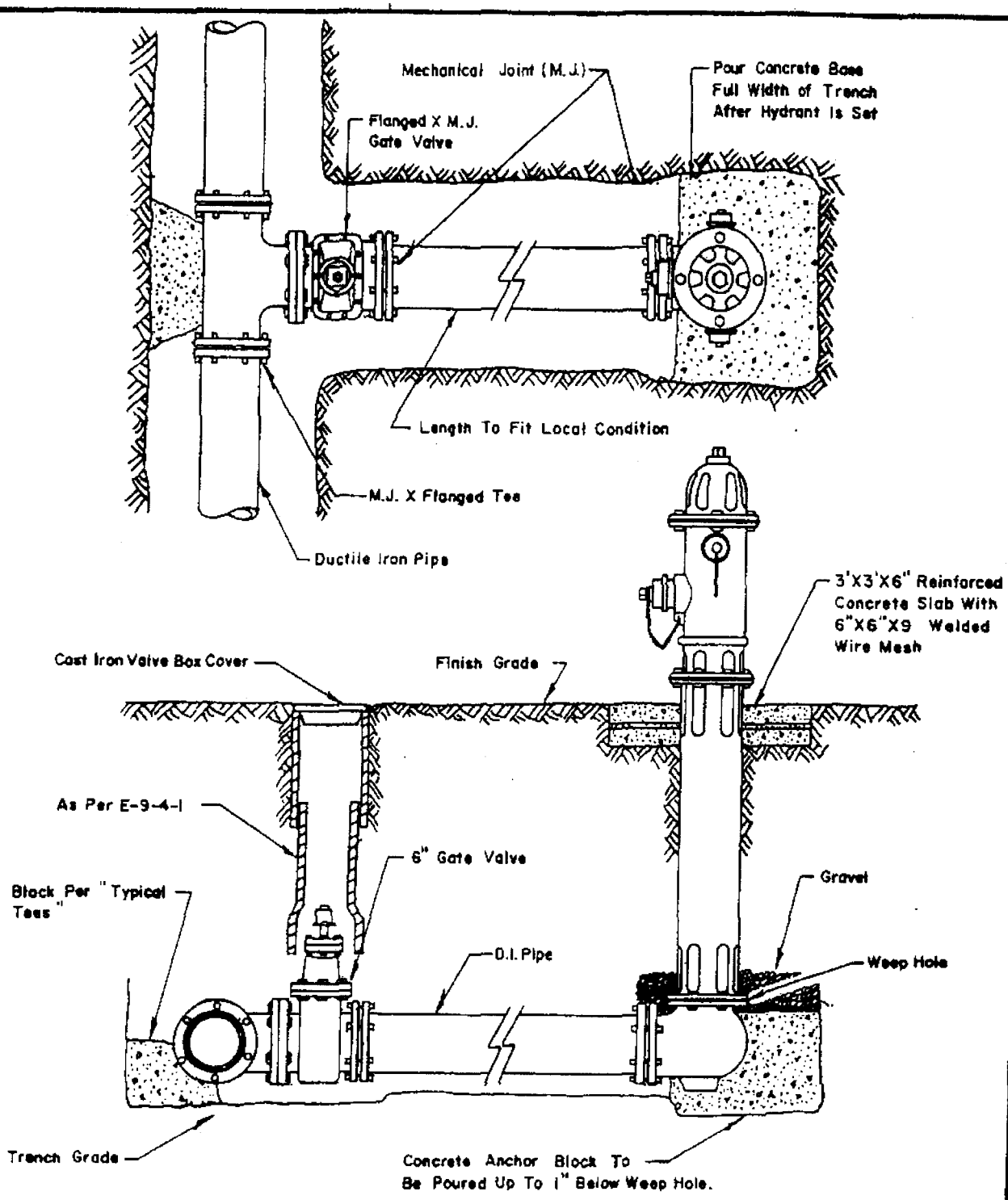


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

THRUST BLOCK FOR VERTICAL BENDS

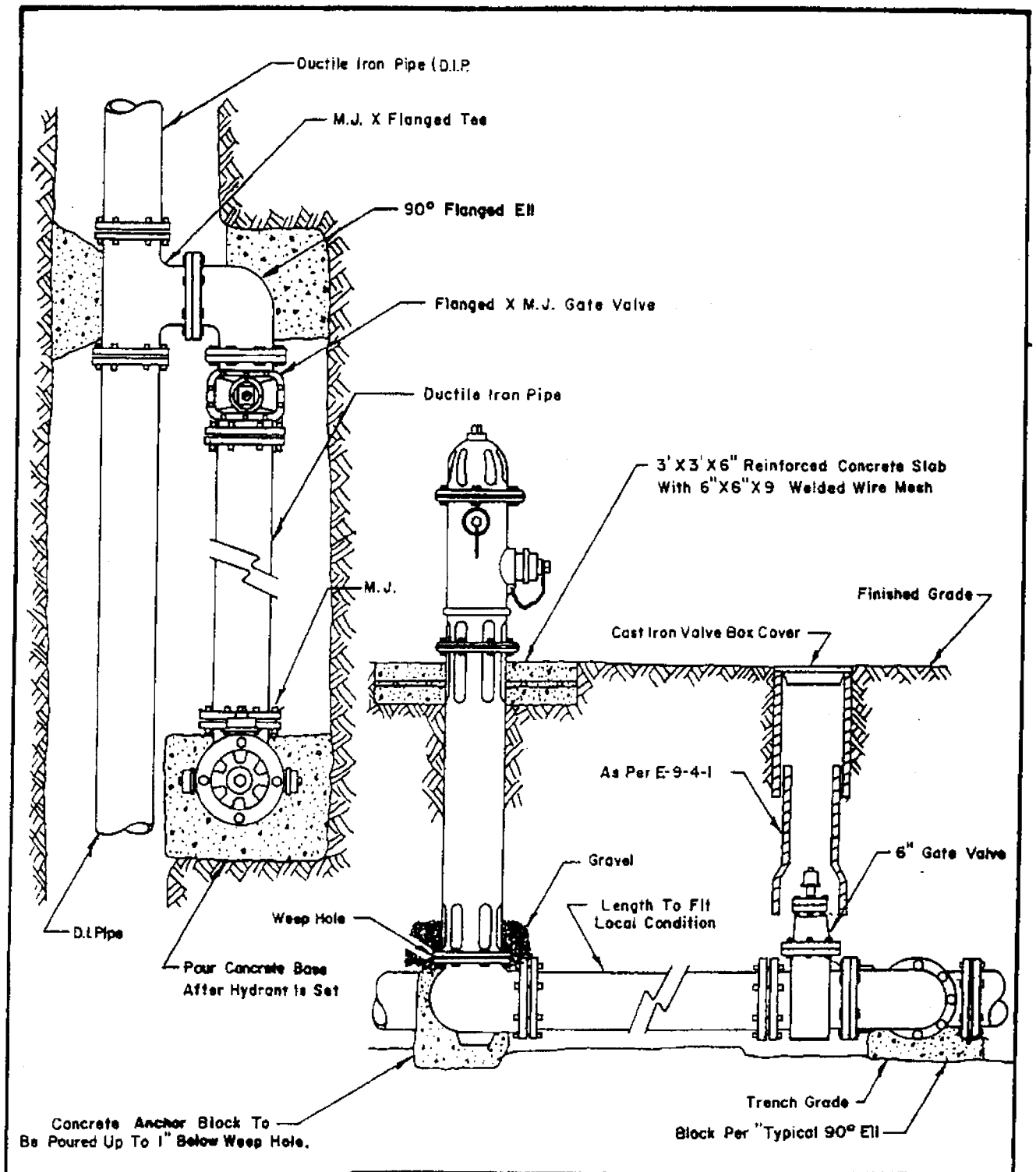


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL FIRE HYDRANTS

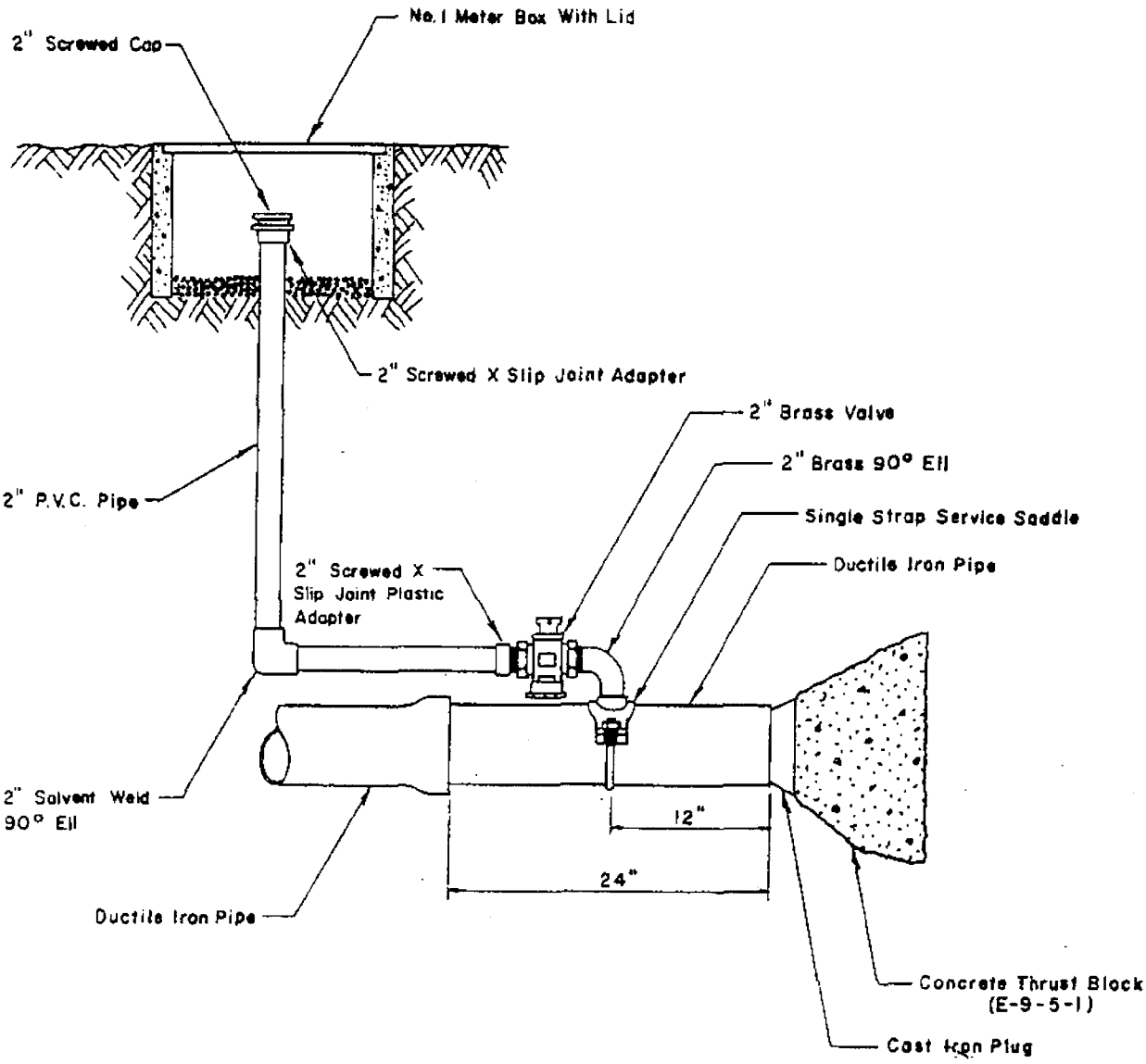


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL FIRE HYDRANT W/FLANGED 90° ELL

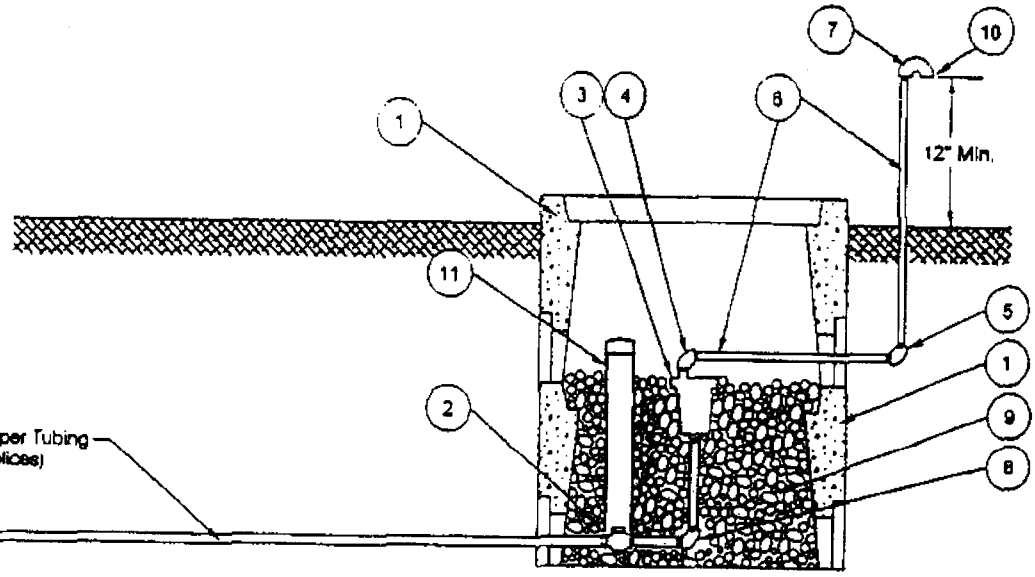


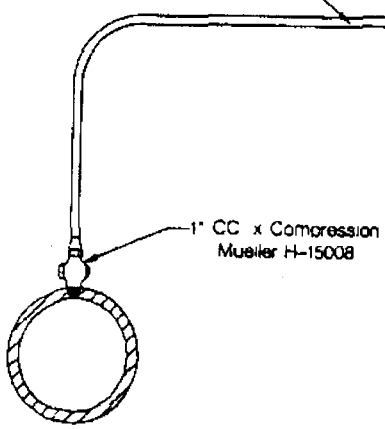
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

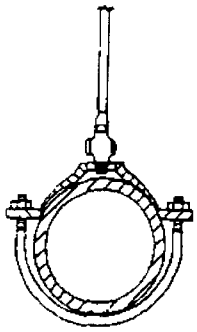
TYPICAL 2" BLOWOFF DEVICE





DIRECT TAP TO DUCTILE IRON PIPE

	FITTINGS SCHEDULE
1.	Number 1 Meter Box
2.	1" Curb Valve, Mueller H-25172 Compression x FIP
3.	Crispin 1" Air Release Valve, Model AR10.
4.	1/2" Galvanized 90° Street Elbow
5.	1/2" Galvanized 90° Ell
6.	1/2" Galvanized Pipe
7.	1/2" Galvanized Return Bend
8.	1" Galvanized Pipe w/ 90° Elbow
9.	1" AB (Fill Meter Box To The Top Of The Air Release Valve)
10.	#18 Wire Mesh Screen (Non-Corrodible)
11.	3" PVC Pipe w/ Cap



SADDLE TAP TO P.V.C.

GENERAL NOTES:

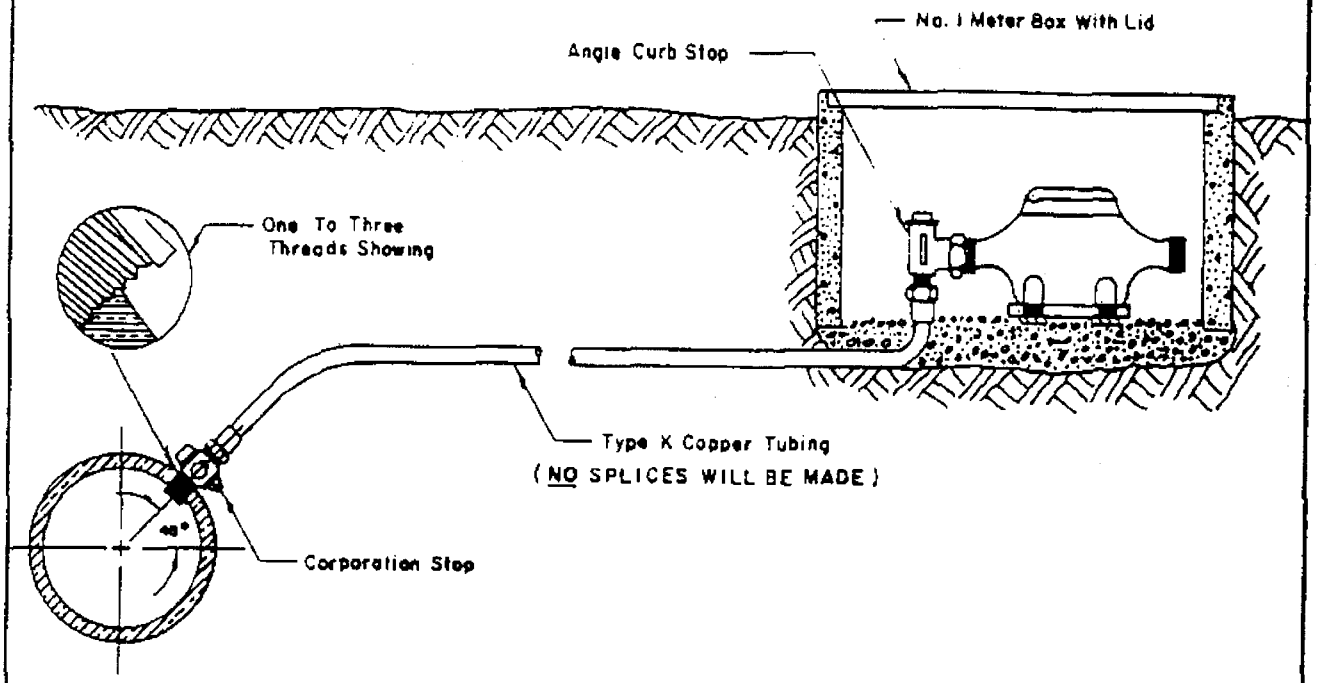
1. The Valve Shall Be Installed At High Points And On Long Runs To Vent The Accumulation of Air With The Line Under Pressure– See The Construction Plans For Specific Locations.
2. The Valve Shall Have A 564" Orifice With Valve Sealing Faces Of Stainless Steel and BUNA–N Rubber.
3. The Valve Shall Be Crispin Model AR10 For 6" And Larger Water Mains.
4. Crispin Model AR10 Valve Construction Consists Of A 1" NPT Inlet & 1/2" NPT Outlet, Cast Iron Body And Top Flange with Stainless Steel Float And Trim.
5. The Meter Box Shall Be Located Out Of The Path Of Traffic But Within Right–Of–Way Or Easement.

ARIZONA WATER COMPANY

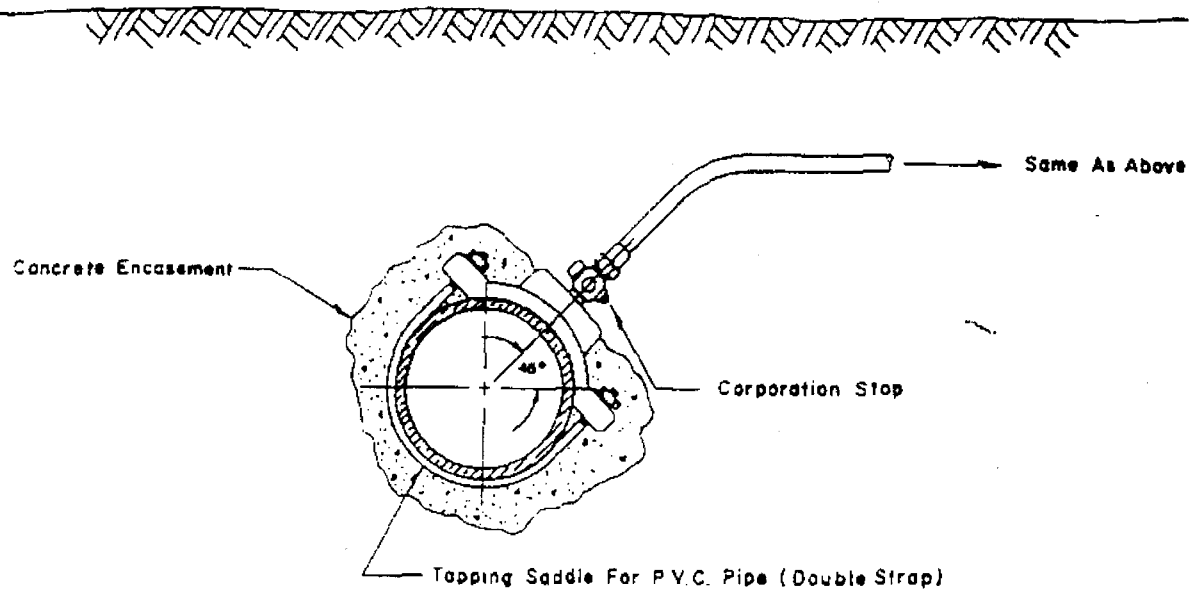
STANDARD SPECIFICATION

FOR THE INSTALLATION OF

AIR RELEASE VALVE



DIRECT TAP CONNECTION TO
DUCTILE IRON PIPE



SADDLE TAP CONNECTION
TO PLASTIC WATER MAIN

Note :

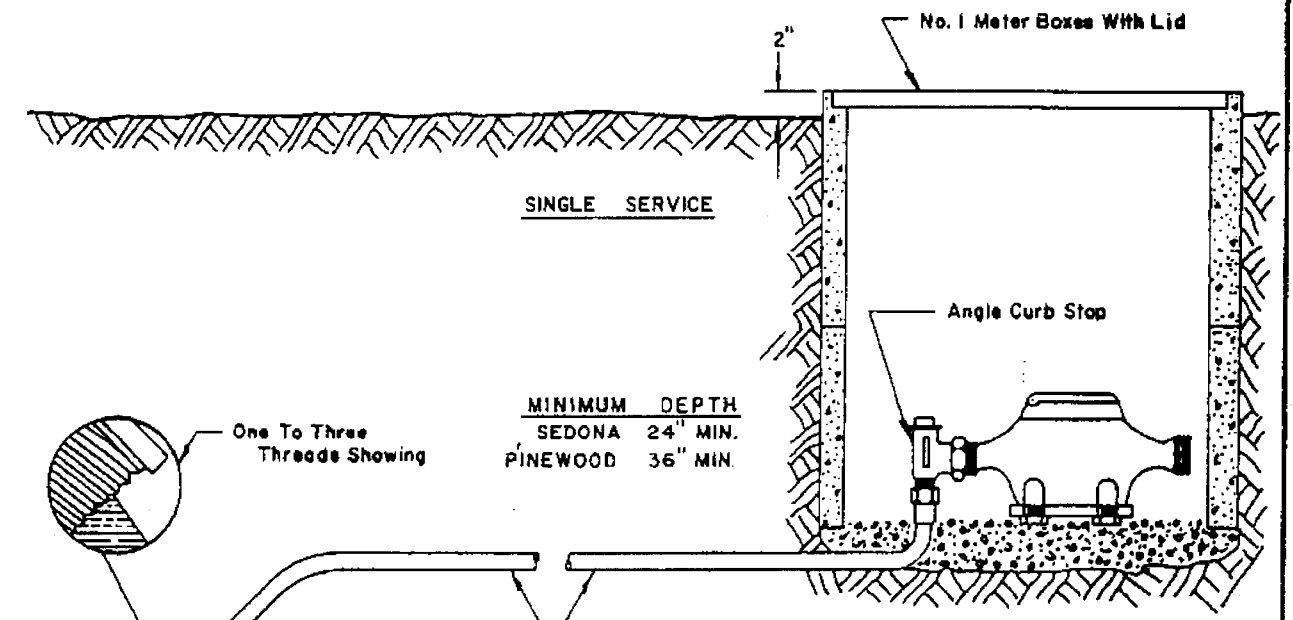
1. Materials To Be Supplied By The Company Except For Concrete Encasement.

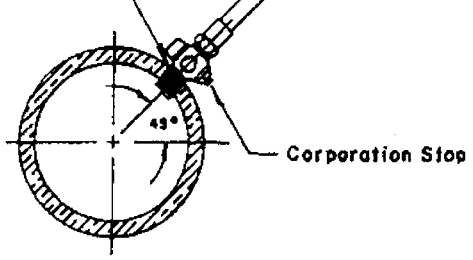
ARIZONA WATER COMPANY

STANDARD SPECIFICATION

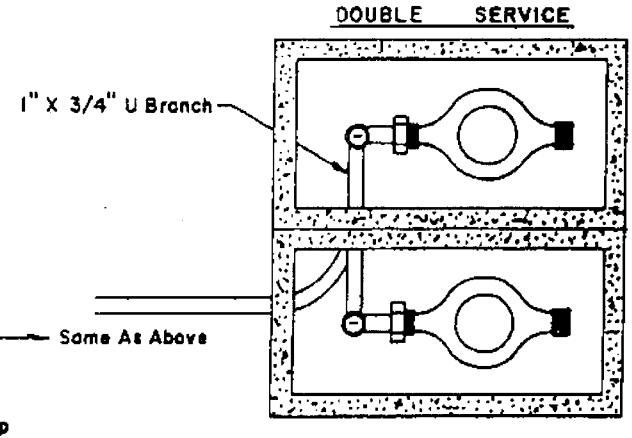
FOR THE INSTALLATION OF

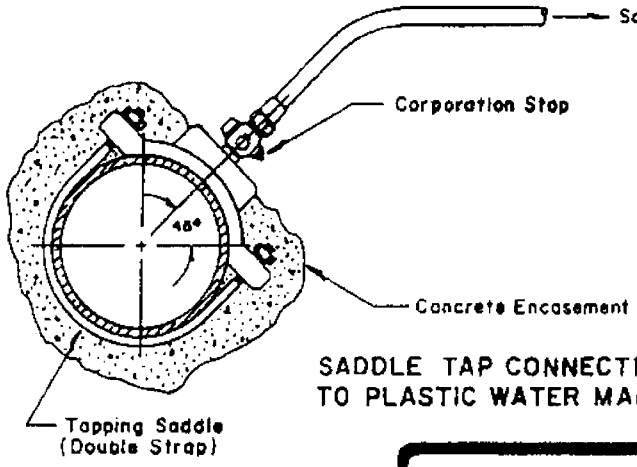
TYPICAL 3/4" & 1" SERVICE CONNECTIONS





DIRECT TAP CONNECTION TO DUCTILE IRON PIPE





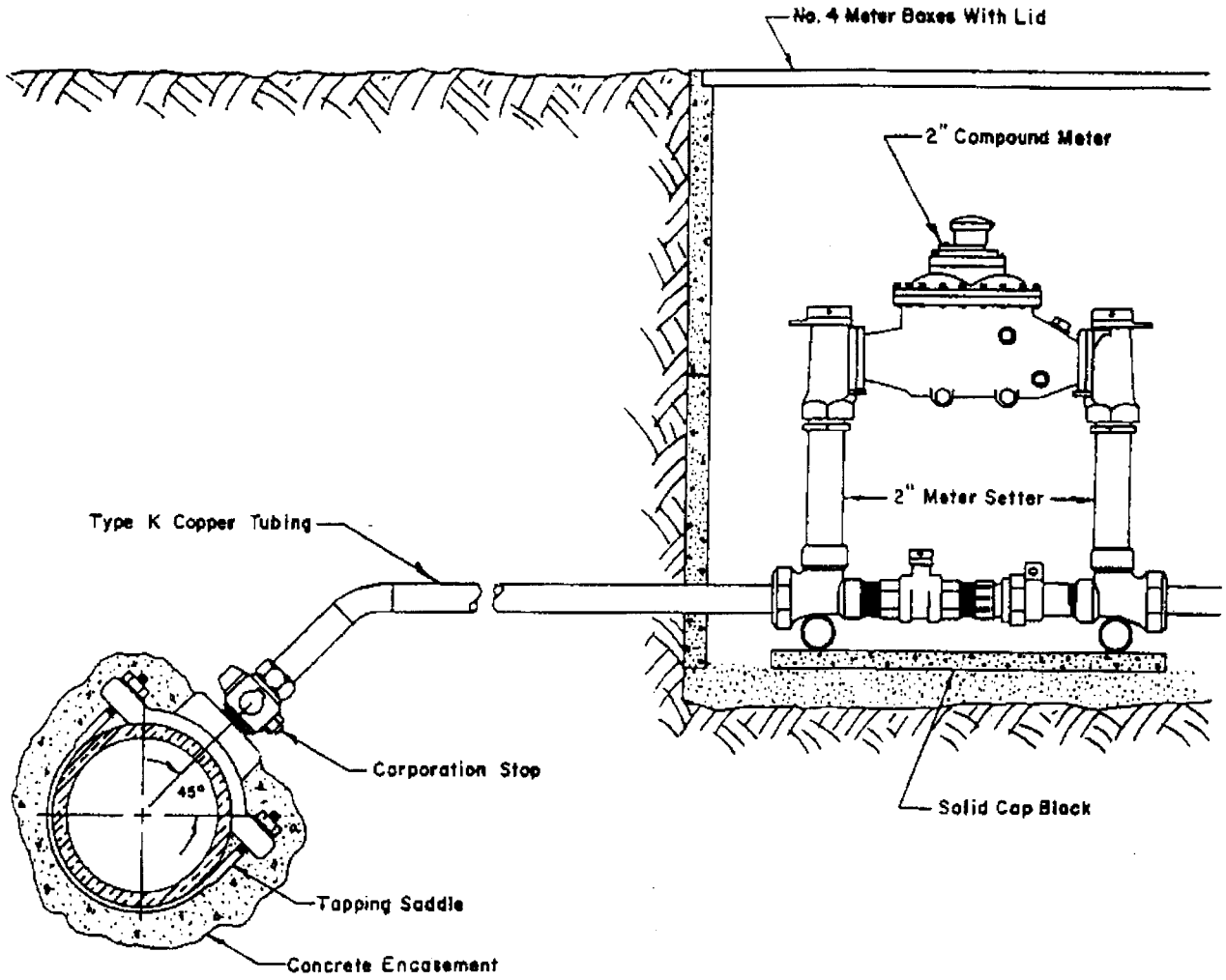
SADDLE TAP CONNECTION TO PLASTIC WATER MAIN

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL 3/4" & 1" SERVICE CONNECTIONS
DOUBLE SERVICES AND FROST PROTECTION



SADDLE TAP CONNECTION
TO DUCTILE IRON PIPE

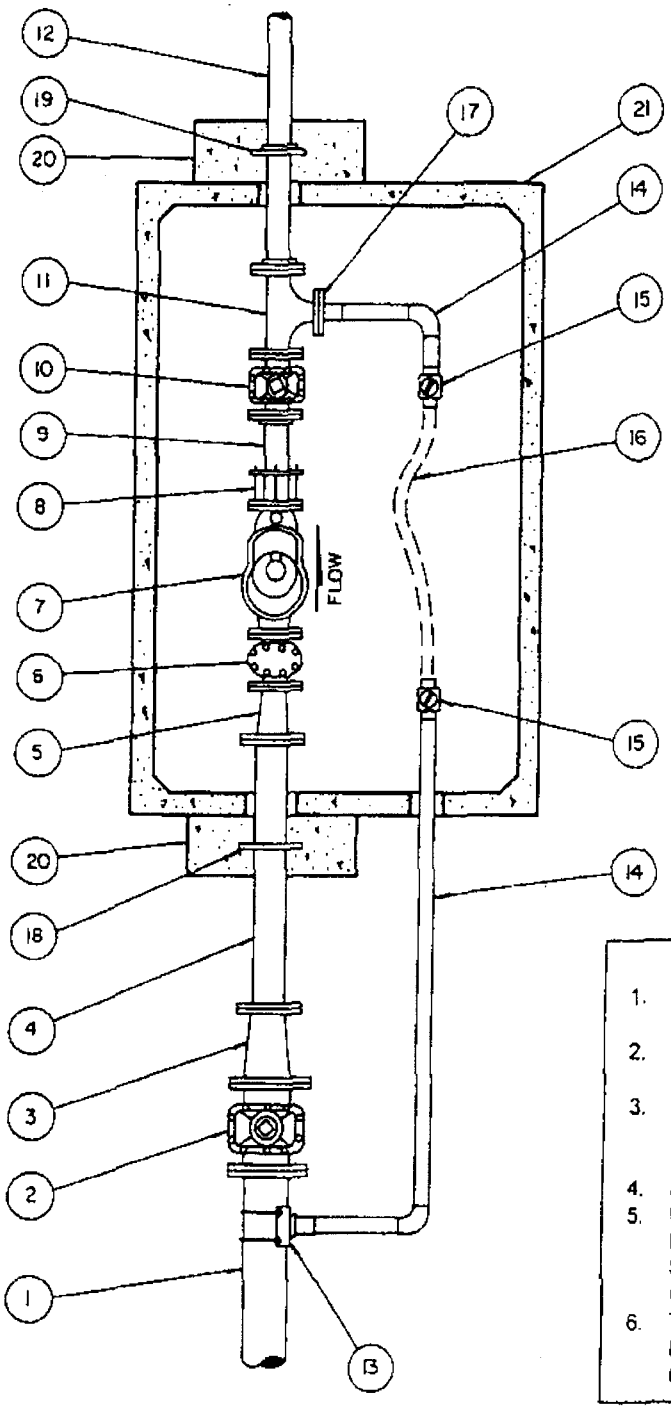
NOTE:

All Splices Will Be Wrapped With 10mil. - 20mil. Pipe Wrap.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL 2" SERVICE CONNECTION



○	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" REDUCER flng x mj
4.	4"x3'-0" D.I.P. SPOOL flng x pe
5.	4"x3" REDUCER flng
6.	3" STRAINER
7.	3" COMPOUND METER
8.	3" F.C.A.
9.	3"x1'-0" SCHED. 40 STL. SPOOL flng x pe
10.	3" GATE VALVE flng
11.	3"x2" TEE flng
12.	3"x4'-0" SCHED. 40 STL. SPOOL flng x pe
13.	6"x2" TAPPING SADDLE
14.	2" COPPER PIPE
15.	2" BALL VALVE / LOCKING (Normally Closed)
16.	2" TEMPORARY BYPASS HOSE (See Note 6)
17.	2" COMPANION FLANGE
18.	6" MEGALUG
19.	3" SLIP-ON WELDING FLANGE
20.	24"x24"x8" CONC. THRUST BLOCK P.I.P.
21.	575–LA CONC. VAULT

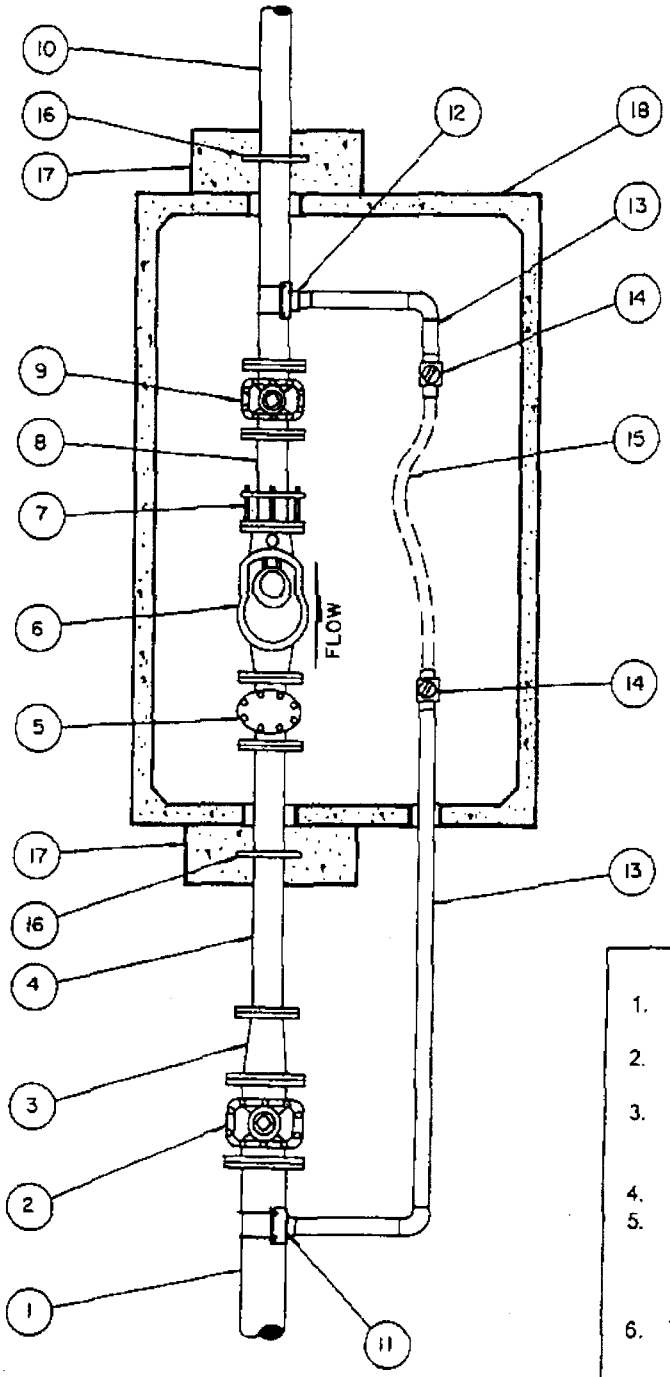
NOTE:

1. USE ROWLEY PIPE SUPPORTS OR EQUIVALENT AS NEEDED. (SEE E-9-12-4)
2. PIPE SUPPORT LOCATIONS TO BE DETERMINED BY FIELD PERSONNEL.
3. ALL SCHED. 40 STL. PIPE OUTSIDE OF VAULT TO BE WRAPPED w/ 10-20 mil. SCOTCHWRAP CORROSION PROTECTION TAPE.
4. ALL MECHANICAL JOINT FITTINGS TO BE MEGALUGGED.
5. USE DEFLECTION FITTINGS (45° ELLS.) TO ACHIEVE NECESSARY DEPTHS & COVER AS SHOWN ON THE STANDARD SPECIFICATION FOR THE INSTALLATION OF A CONCRETE VAULT (E-9-12-5).
6. TEMPORARY BYPASS HOSE IS TO BE INSTALLED DURING METER CHANGE-OUT & REMOVED UPON COMPLETION OF METER CHANGE-OUT.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

3" COMPOUND METER



	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj x flng
3.	6"x4" REDUCER flng x mj
4.	4"x3'-0" D.I.P. SPOOL flng x pe
5.	4" STRAINER
6.	4" COMPOUND METER
7.	4" F.C.A.
8.	4"x1'-0" D.I.P. SPOOL flng x pe
9.	4" GATE VALVE flng
10.	4"x4'-0" D.I.P. SPOOL flng x pe
11.	6"x2" TAPPING SADDLE
12.	4"x2" TAPPING SADDLE
13.	2" COPPER PIPE
14.	2" BALL VALVE / LOCKING (Normally Closed)
15.	2" TEMPORARY BYPASS HOSE (See Note 6)
16.	4" MEGALUG
17.	24"x24"x8" CONC. THRUST BLOCK P.I.P.
18.	575-LA CONC. VAULT

NOTE:

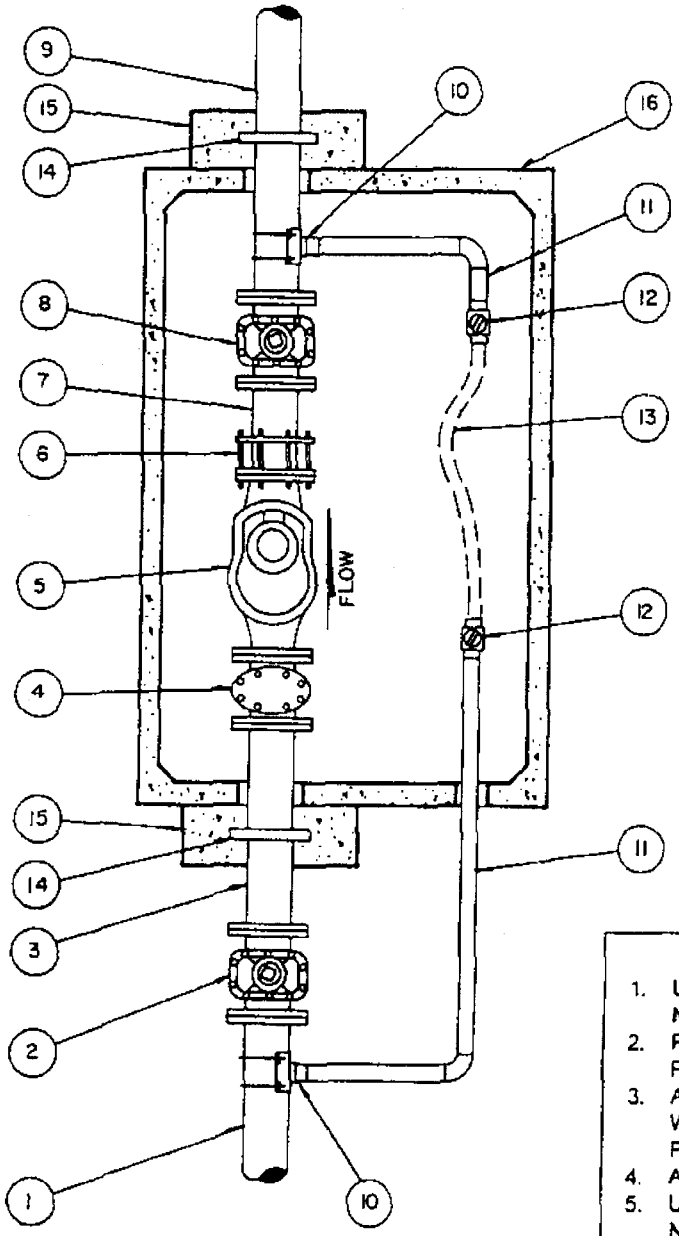
1. USE ROWLEY PIPE SUPPORTS OR EQUIVALENT AS NEEDED. (SEE E-9-12-4)
2. PIPE SUPPORT LOCATIONS TO BE DETERMINED BY FIELD PERSONNEL.
3. ALL SCHED. 40 STL. PIPE OUTSIDE OF VAULT TO BE WRAPPED w/ 10-20 mil. SCOTCHWRAP CORROSION PROTECTION TAPE.
4. ALL MECHANICAL JOINT FITTINGS TO BE MEGALUGGED.
5. USE DEFLECTION FITTINGS (45° ELLS.) TO ACHIEVE NECESSARY DEPTHS & COVER AS SHOWN ON THE STANDARD SPECIFICATION FOR THE INSTALLATION OF A CONCRETE VAULT (E-9-12-5).
6. TEMPORARY BYPASS HOSE IS TO BE INSTALLED DURING METER CHANGE-OUT & REMOVED UPON COMPLETION OF METER CHANGE-OUT.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

4" COMPOUND METER



	FITTINGS SCHEDULE
1.	6" D.I.P.
2.	6" G.V.B.&C. mj
3.	6"x3'-0" D.I.P. SPOOL flng x pe
4.	6" STRAINER
5.	6" COMPOUND METER
6.	6" F.C.A.
7.	6"x1'-0" D.I.P. SPOOL flng x pe
8.	6" GATE VALVE flng
9.	6"x4'-0" D.I.P. SPOOL flng x pe
10.	6"x2" TAPPING SADDLE
11.	2" COPPER PIPE
12.	2" BALL VALVE / LOCKING (Normally Closed)
13.	2" TEMPORARY BYPASS HOSE (See Note 6)
14.	6" MEGALUG
15.	24"x24"x8" CONC. THRUST BLOCK P.I.P.
16.	575-L.A CONC. VAULT

NOTE:

1. USE ROWLEY PIPE SUPPORTS OR EQUIVALENT AS NEEDED. (SEE E-9-12-4)
2. PIPE SUPPORT LOCATIONS TO BE DETERMINED BY FIELD PERSONNEL.
3. ALL SCHED. 40 STL. PIPE OUTSIDE OF VAULT TO BE WRAPPED w/ 10-20 mil. SCOTCHWRAP CORROSION PROTECTION TAPE.
4. ALL MECHANICAL JOINT FITTINGS TO BE MEGALUGGED.
5. USE DEFLECTION FITTINGS (45° ELLS.) TO ACHIEVE NECESSARY DEPTHS & COVER AS SHOWN ON THE STANDARD SPECIFICATION FOR THE INSTALLATION OF A CONCRETE VAULT (E-9-12-5).
6. TEMPORARY BYPASS HOSE IS TO BE INSTALLED DURING METER CHANGE-OUT & REMOVED UPON COMPLETION OF METER CHANGE-OUT.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

6" COMPOUND METER

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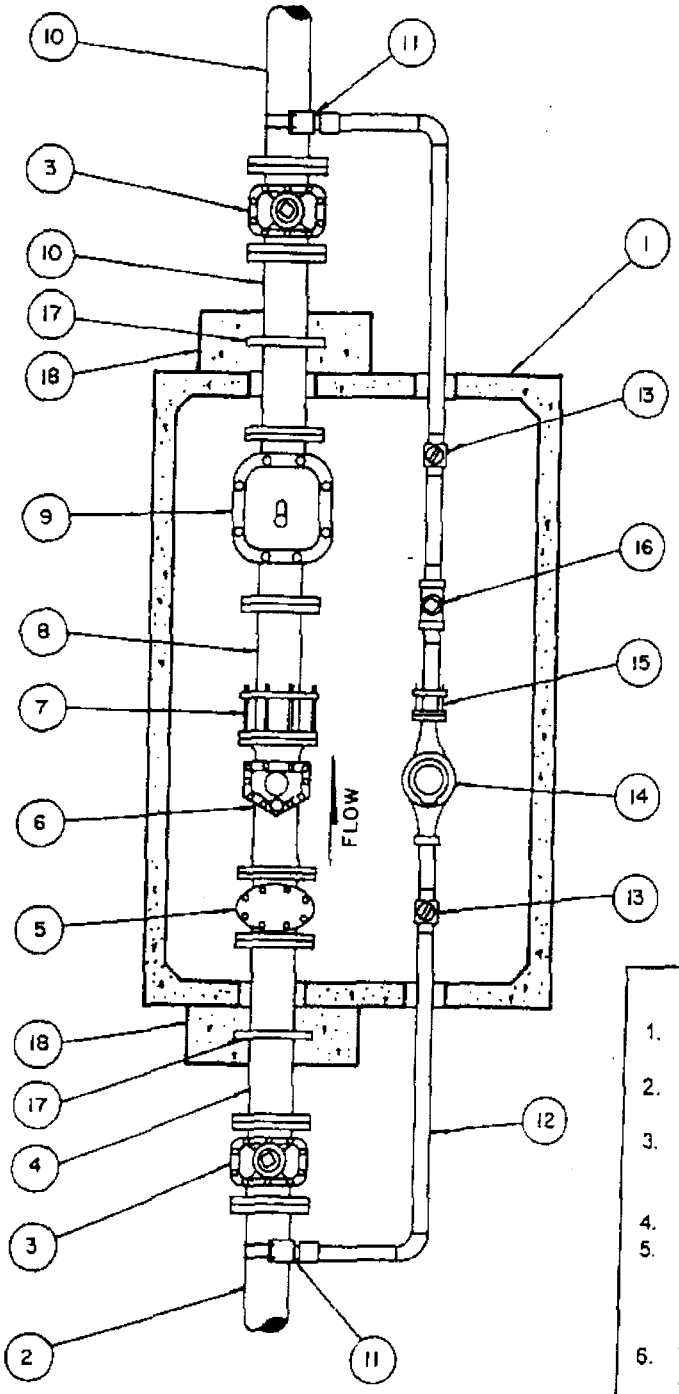
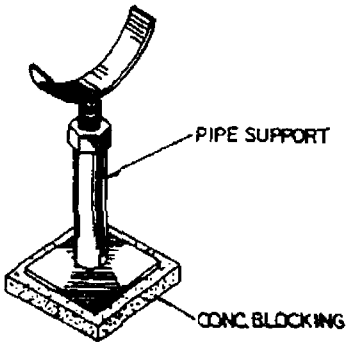


	FITTINGS SCHEDULE
1.	575-LA CONC. VAULT
2.	6" D.I.P.
3.	6" G.V.B.&C. m.j.
4.	6" x 3'-0" D.I.P. SPOOL PIECE flng x pe
5.	6" STRAINER
6.	6" TURBO METER
7.	6" F.C.A.
8.	6" x 2'-0" D.I.P. SPOOL PIECE flng x pe (TRIM SPOOL PIECE TO 3x THE PIPE DIA.)
9.	6" DETECTOR CHECK
10.	6"x3'-0" D.I.P. SPOOL PIECE flng x pe
11.	"6"xN" TAPPING SADDLE
12.	"N" COPPER PIPE
13.	"N" BALL VALVE (LOCKING)
14.	"N" METER
15.	"N" COUP. ADAPT.
16.	"N" FLAPPER CHECK VALVE
17.	6" MEGALUG
18.	24"x24"x6" CONC. THRUST BLOCK P.I.P.

*N - SIZE TO BE DETERMINED BY A.W.Co.

NOTE:

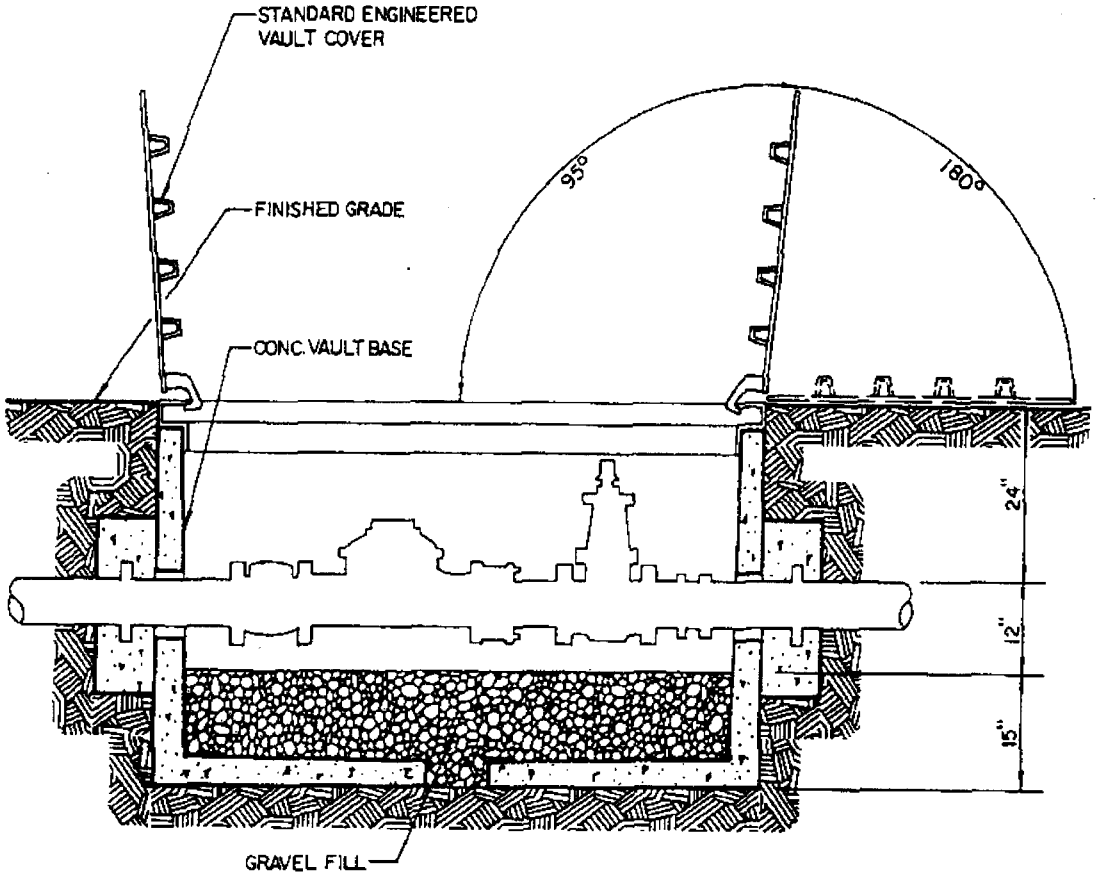
1. USE ROWLEY PIPE SUPPORTS OR EQUIVALENT AS NEEDED. (SEE DETAIL BELOW)
2. PIPE SUPPORT LOCATIONS TO BE DETERMINED BY FIELD PERSONNEL.
3. ALL SCHED. 40 STL. PIPE OUTSIDE OF VAULT TO BE WRAPPED w/ 10-20 mil.SCOTCHWRAP CORROSION PROTECTION TAPE.
4. ALL MECHANICAL JOINT FITTINGS TO BE MEGALUGGED.
5. USE DEFLECTION FITTINGS (45° ELLS.) TO ACHIEVE NECESSARY DEPTHS & COVER AS SHOWN ON THE STANDARD SPECIFICATION FOR THE INSTALLATION OF A CONCRETE VAULT (E-9-12-5).
6. TO CHANGE FROM 6" SERVICE TO 4" SERVICE, CHANGE ALL LISTED 6" MATERIALS TO 4" MATERIALS.



ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

6" COMPOUND SERVICE



PROFILE VIEW

CONCRETE VAULT & COVER SPECIFICATIONS

VAULT - BASE No. 575-BL
COVER - STANDARD ENGINEERED VAULT COVER
- 4874 ALUMINUM DIAMOND PLATE COVER FOR NON-TRAFFIC LOADING AREAS

OR

- 4874 GALVANIZED STEEL DIAMOND PLATE COVER w/ H-20 TRAFFIC LOADING
- DOUBLE TORSION SPRING ASSISTED DOORS w/ RECESSED HASP & SAFETY LATCHES

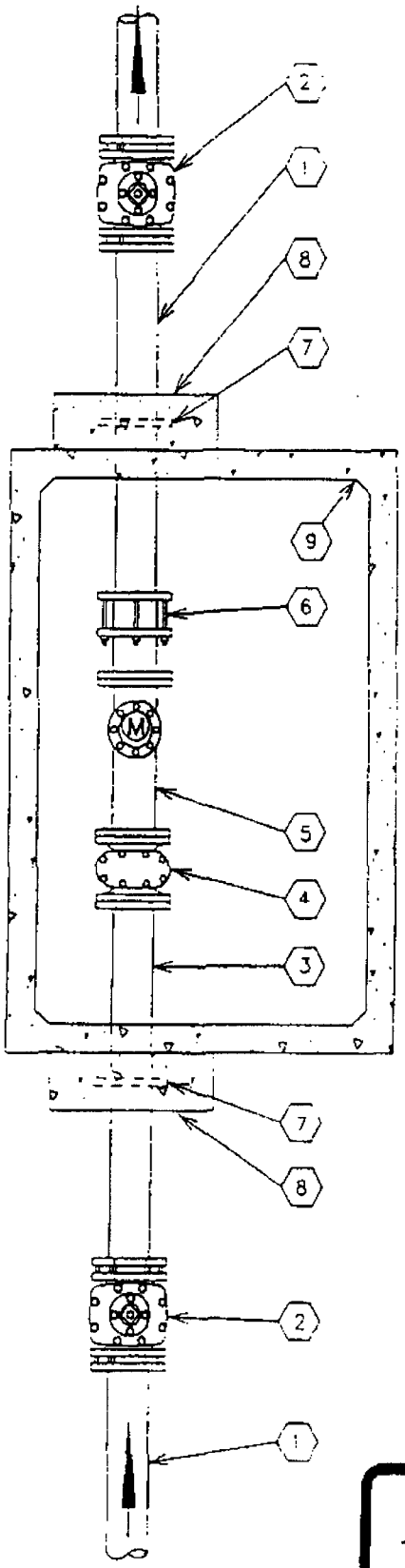
NOTES

1. TOTAL DEPTH OF CONCRETE VAULT TO BE A MAXIMUM OF 3'-0" FROM TOP OF VAULT COVER TO TOP OF GRAVEL FILL.
2. SERVICE CONNECTIONS LARGER THAN 6" IN DIAMETER WILL CONFORM TO THE SAME VAULT & COVER SPECIFICATIONS. SIZE OF VAULT & COVER TO BE DETERMINED BY A.W.Co. ENGINEERS.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

CONCRETE VAULT



No.	FITTINGS SCHEDULE
1.	DUCTILE IRON PIPE
2.	GATE VALVE m.j.
3.	D.I.P. SPOOL PIECE flg x pe (10xDia.)
4.	METER STRAINER
5.	PROPELLER METER
6.	FLG. COUP. ADAPT.
7.	MEGALUG FLG. (Thrust Anchor)
8.	CONC. THRUST BLOCK P.I.P.
9.	CONC. VAULT

NOTE:

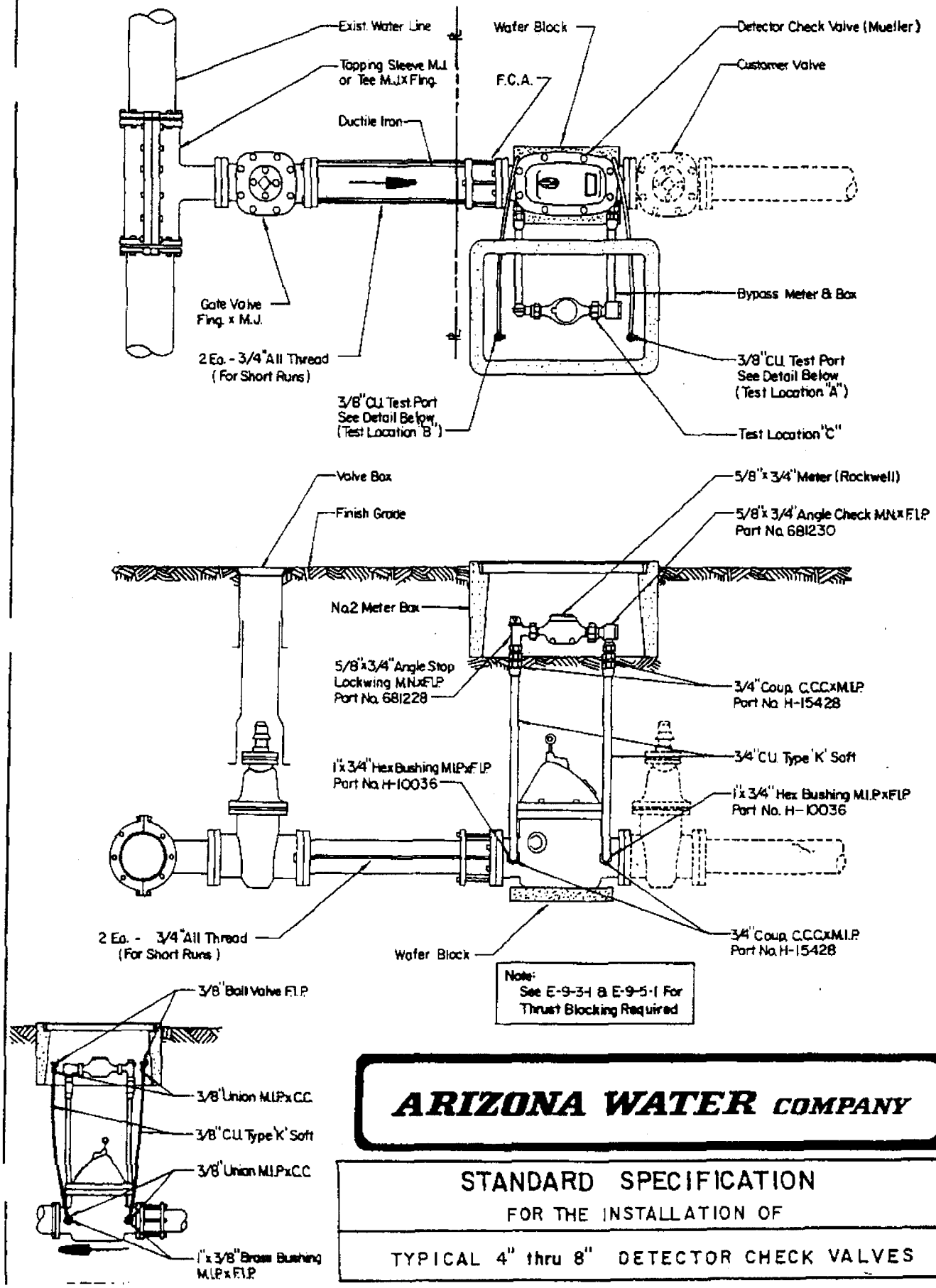
1. Use Rowley pipe supports or equivalent as needed (See E-9-12-4).
2. Pipe support locations to be determined by field personnel.
3. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
4. All mechanical joint fittings to are to be megalugged.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

NON-ROTARLE PROPELLER METER

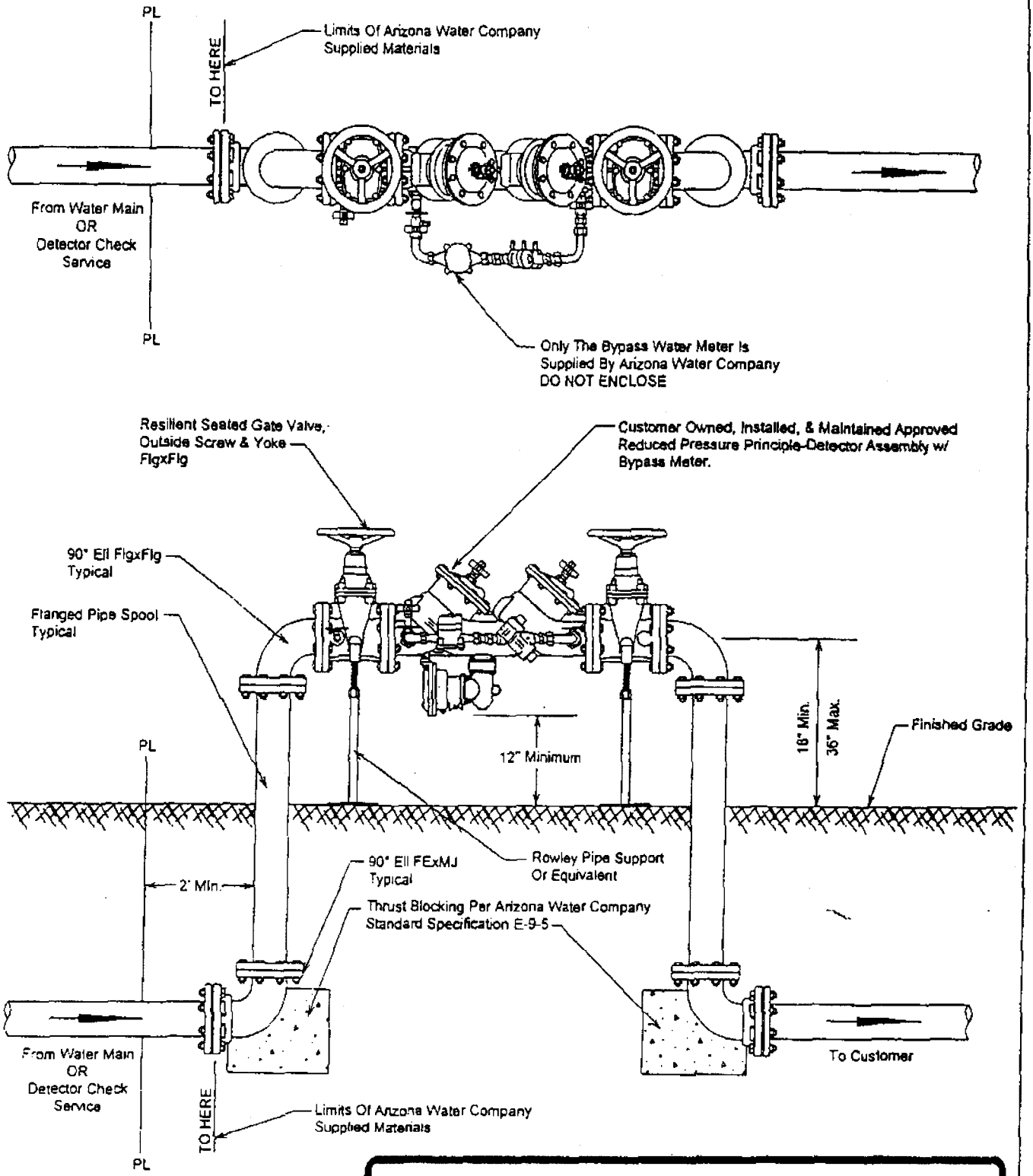


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL 4" thru 8" DETECTOR CHECK VALVES



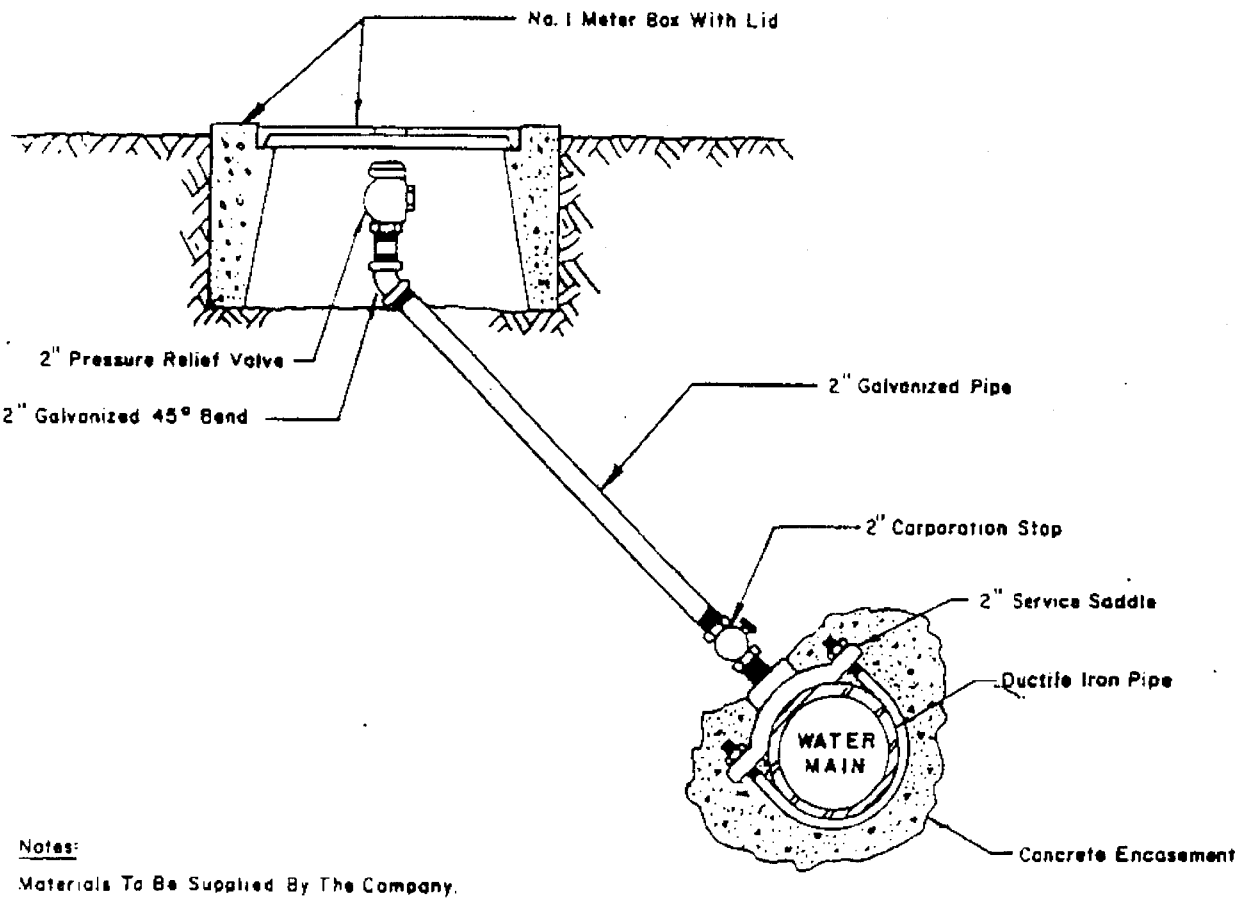
ARIZONA WATER COMPANY

NOTE. Minimum Depth Of Cover Over 6" & 8" Mains is 36 Inches, 12" & Greater is 48 Inches

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

3" THRU 10" REDUCED PRESSURE PRINCIPLE-DETECTOR ASSEMBLY



Notes:

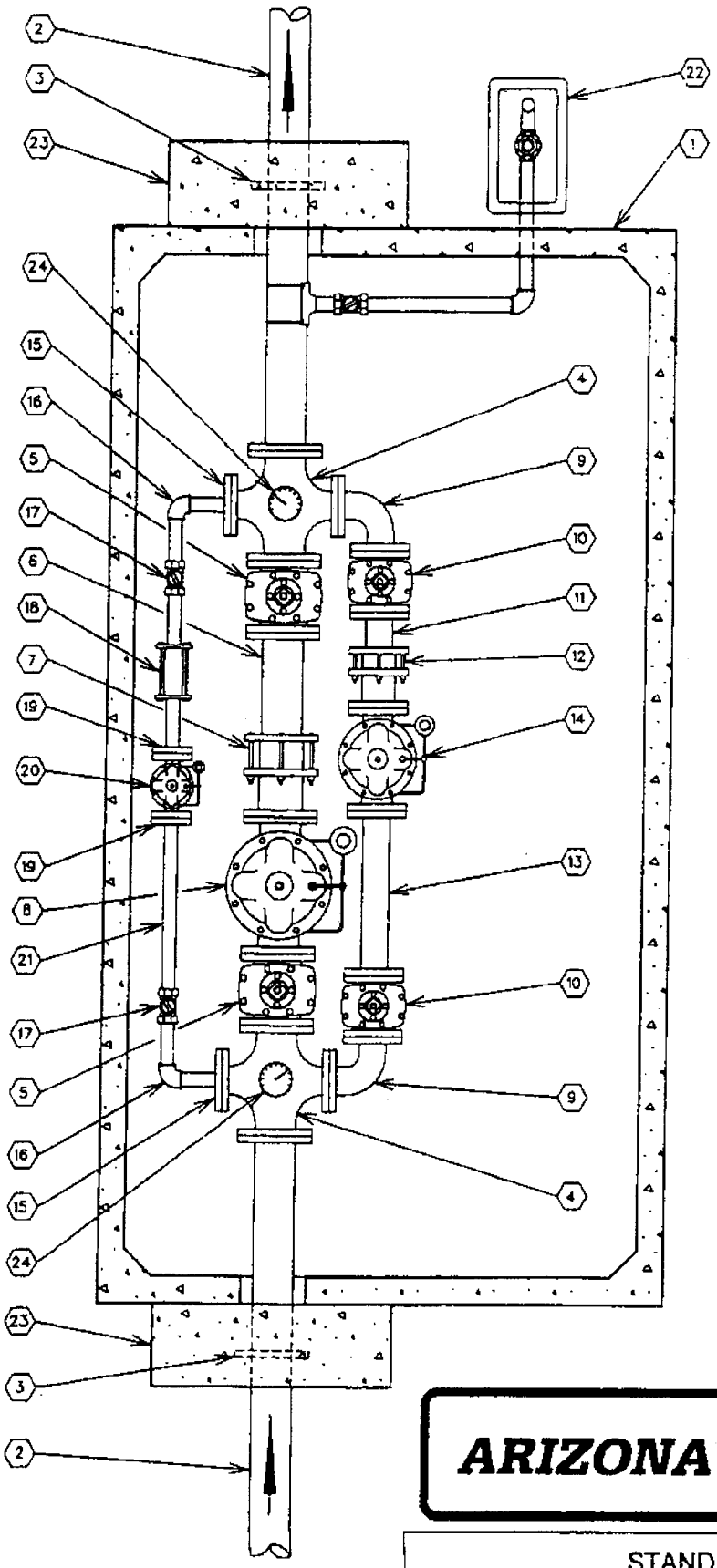
1. Materials To Be Supplied By The Company, Except For Concrete Encasement
2. Pressure Relief Valve To Be Located Just Down Stream Of Pressure Reducing Station.

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL PRESSURE RELIEF VALVE ASSEMBLY



No.	FITTINGS SCHEDULE
1.	612 LA Conc. Vault (See Note 3)
2.	6"x6'-0" D.I.P. Spool Flg.xP.E.
3.	6" Megalug (Thrust Anchor)
4.	8"x4" Cross Flg.
5.	6" Gate Valve Flg.
6.	6"x2'-0" D.I.P. Spool Flg.xP.E.
7.	6" Flg. Coup. Adapt. (Rockwell 913)
8.	6" High Flow Pressure Reducing Valve Flg.
9.	4" 90° Ell. Flg.
10.	4" Gate Valve Flg.
11.	4"x1'-0" D.I.P. Spool Flg.xP.E.
12.	4" Flg. Coup. Adapt. (Rockwell 913)
13.	4"x2'-0" D.I.P. Spool Flg.
14.	4" Medium Flow Pressure Reducing Valve Flg.
15.	2"x9" O.D. Reducing Flg. (I.P.T.)
16.	2" 90° Ell. F.I.P.
17.	2" Ball Valve F.I.P.
18.	2" Comp. Coup. (Rockwell 411)
19.	2" Companion Flg. (I.P.T.)
20.	2" Low Flow Pressure Reducing Valve Flg.
21.	2" Sched. 40 Stl. Pipe
22.	2" Pressure Relief Valve (See E-9-14-1)
23.	12"x36"x36" Conc. Thrust Block P.I.P.
24.	Pressure Gauge

NOTE:

1. Use Rowley pipe supports or equivalent as needed. (See E-9-12-4)
2. Pipe support locations to be determined by field personnel.
3. Vault-612 LA top section w/12" Dia. sump hole. Cover-concrete slab top w/(4) 4'-0" x2'-6" aluminum drag-off style covers for non-traffic loading areas. For areas w/low density traffic, cover is to be designed for H-20 traffic loading.
4. All Sched. 40 Stl. pipe outside of vault to be wrapped w/10-20 Mil. Scotchwrap corrosion protection tape.
5. Use deflection fittings (45° Ells.) to achieve necessary depths & cover as shown on the standard specification for the installation of a concrete vault (E-9-12-5).

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

PRESSURE REDUCING STATION

1. Specific Items to be Painted Deer-O Pure White Enamel:

   A. All booster pumps.
   B. All electrical motors and gas engines.
   C. Well pump discharge heads.
   D. Electrical panel.

2. Specific Items to be Painted Frost Cap White or Deer-O Pure White Enamel:

   A. Well shelter.

3. Specific Items to be Painted OSHA Orange:

   A. Electrical conduit.

4. All other items to be Painted with either:
   (At manager's discretion)

   A. Cholla Green
   B. Forest Green
   C. Sonora Beige
   D. Red Rock
   E. Rock Brown
   F. Deer-O Pure White
   G. Elkhorn Cactus

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR

1. Tank shall conform to AWWA Specification D100-84 with exceptions noted below.

*2. 1/4" minimum shell plate.

3. Minimum of 12" diameter roof vent, screened with No. 18 non-corrodible wire mesh, to be located on a 24" diameter round hinged manhole opening at the center of the tank to provide access to the deck plate.

4. Overflow pipe shall be the same diameter as the inlet pipe and shall terminate 12 to 24 inches above splash pad or a minimum of 2 overflow pipe diameters above weir box high water level.

5. Storage tank shall be placed upon adequately compacted base material.

6. 6" minimum floor mounted tank drain outlet to be located close to the outer shell.

7. Tank and related fittings shall be enclosed with a 8 foot chain link fence with lockable gates and anti-personnel wire on top of fence.

8. Liquid level shall be indicated by a target and target board on the outside surface of the tank.

9. 24 inch diameter manholes shall be provided on the roof and on the shell near the bottom of the tank. The roof manhole cover shall overlap the manhole by at least 2 inches to provide a rain tight closure. Roof manhole shall be hinged and equipped with a lock. Shell manhole cover to be hinged and bolted in place. *Tanks larger than a 60 foot diameter require 2 shell manholes.

10. Inside and outside ladders shall be located at the roof manhole. Outside ladder shall be caged with locking trap door. Bottom 8 feet of cage shall be enclosed to within 1/2" of shell with 10 gauge sheet steel.

11. Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin No. 8 before being placed into service.

12. The following information will be included with application for approval to construct:

    1. Tank location_____
    2. Tank height_____
    3. Tank diameter_____
    4. Tank capacity_____
    5. Method of water level control_____

13. The storage tank will not be constructed within the 100 year flood plain and the tank site will be graded to slope away from the tank.

14. The welded steel storage tank will be coated as per AWWA Specification D102, and N.S.F. Standard 61.

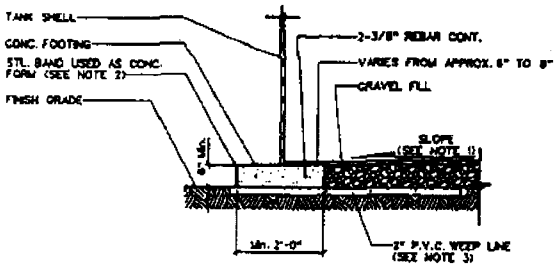
*Exceptions to AWWA Specification D100-84

FOUNDATION NOTES

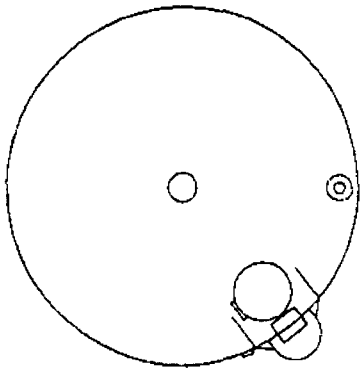
1. FINISH CONCRETE SURFACE MUST SLOPE UPWARDS FROM THE STEEL BAND APPROX. 1" IN 10'-0".

2. TOP OF STEEL BAND MUST BE MAINTAINED LEVEL TO WITHIN 1/8".

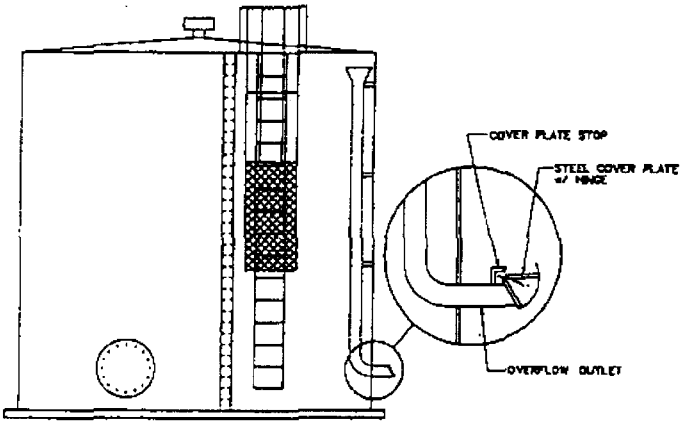
3. INSTALL 8-2" DIA.x10'-0" P.V.C. WEEP LINES, EQUALLY SPACED (EVERY 45°). PERFORATE 6'-0" OF LINE WITH 1/8" DIA. HOLES @ 6" O.C. PLUG INTERIOR END OF LINE w/2" CAP.



FOUNDATION DETAIL



PLAN VIEW



PROFILE VIEW

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

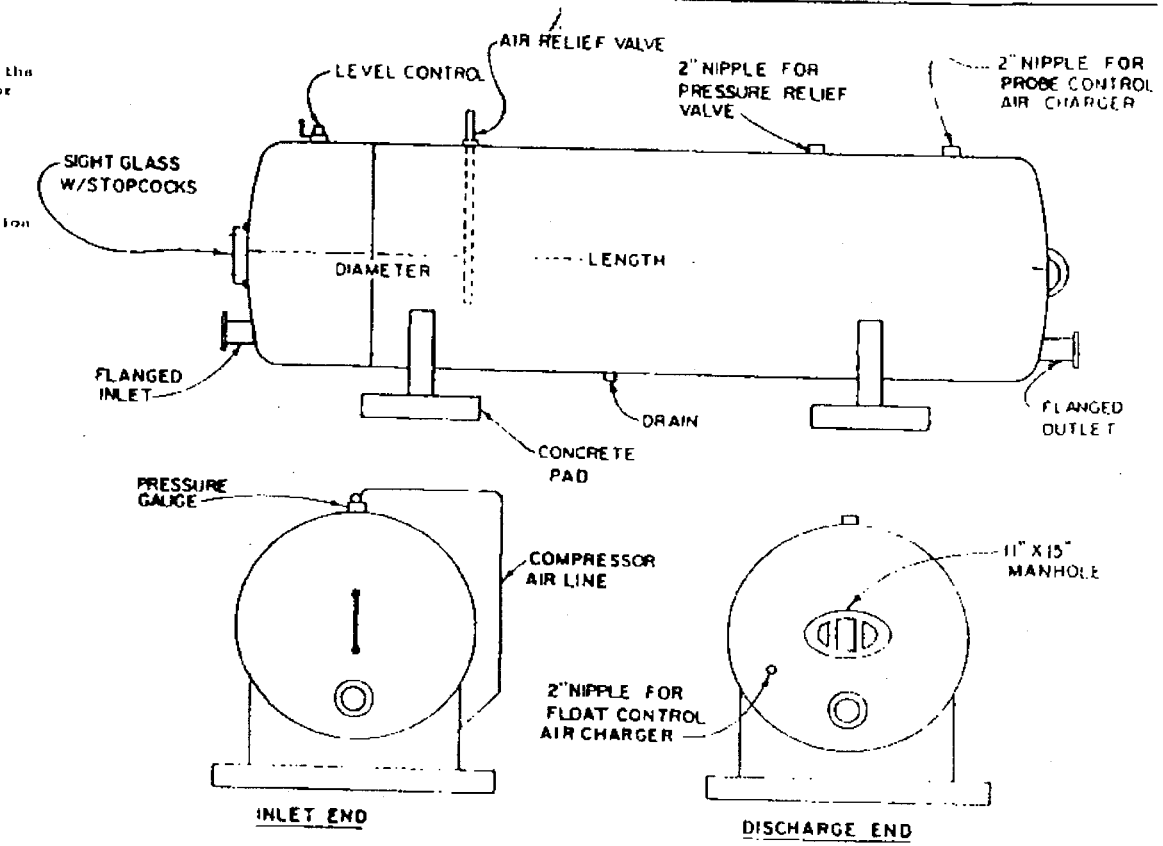
STEEL WATER STORAGE TANK

1. All hydropneumatic tanks shall be designed and constructed in accordance with the current requirements of the American Society of Mechanical Engineers (ASME) Code for Unfired Pressure Vessels, Section VIII, Division 1.

2. Finished tank shall be disinfected in accordance with Arizona Department of Health Services Engineering Bulletin #8 before being placed into service.

3. The following information will be included with application for approval to construct.

   1. Tank location
   2. Tank length
   3. Tank diameter
   4. Tank capacity
   5. Maximum working pressure



ARIZONA WATER COMPANY

STANDARD SPECIFICATION

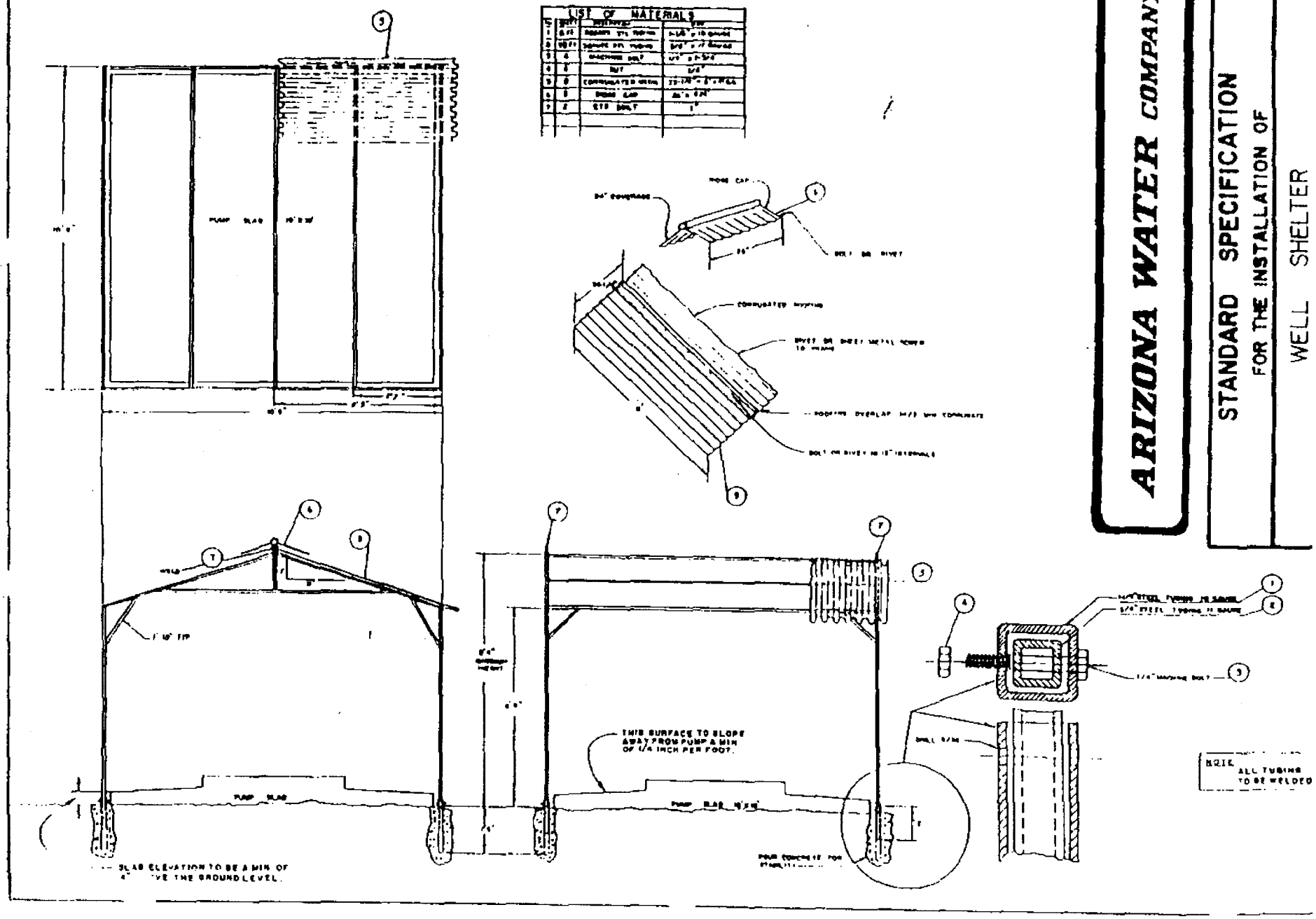
FOR

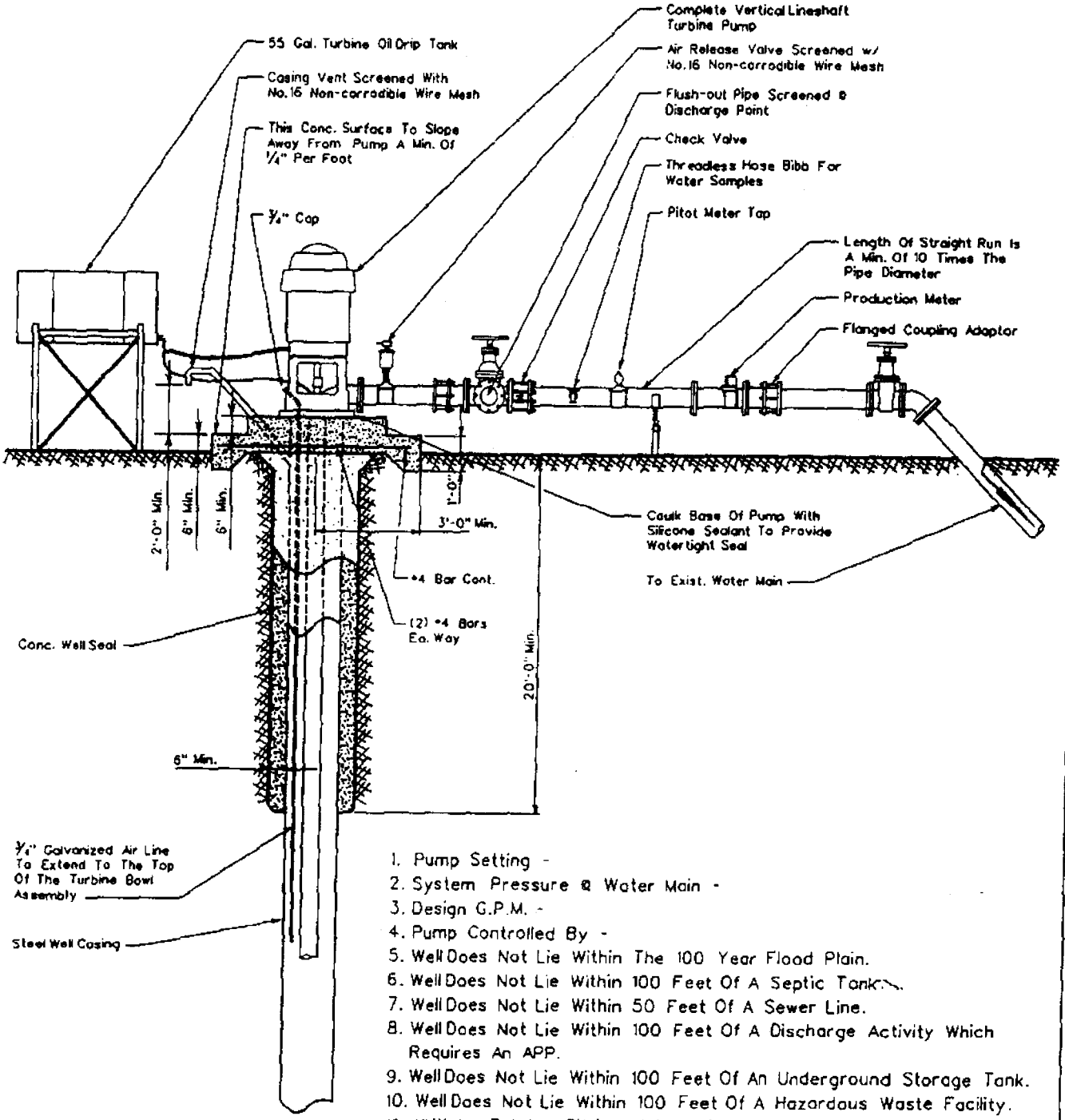
STANDARD PRESSURE TANK

DRAWN	APPROVED	DATE 3/20/88	△ 1-28-91	E-9-18-1

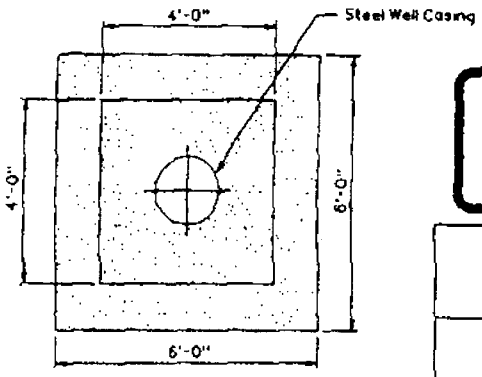
ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF
WELL SHELTER





1. Pump Setting -
2. System Pressure @ Water Main -
3. Design G.P.M. -
4. Pump Controlled By -
5. Well Does Not Lie Within The 100 Year Flood Plain.
6. Well Does Not Lie Within 100 Feet Of A Septic Tank.
7. Well Does Not Lie Within 50 Feet Of A Sewer Line.
8. Well Does Not Lie Within 100 Feet Of A Discharge Activity Which Requires An APP.
9. Well Does Not Lie Within 100 Feet Of An Underground Storage Tank.
10. Well Does Not Lie Within 100 Feet Of A Hazardous Waste Facility.
11. All Water Related Fittings Will Conform to N.S.F. Standard 61.

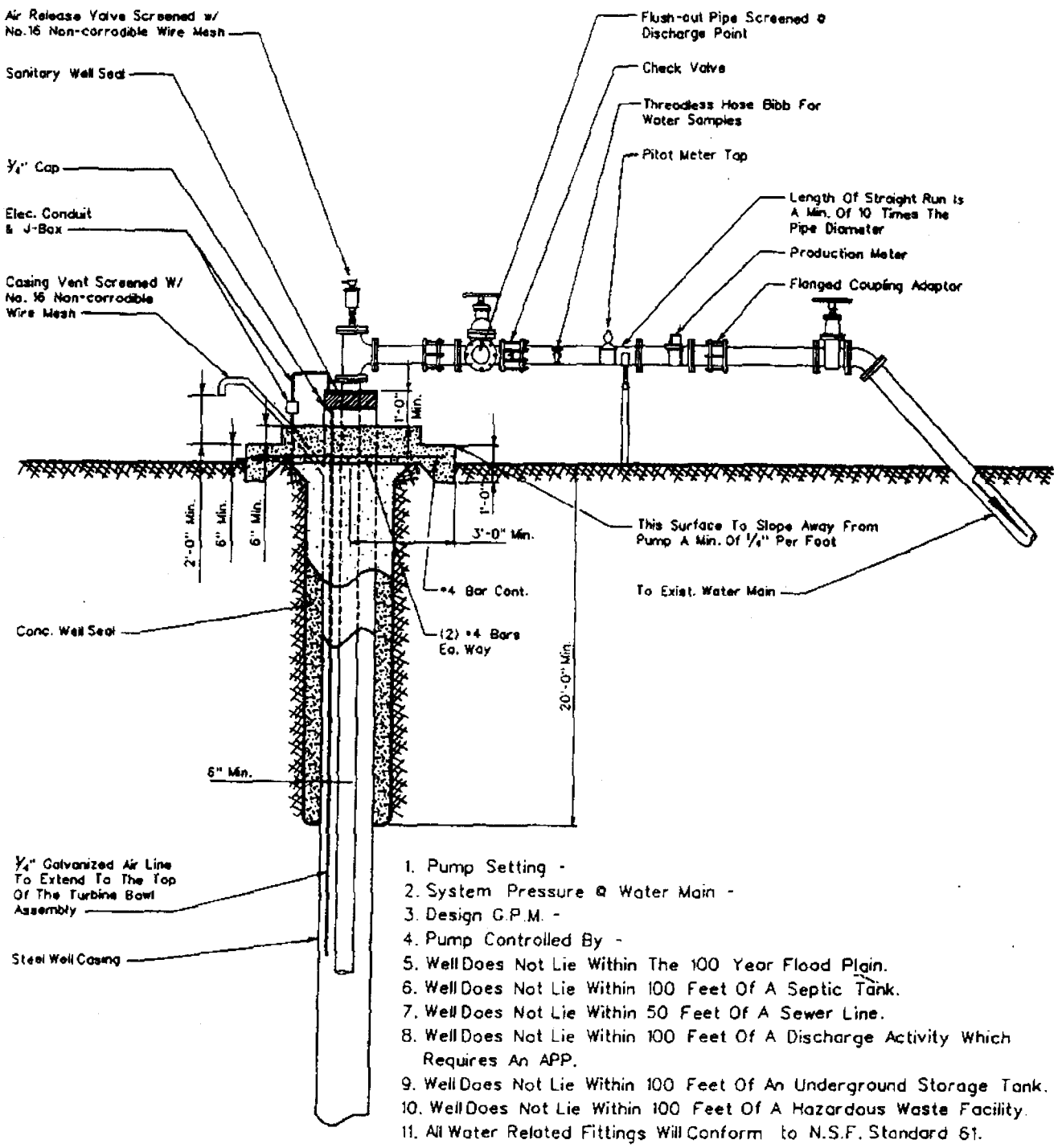


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL WELL W/ LINESHAFT TURBINE PUMP



1. Pump Setting -
2. System Pressure @ Water Main -
3. Design G.P.M. -
4. Pump Controlled By -
5. Well Does Not Lie Within The 100 Year Flood Plain.
6. Well Does Not Lie Within 100 Feet Of A Septic Tank.
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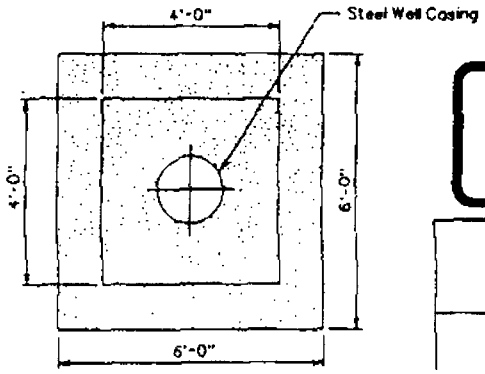


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL WELL W/ SUBMERSIBLE TURBINE PUMP

ARIZONA WATER COMPANY

STANDARD SPECIFICATION FOR COLUMN PIPE, OIL TUBE AND LINE SHAFT

All new purchases to conform to the following:

Column Pipe

4" I.D. - 8	threads	per	inch,	tapered	3/4"	per	foot	right	hand
6" I.D. - 8	"	"	"	"	"	"	"	"	"
8" I.D. - 8	"	"	"	"	"	"	"	"	"
10" I.D. - 8	"	"	"	"	"	"	"	"	"
12" I.D. - 8	"	"	"	"	"	"	"	"	"
14" I.D. - 8	"	"	"	"	"	"	"	"	"

Oil Tube - Peerless Type

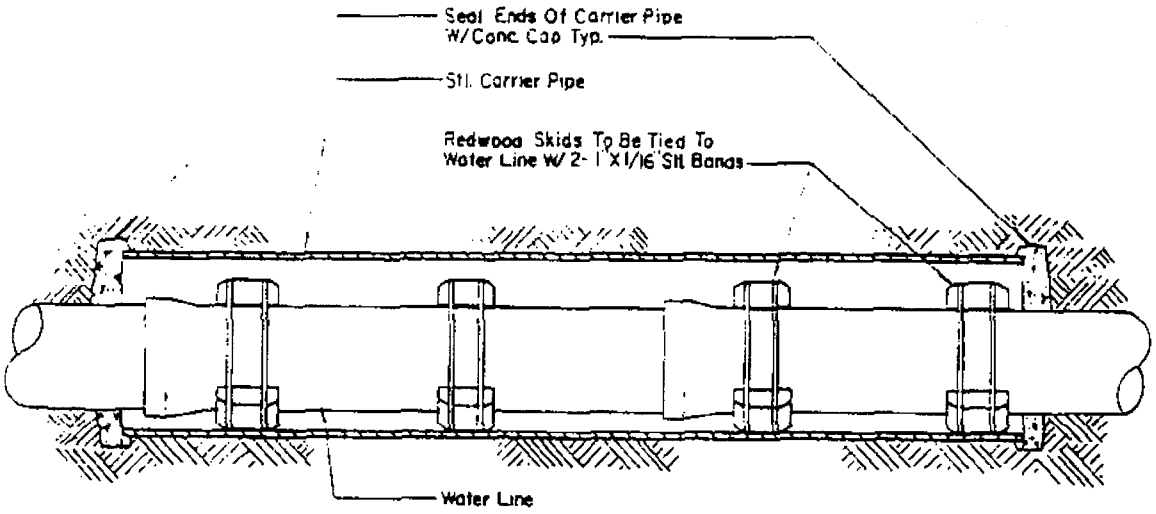
1½" O.D. - 14	threads	per	inch	right	hand
2" O.D. - 12	"	"	"	"	"
2½" O.D. - 10	"	"	"	"	"
3" O.D. - 10	"	"	"	"	"
3½" O.D. - 10	"	"	"	"	"
4" O.D. - 10	"	"	"	"	"

Line Shaft

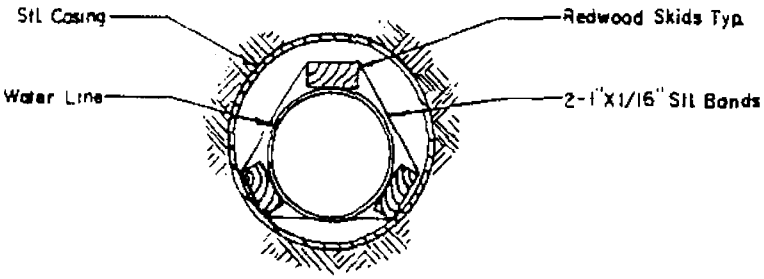
3/4" O.D. - 10	threads	per	inch	left	hand
1" O.D. - 14	"	"	"	"	"
1-3/16" O.D. - 10	"	"	"	"	"
1½" O.D. - 10	"	"	"	"	"
1-11/16" O.D. - 10	"	"	"	"	"
1-15/16" O.D. - 10	"	"	"	"	"
2-3/16" O.D. - 10	"	"	"	"	"
2-7/16" O.D. - 8	"	"	"	"	"

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR
COLUMN PIPE, OIL TUBE AND LINE SHAFT



CROSS SECTION



SECTION CUT

NOTE:
Redwood Skid To Be Located Behind Pipe Bell & At Mid Section Of Pipe

PIPE SIZE	CASING SIZE	SKID SIZE
6"	12"	* X 4 X 12
8"	16"	* X 4 X 12
12"	20"	* X 4 X 12
16"	24"	* X 4 X 12
*	THICKNESS OF REDWOOD SKID TO EXTEND 1/2" ABOVE THE O.D. OF THE PIPE BELL	

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

TYPICAL WATER LINE ENCASEMENT

1.0 Scope - This specification describes a Bevco Chlorination House as manufactured by Bevco Engineering, Inc., 10605 West Glenbrook Court, Milwaukee, Wisconsin 53224, or its equivalent.

2.0 Description - The Chlorination House shall be completely assembled, ready to install, compact type capable of housing a complete chlorination system. The Chlorination House shall be Bevco Model 7521, or its equivalent, and shall be supplied with all components factory mounted.

3.0 Design - Model 7521 - The house shall be constructed of 14 gauge steel finished with three coats of baked enamel, automotive type, hammertone green, exterior finish. The floor shall be 11 gauge steel provided as an integral part of the house and reinforced to support four chlorine gas cylinders. The floor shall be vinyl covered. A recess for a scale(s) shall be built into the floor such that the scale(s) will be flush with the floor. The interior of the house shall be insulated with a 1 inch minimum layer of plastic insulation. The plastic insulation shall meet U.L. specifications for fire resistant SE-1 foam.

The house shall have dimensions of 54 inches long, 24 inches deep, by 72 inches high with pre-drilled lugs for fastening to 1/2 inch bolts pre-set in concrete.

The roof shall be pitched, provided with a drip lip and equipped with two removable lifting eyes to facilitate field erection. The side walls shall contain two screened vents, one for an air inlet and one for exhaust.

The house shall have two independent, continuously hinged, three point latched doors. One door shall have a key lock handle. A gas tight window, 9 inches by 7 inches, shall be provided for inspection of the interior without opening the door. A high visibility caltering gas warning sign shall be placed on the front left door of the Chlorinator House.

4.0 Components - The House shall have the following components:

4.1 Electrical Fixtures - The following electrical fixtures shall be provided:

a. Light with protective cover.

b. Automatic-manual selector switch externally mounted, and interlocked for automatic operation of exhaust fan and light.

c. Safety switch, 2 pole, fused for 30 amps, for 120 volts, 60 cycle, single phase power.

d. Duplex receptacle, wall panel mounted.

4.2 Exhaust Fan - The exhaust fan shall have a rating of 100 cubic feet per minute and a capability of providing a complete air change within one minute

4.3 Heater - The heater shall be a 1000 watt, adjustable thermostatically controlled, forced air type.

4.4 Automatic Door Switch - A door actuated micro switch shall be provided to automatically turn on light and fan whenever door is opened.

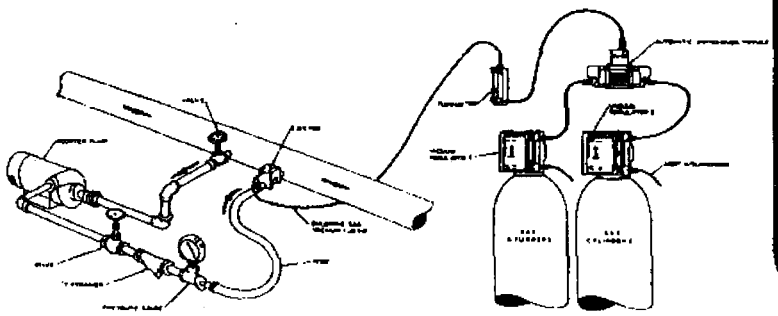
4.5 Miscellaneous - Cylinder support chains, replaced test kit holder, vent and vacuum bulkhead fittings, stainless steel hook for holding the chlorinator during changing of cylinders shall be provided. A single or dual cylinder scale shall be located in the floor recess to allow periodic weight determination of chlorine gas.

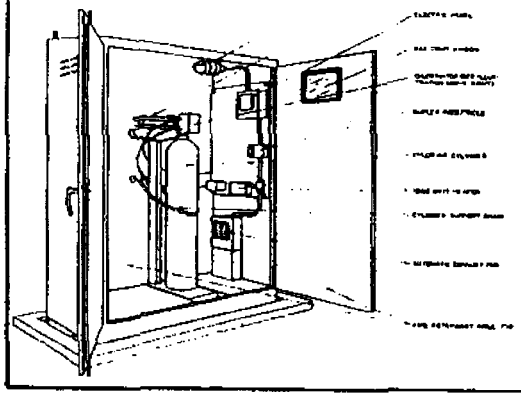
4.6 Breathing Apparatus - A canister-type gas mask shall be housed in a pole mounted, weatherproof enclosure and shall be placed in a high visibility location.

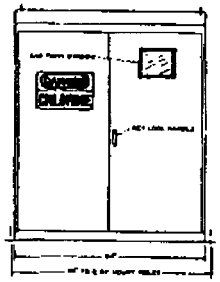
5.0 Chlorinator Design - The chlorination facility shall be designed and constructed in accordance with Arizona State Department of Health Engineering Bulletin No. 8 Standards "Disinfection of Water Systems".

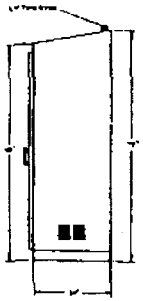
5.1 Chlorination Equipment - The chlorination equipment shall be advance series 200 (or its equivalent) direct cylinder mounted gas chlorinator, vacuum operated solution feed, as on file with ADEQ.

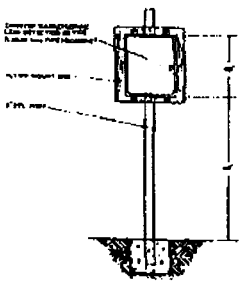
5.2 Chlorinator Operation - The chlorination facility shall be operated in accordance with Arizona State Department of Health Engineering Bulletin No. 8 "Disinfection of Water Systems" Table 1.









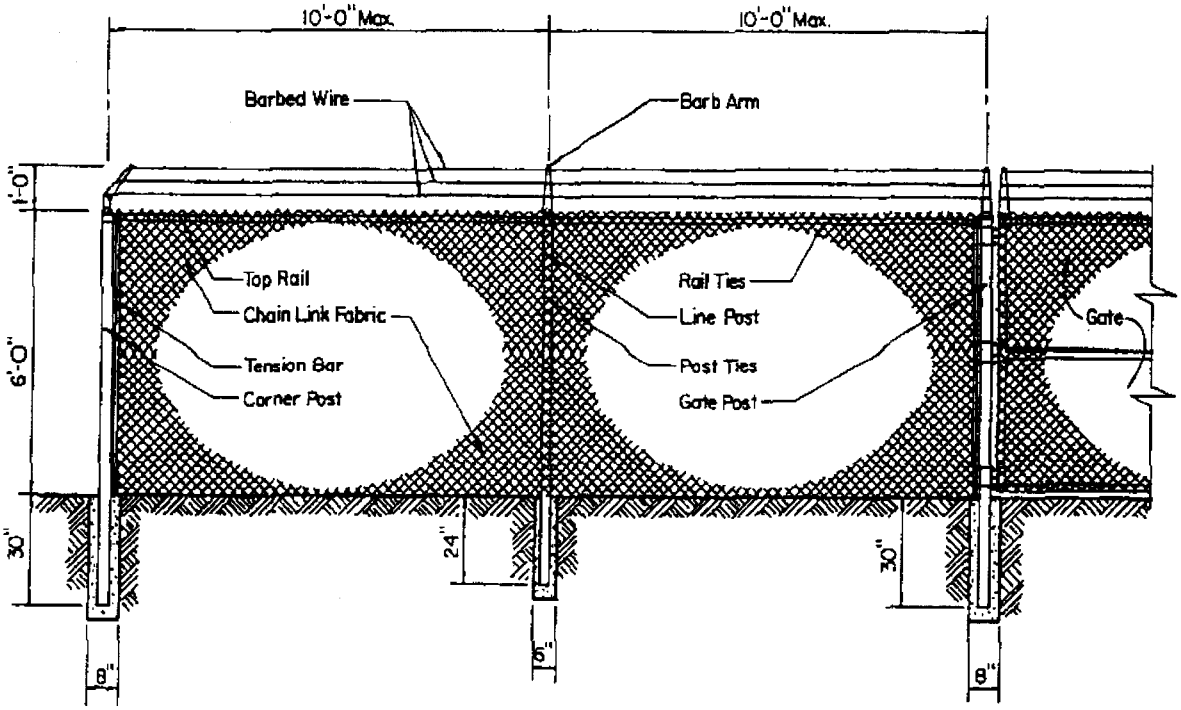


ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

TYPICAL CHLORINATION HOUSE

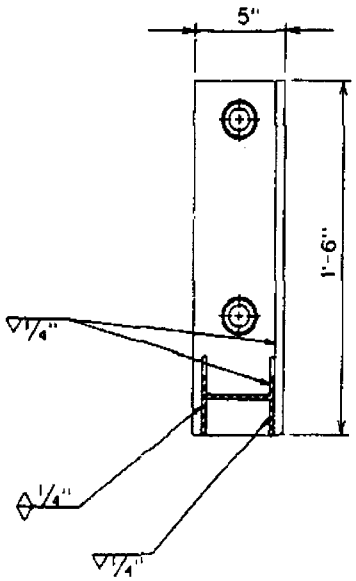


LINE POSTS:	1-7/8" O.D.	1.74 lbs. P/L.F.	ASTM A-256
END POSTS:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
CORNER POST:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
GATE POST:	2-7/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
TOP RAIL:	1-5/8" O.D.	4.64 lbs. P/L.F.	ASTM A-256
CHAIN LINK FABRIC:	9 Ga. 2" MESH GALV. BEFORE WEAVE		
SELVAGE:	BARB/KNUCKLE		
FITTINGS:	PRESSED STEEL		
BARB WIRE:	2-1/2 Ga./2 POINT		
BARB ARM:	1 PIECE/45° ARM		
TENSION WIRE:	9 Ga./GALV.		
LINE POST SET:	6"X24" IN CONCRETE		
TERMINAL POST SET:	8"X30" IN CONCRETE		

ARIZONA WATER COMPANY

STANDARD SPECIFICATION
FOR THE INSTALLATION OF

CHAIN LINK FENCE

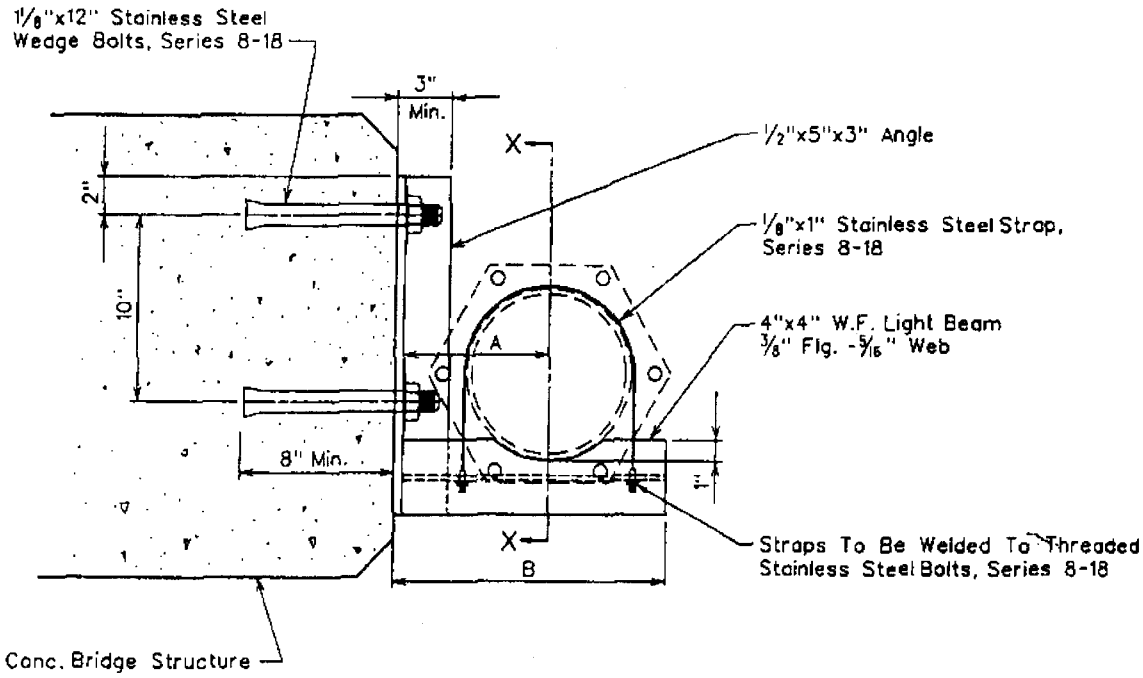


SECTION X-X

NOTES

1. Minimum 2 Supports Per Joint Of Pipe.
2. All Bolts Shall Have A Lock Washer Under The Nut.
3. All Nuts Shall Be Stainless Steel Series 8-18.

PIPE SIZE	A	B
8"	8"	15"
10"	9"	17"
12"	10"	19"



SUSPENSION DETAIL

ARIZONA WATER COMPANY

STANDARD SPECIFICATION

FOR THE INSTALLATION OF

SIDE HUNG WATER LINE SUSPENSION

ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #1

April 28, 1999
Revised July 2, 1999

A parcel of land located in the Northwest ¼ of the Southwest ¼ of Section 5, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the West ¼ corner of said Section 5;

THENCE S00°39'34"E, along the West line of said Section 5, 260.10 feet;

THENCE N89°20'26"E, 327.93 feet to the TRUE POINT OF BEGINNING;

THENCE N58°41'54"E, 50.00 feet;

THENCE S31°18'06"E, 50.00 feet;

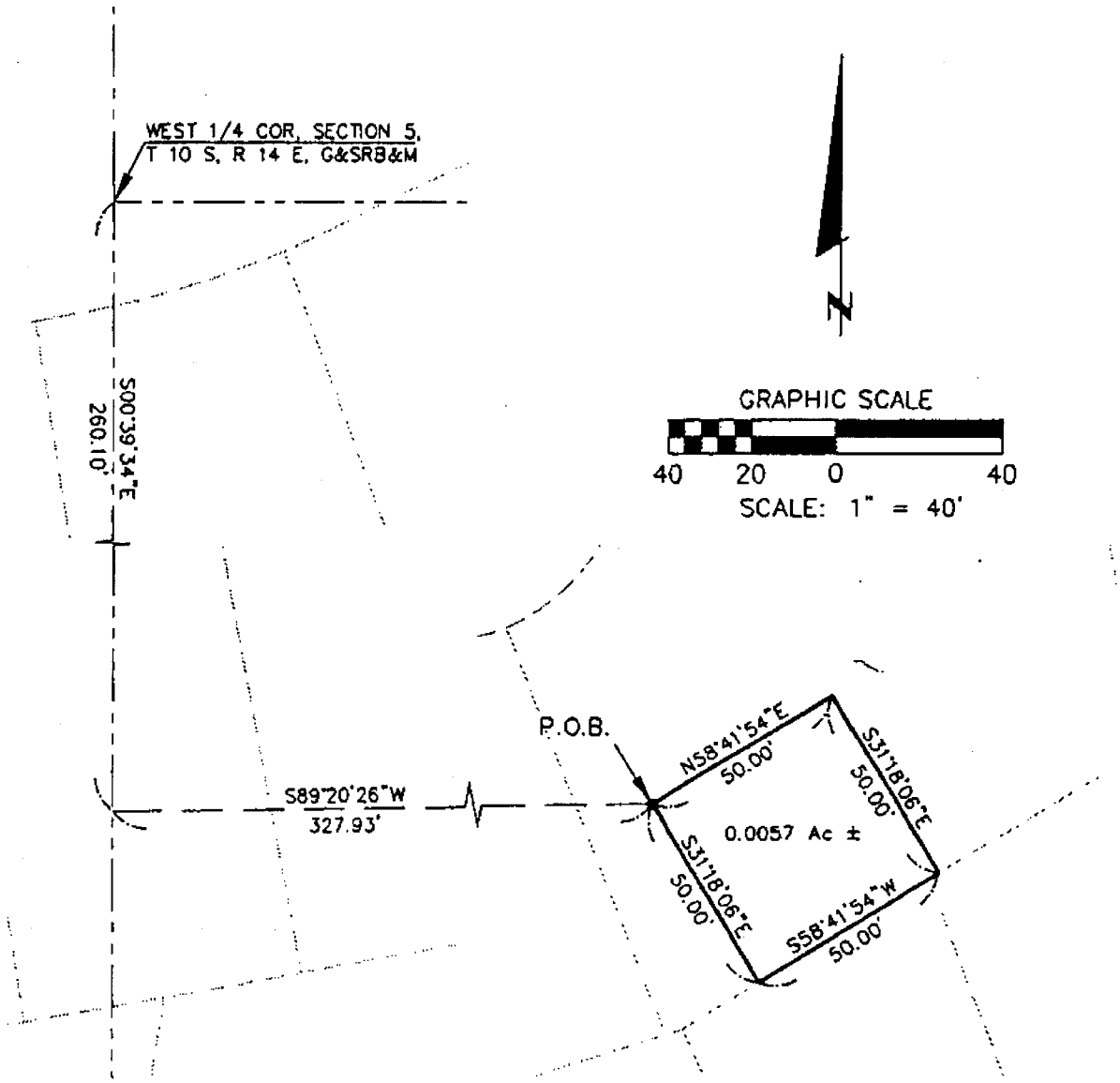
THENCE S58°41'54"W, 50.00 feet;

THENCE N31°18'06"W, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
WELL SITE 1
SADDLEBROOKE RANCH

APRIL 28, 1999
REVISED: JULY 2, 1999



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ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #2

April 28, 1999

A parcel of land located in the Northeast ¼ of the Northeast ¼ of Section 8, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the Northeast corner of said Section 8

THENCE N89°43'06"W, along the North line of said Section 8, 611.35 feet;

THENCE S00°16'54"W, 50.14 feet to the TRUE POINT OF BEGINNING;

THENCE S33°59'46"E, 50.00 feet;

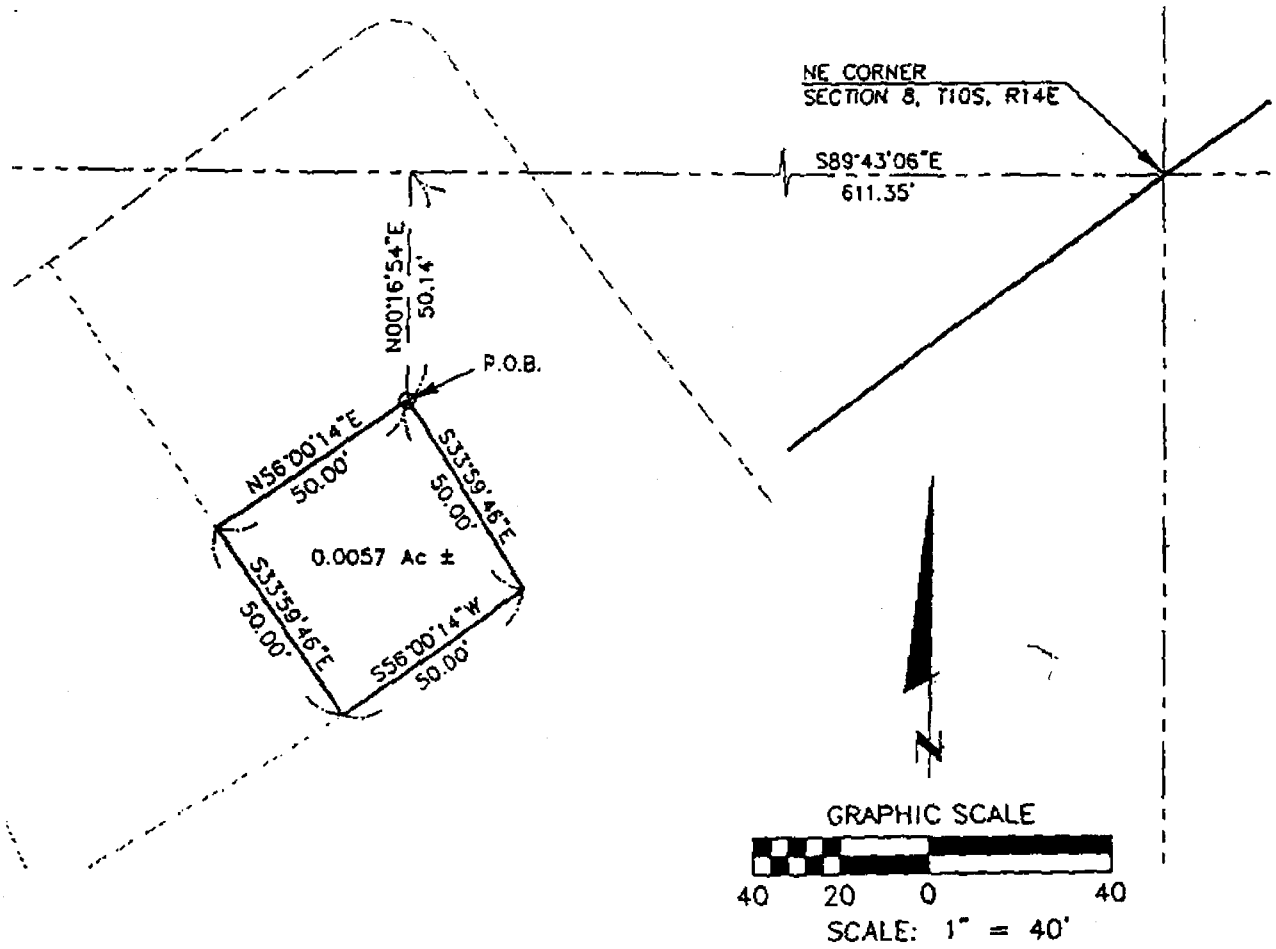
THENCE S56°00'14"W, 50.00 feet;

THENCE N33°59'46"W, 50.00 feet;

THENCE N56°00'14"E, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
WELL SITE 2
SADDLEBROOKE RANCH
APRIL 28,1999



ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
BOOSTER PUMP AND WATER RESERVOIR STORAGE FACILITY SITE

April 28, 1999
Revised July 2, 1999

A parcel of land located in the Southeast ¼ of the Southeast ¼ of Section 34, T9S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

BEGINNING at the Southeast corner of said Section 34;

THENCE S89°43'53"W, along the South line of said Section 34, 350.00 feet;

THENCE N00°32'29"W, 200.00 feet;

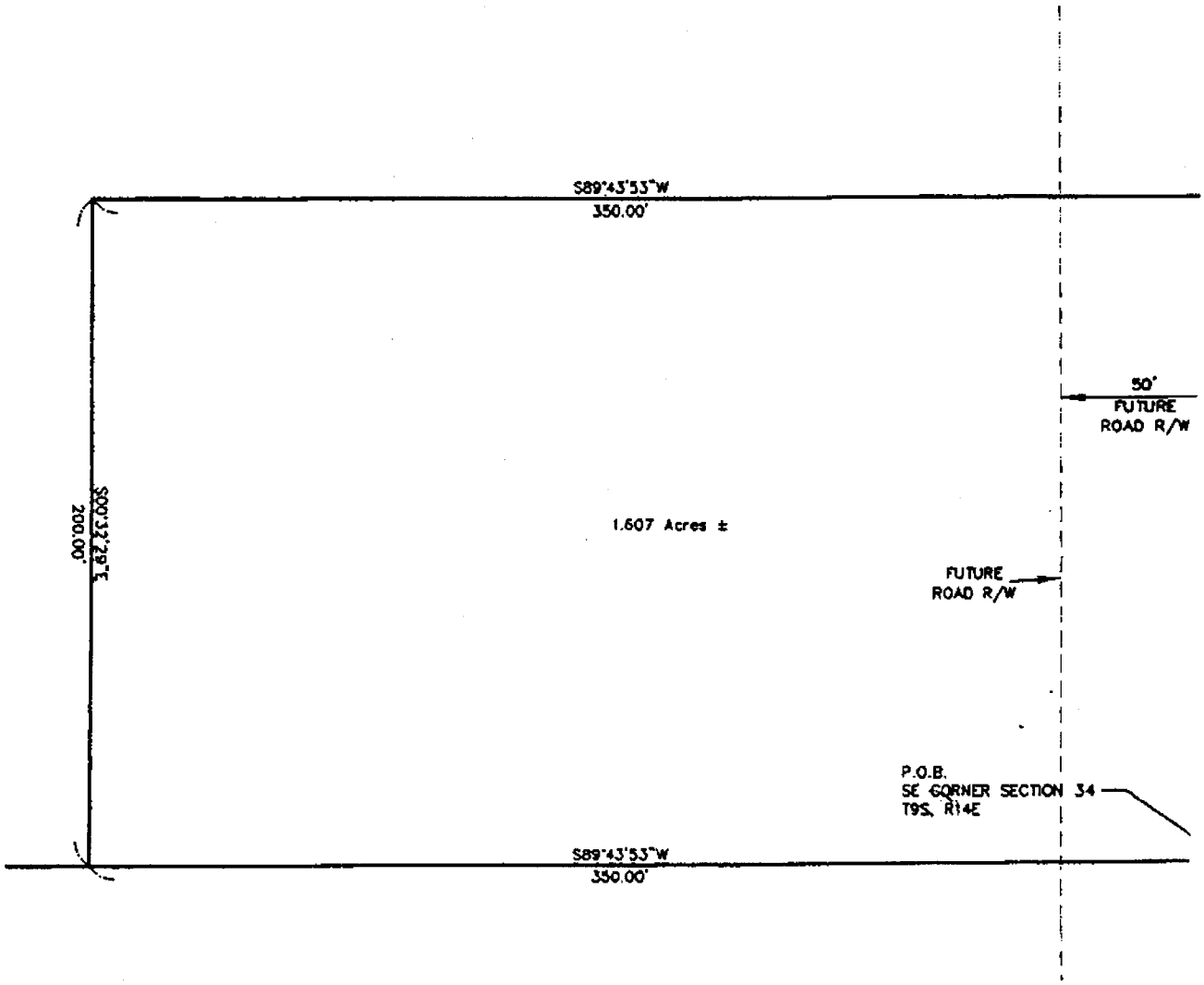
THENCE N89°43'53"E, 350.00 feet to the East line of said Section 34;

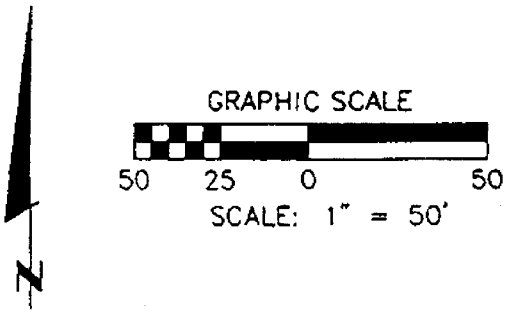
THENCE S00°32'29"E, along said East line of Section 34, 200.00 feet to the POINT OF BEGINNING.

The above-described parcel contains an area of 1.607 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
BOOSTER PUMP AND WATER RESERVOIR STORAGE FACILITY
SADDLEBROOKE RANCH

APRIL 28, 1999
REVISED: JULY 2, 1999





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ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #3

April 28, 1999
Revised July 2, 1999

A parcel of land located in the South ½ of the Northeast ¼ of Section 4, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the East ¼ corner of said Section 4

THENCE N00°22'21"W, along the East line of said Section 4, 1,024.45 feet;

THENCE S89°37'39"W, 1,689.41 feet to the TRUE POINT OF BEGINNING;

THENCE S59°45'34"W, 50.00 feet;

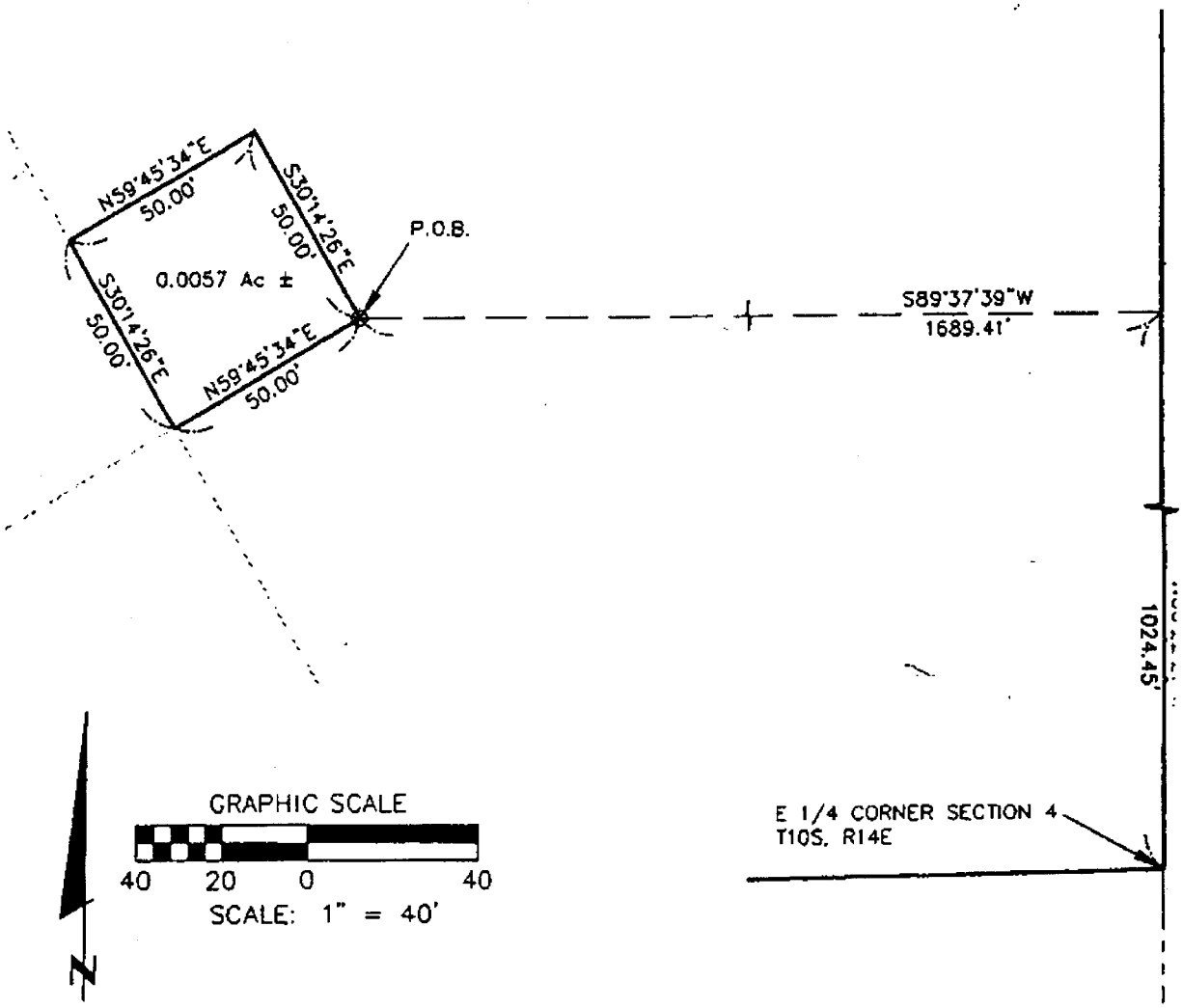
THENCE N30°14'26"W, 50.00 feet;

THENCE N59°45'34"E, 50.00 feet;

THENCE S30°14'26"E, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
WELL SITE 3
SADDLEBROOKE RANCH
APRIL 28, 1999
REVISED: JULY 2, 1999



ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #4

April 28, 1999
Revised July 2, 1999

A parcel of land located in the Northwest ¼ of the Southwest ¼ of Section 33, T9S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the West ¼ corner of said Section 33;

THENCE S00°32'38"E, along the West line of said Section 33, 512.17 feet;

THENCE N89°27'22"E, 275.83 feet to the TRUE POINT OF BEGINNING;

THENCE N23°52'41"E, 50.00 feet;

THENCE S66°07'19"E, 50.00 feet;

THENCE S23°52'41"W, 50.00 feet;

THENCE N66°07'19"W, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #5

April 28, 1999
Revised July 2, 1999

A parcel of land located in the Southeast ¼ of the Northeast ¼ of Section 5, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the East ¼ corner of said Section 5;

THENCE N00°31'16"W, along the East line of said Section 5, 494.32 feet;

THENCE S89°28'44"W, 90.16 feet to the TRUE POINT OF BEGINNING;

THENCE S52°30'45"W, 50.00 feet;

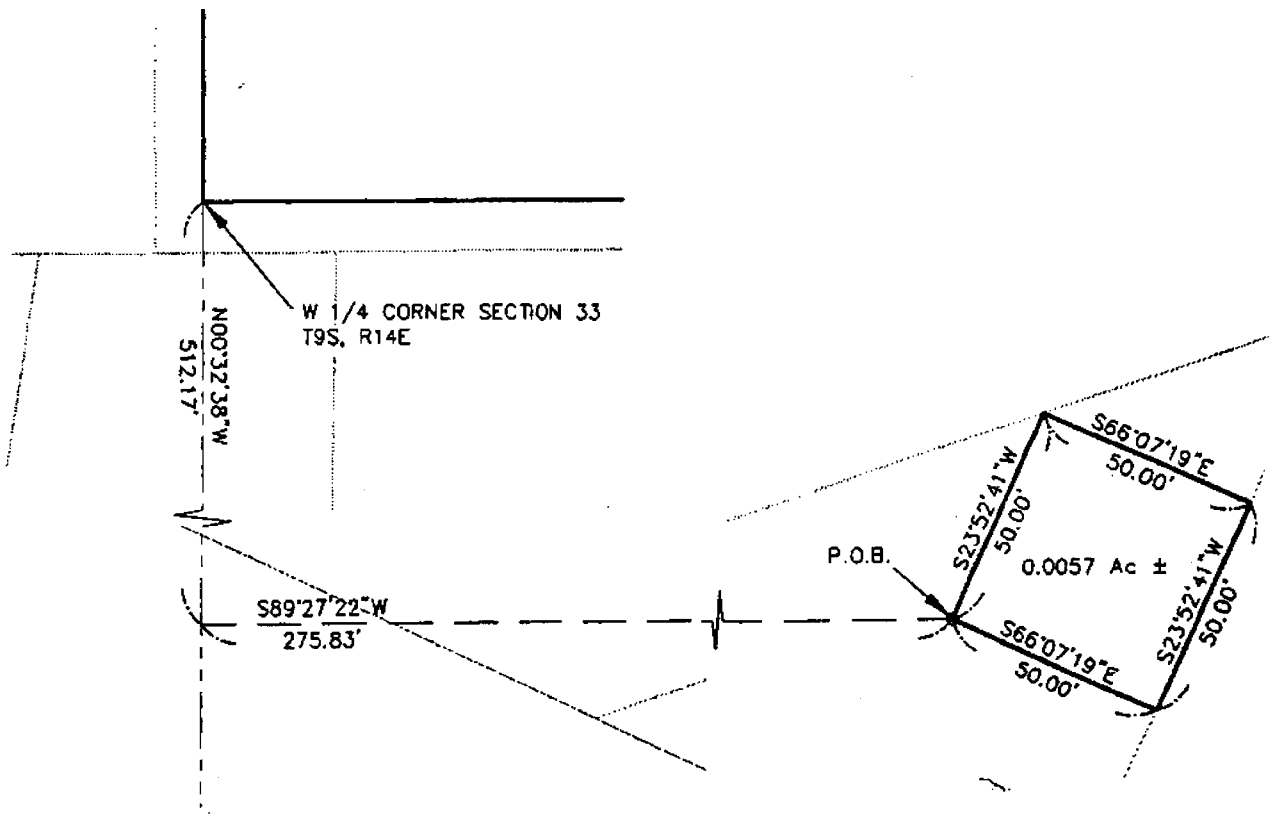
THENCE N37°29'15"W, 50.00 feet;

THENCE N52°30'45"E, 50.00 feet;

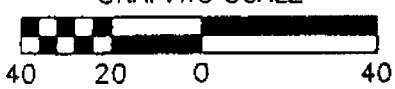
THENCE S37°29'15"E, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
WELL SITE 4
SADDLEBROOKE RANCH
APRIL 28, 1999
REVISED: JULY 2, 1999



GRAPHIC SCALE



SCALE: 1" = 40'

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ATTACHMENT G

LEGAL DESCRIPTION
SADDLEBROOKE RANCH
WELL SITE #5

April 28, 1999
Revised July 2, 1999

A parcel of land located in the Southeast ¼ of the Northeast ¼ of Section 5, T10S, R14E, G&SRB&M, Pinal County, Arizona, more particularly described as follows:

COMMENCING at the East ¼ corner of said Section 5

THENCE N00°31'16"W, along the East line of said Section 5, 494.32 feet;

THENCE S89°28'44"W, 90.16 feet to the TRUE POINT OF BEGINNING;

THENCE S52°30'45"W, 50.00 feet;

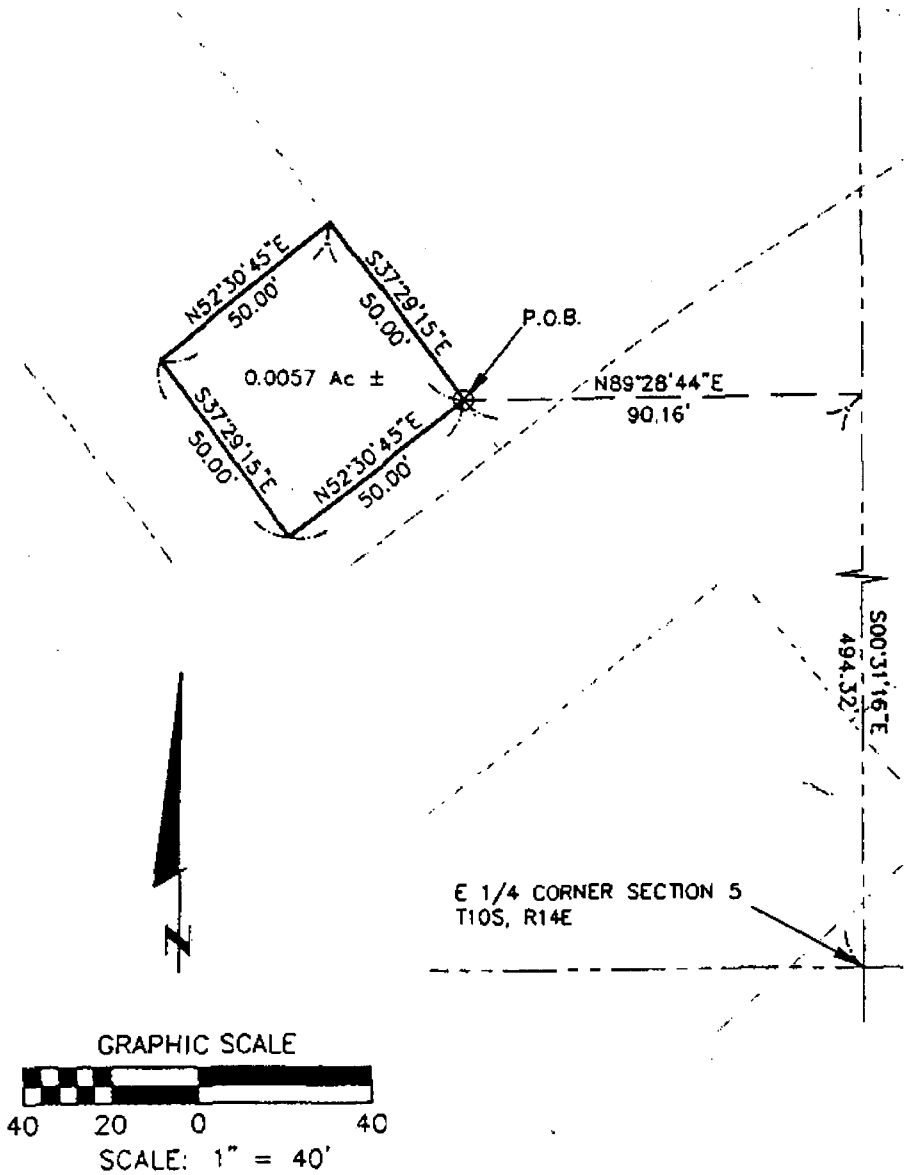
THENCE N37°29'15"W, 50.00 feet;

THENCE N52°30'45"E, 50.00 feet;

THENCE S37°29'15"E, 50.00 feet to the TRUE POINT OF BEGINNING.

The above-described parcel contains an area of 0.0057 acres, more or less.

MAP TO ACCOMPANY LEGAL DESCRIPTION
WELL SITE 5
SADDLEBROOKE RANCH
APRIL 28, 1999
REVISED: JULY 2, 1999



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ATTACHMENT "H"

SCHEDULE OF MILESTONE DATES

Date	Milestone
11/99	Arizona Water Company shall submit an application to the Arizona Corporation Commission within sixty (60) days after the execution of the Master Water System Facilities Agreement requesting a new Certificate of Convenience & Necessity ("CC&N") in place of the existing CC&N. Developer shall fully and promptly cooperate with Arizona Water Company's preparation and filing of the application.
5/00	Arizona Water Company shall use its best reasonable efforts to obtain the new CC&N within one year of filing the application for the new CC&N. Developer shall fully cooperate with Arizona Water Company's efforts.
6/00	Equip existing potable well #1
6/00	Drill potable water well #2
11/01	750,000-gallon storage tank and transmission lines completed
11/02	Open Golf Course and Models
10/02	Sell first home
9/08	Dwelling Unit 1750 completed
10/08	Drill/equip/connect well #3
1/09	Booster station completed
8/14	Dwelling Unit 3,400 completed
9/14	Second 750,000-gallon storage tank completed
10/14	Drill/equip/connect well #4
5/20	Dwelling Unit 4,700 completed
6/20	Drill/equip/connect well #5
12/22	Build-out 6000 Dwelling Units

ATTACHMENT "I"

ARIZONA WATER COMPANY
Phoenix Office: P.O. Box 29006 - Phoenix, AZ 85038-9006
Voice: 602-240-6860 Fax: 602-240-6878

AGREEMENT FOR EXTENSION OF WATER FACILITIES

CUSTOMER: _____
Name

_____
Address

_____
City and State *Zip Code*

Contract No. _____
W.A. No. _____

DATE OF AGREEMENT: _____

DATE OF COST ESTIMATE: _____ WATER SYSTEM: _____ [select division] _____

WATER FACILITIES:

REFUNDABLE ADVANCE IN AID OF CONSTRUCTION for: _____ $_____

NON-REFUNDABLE CONTRIBUTION for: _____ _____

AGREEMENT TOTAL $_____

LESS: MAIN EXTENSION DEPOSIT RECEIVED _____

BALANCE DUE $_____

THIS AGREEMENT is made and entered into by and between ARIZONA WATER COMPANY, an Arizona corporation, (hereinafter called the "Company"), and the Customer named above. In consideration of the services to be performed by the Company and the sums of money to be paid by the Customer, in accordance with the related Cost Estimate, it is agreed as follows:

1. The Company will construct, or will arrange for the construction of the Water Facilities as described above.
2. The Customer will pay to the Company upon signing this Agreement the Total shown above, receipt of which is hereby acknowledged by the company. The Total shown above to be paid by the customer to the Company is the Company's estimated cost of construction of the Water Facilities. The Company will determine and inform the Customer of the actual cost of construction within sixty (60) days after the completion of construction or the Company's receipt of all invoices and charges related to the construction. If the Company's actual cost of construction is less than the Total amount paid, the Company will refund the difference to the Customer; conversely, if the Company's actual cost of construction is more than the Total amount paid, the Customer shall pay the difference to the Company within sixty (60) days of receipt of an invoice from the Company. However, if the actual cost is more than five percent (5%) greater than the Total amount paid, the Customer will only be required to pay five percent (5%) more than the Total amount paid, unless the Company can demonstrate that the increased costs were beyond its control and could not be foreseen at the time the estimate for the Total amount paid was made. The Company and the Customer further agree that the amount subject to refund pursuant to paragraph 3 of this Agreement shall be the refundable portion of the Company's actual cost of construction. Information about the actual cost of construction will be attached to this Agreement and forwarded to the Customer.
3. Refunds of any advances in aid of construction shall be made as follows: Each year for a period of 10 years the Company shall pay to the Customer or the Customer's assignee or successor in interest, provided the Company has first received written notice and evidence of such assignment or succession and approved of same, an amount equal to 10 percent of the total gross annual revenue received by the Company from water sales to each bona fide customer whose service line is directly connected to pipelines installed pursuant to this Agreement. Refunds shall be made by the Company on or before August 31 of each year, covering any water revenues received during the preceding July 1 to June 30 period. *Any balance remaining subject to refund at the end of the 10-year period shall become non-refundable.* Aggregate refunds shall in no event exceed the total of the refundable advance in aid of construction received from the Customer. No interest shall be paid by the Company on any amounts paid hereunder.
4. All Water Facilities installed under this Agreement shall be the sole property of the Company, and the customer shall have no right, title or interest in or to any such facilities.
5. The size, design, type and quality of materials and of the system, location and manner of installation, shall be specified by the Company and shall comply with requirements of the Arizona Corporation Commission or other public agencies having authority therein.
6. The Customer agrees to furnish to the Company adequate and recordable easements and required surveying necessary to serve each parcel or lot within the Customer's subdivision, tract, development, or project.
7. The Customer agrees that all easements and rights-of-way shall be free of obstacles which may interfere with the construction of the Company's Water Facilities. If the Customer's subdivision, tract, development, or project involves road construction, all roads and drainageways will be brought to grade by the Customer prior to the commencement of the installation of the Company's Water Facilities. No pavement or curbs shall be installed prior to completion of all Water Facilities. If any street, road, alley or drainageway is installed at a different grade or location after the beginning of the installation of Water Facilities, the Customer shall bear all costs incurred by the Company to relocate the Water Facilities as a result of said facilities having improper cover or location. Such costs shall be non-refundable.
8. The Customer agrees to pay to the Company any additional costs incurred as a result of design changes made or caused by the Customer or its employees, agents, servants, contractors or subcontractors, the Arizona Department of Environmental Quality, the Arizona Corporation Commission, any county health department or other public agency under whose jurisdiction the subject construction may fall, or anticipated or un-anticipated changes in existing Company facilities, due to any work associated with this subdivision, tract, development or project which causes said facilities to have improper cover or location.
9. This Agreement shall be binding upon and for the benefit of the successors and assigns of the Company and the Customer. No assignment or transfer of this Agreement by the Customer shall be binding upon the Company or create any rights in the assignee until such assignment or transfer is approved and accepted in writing by the Company.
10. This Agreement, and all rights and obligations hereunder, including those regarding water service to the Customer, are subject to the Arizona Corporation Commission's "Rules and Regulations Relating to the Operation of Domestic Water Utility Companies" and the Company's tariff schedule TC-243, "Terms and Conditions for the Provision of Water Service."

ARIZONA WATER COMPANY
Company

By: _____

Title: _____

_____
Customer

By: _____

Title: _____

Recorded at the Request of,
and
When Recorded Please Return to:

ATTACHMENT "J"

Arizona Water Company
P.O. Box 29006
Phoenix, AZ 85038-9006

BILL OF SALE

FOR A VALUABLE CONSIDERATION, Receipt of which is hereby acknowledged, ROBSON RANCH MOUNTAINS, L.L.C., an Arizona limited liability company ("Grantor"), does hereby grant, bargain, sell, convey, transfer, deliver and assign to ARIZONA WATER COMPANY, an Arizona corporation ("Grantee"), free and clear of all liens, encumbrances and claims, whether of record or otherwise, the following described property:

See Exhibit "A" hereto.

GRANTOR, for itself, its successors, heirs, representatives, and assigns, covenants with Grantee and its successors, representatives, and assigns that it is lawfully seized of the described property; that it has the right to convey the described property; that it warrants and will defend the title of the described property against the claims and demands of all persons; and that it will do any further acts for the purpose of perfecting and confirming the title to the described property that Grantee may reasonably require.

IN WITNESS WHEREOF, Grantor has caused this instrument to be executed this _____ day of _____, _____.

ROBSON RANCH MOUNTAINS, L.L.C.
An Arizona limited liability company

By ARLINGTON PROPERTY MANAGEMENT COMPANY
An Arizona corporation

By_____

Its_____

STATE OF ARIZONA)
) ss
COUNTY OF _____)

On _____ before me, the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the person who executed the within instrument as the _____ of the corporation that executed the within instrument on behalf of Robson Ranch Mountains L.L.C., the limited liability company that executed the within instrument, and acknowledged to me that such corporation executed the same as such _____ and that such limited liability company executed same.

_____
Notary Public

EXHIBIT
CT-125
ADMITTED

AGREEMENT FOR THE PURCHASE, SALE AND RESALE
OF RECLAIMED WATER IN APACHE JUNCTION, ARIZONA

THIS AGREEMENT for the purchase, sale and resale of reclaimed water is entered into this 15 day of MARCH, 1989 between ARIZONA WATER COMPANY, an Arizona corporation (the "Company"), GOLD CANYON SEWER COMPANY, an Arizona corporation ("Gold Canyon") and SUPERSTITION MOUNTAIN INVESTMENT, LTD., an Illinois limited partnership ("SMI").

RECITALS

A. The Company is a public service corporation, authorized to provide and providing water service to customers within the City of Apache Junction and the surrounding community, including the area subject to the Application (as defined below), pursuant to the jurisdiction of and certificates of convenience and necessity issued to it by the Arizona Corporation Commission (the "Commission") in Decision Numbers 34113, 34963, 38613, 38940, 44672, 48825, 49202, 49223, 55613 and 55700. The Company is not certificated to provide nor does it provide sewerage collection in the area subject to the Application.

B. SMI operates under lease a sewerage treatment plant which is located in the vicinity of Apache Junction, Arizona. The parties presently anticipate that Gold Canyon will acquire SMI's interest in the sewerage treatment plant and operate the sewerage treatment plant if and when the Commission approves the portion of the Application pertaining to authority to provide sewerage collection and treatment.

C. SMI also owns and operates an eighteen-hole golf course (the "Golf Course") in the area subject to the Application.

D. On September 27, 1988 Gold Canyon filed an application (the "Application") with the Commission for a certificate of public convenience and necessity to provide sewerage collection and treatment service ("Sewer

Service") and reclaimed water ("Reclaimed Water") service within a designated area in Pinal County, Arizona and for approval of initial rates and charges and a proposed capital structure and funding procedure. The Application was designated by the Commission as Docket Number U-2519-88-237 (the "Docket"). The parties presently contemplate that Gold Canyon will become a sewer public service corporation subject to the jurisdiction of the Commission shortly after the date of this Agreement, by virtue of the Commission's approval of the portion of the Application requesting authority to provide Sewer Service to the public.

E. Because of the Company's concern that its existing water service certificate rights are jeopardized or diminished by reason of the Reclaimed Water portion of the Application, the Company intervened in the Docket and lodged its opposition to that portion of Gold Canyon's Application. The Company, Gold Canyon and SMI have since met for the purpose of exploring a possible resolution of this concern and this Agreement reflects the results of their discussions.

F. Gold Canyon desires to deliver and sell Reclaimed Water and the Company desires to purchase Reclaimed Water for sale and delivery to SMI (and to others as may be appropriate pursuant to Paragraph 14 of this Agreement) for SMI's use on the Golf Course, and SMI desires to purchase Reclaimed Water from the Company to use on the Golf Course, subject to the terms and conditions of this Agreement.

THEREFORE, in consideration of the premises and mutual agreements, covenants, promises, representations and understandings contained in this Agreement and other valuable consideration, the parties hereto have entered into the following agreement:

1. Gold Canyon agrees to supply the Company with Reclaimed Water in such quantities as Gold Canyon has available to it and SMI desires to purchase from the Company, and the Company agrees to sell and deliver such Reclaimed Water to SMI for use on the Golf Course subject to the terms and conditions of this Agreement.

2. Gold Canyon will deliver Reclaimed Water to the Company at such place or places as SMI desires delivery of same, for the price and upon the terms and conditions set forth in this Agreement.

3. Gold Canyon agrees that the Reclaimed Water to be delivered to the Company, by the time of delivery, will have been treated in accordance with all applicable governmental regulations. The Company shall have no obligation to accept delivery of or to purchase from Gold Canyon any Reclaimed Water which has not been treated in accordance with all applicable governmental regulations. Gold Canyon agrees upon request by the Company to provide the Company with copies of written reports received by Gold Canyon from any governmental agency having jurisdiction relating to the Reclaimed Water to be delivered and sold to the Company under this Agreement. Gold Canyon releases and agrees to indemnify, hold harmless and defend the Company, its directors, officers, employees and agents from and against any claim or cause of action or any liability, loss or expense, including reasonable attorney's fees, which the Company may incur or suffer by reason of any claim asserted by any person or entity arising or alleged to have arisen out of Gold Canyon's delivery to the Company of any Reclaimed Water which fails to satisfy the water quality requirements applicable to Reclaimed Water and its use.

4. The initial charge to the Company for all Reclaimed Water delivered to it by Gold Canyon under the terms of this Agreement will be $250.00 per acre foot or such other rate as is set therefor by the Commission. Gold

Canyon will render an invoice to the Company each month for Reclaimed Water delivered to the Company during the preceding month. Reclaimed Water billed by each invoice will be priced at the price in effect at the time of delivery. Each such invoice will be due and payable twenty (20) days after it is received by the Company. All taxes and governmental levies, if any, imposed on the production, sale or delivery of Reclaimed Water by Gold Canyon to the Company shall be included in said invoice. It shall be permissible for Gold Canyon to change the price for Reclaimed Water delivered to the Company under this Agreement; provided, however, that the Company's obligation to pay any such change shall be conditioned upon the Commission's approval of such change, and upon the Company's ability to apply such change to the price it charges SMI for Reclaimed Water deliveries under this Agreement.

5. Gold Canyon agrees not to sell, deliver, furnish or otherwise provide Reclaimed Water to any person or entity other than the Company in any of the Company's certificated areas.

6. The Company will have no obligation to accept delivery of or to pay for any Reclaimed Water which SMI will not accept for delivery or pay for.

7. The Company will deliver Reclaimed Water to SMI for SMI's use on the Golf Course at such place or places as the Reclaimed Water is delivered to the Company, and for the price and upon the terms and conditions set forth in this Agreement. The Company will sell and deliver to SMI only such quantities of Reclaimed Water as are (1) delivered to the Company by Gold Canyon, and (2) required by SMI for the purposes set forth in this Agreement. The Company will have no obligation whatsoever to provide Reclaimed Water at any time when Reclaimed Water is not available for any reason from Gold Canyon.

8. The Company will charge SMI the rate which Gold Canyon charges the Company under Paragraph 4 of this Agreement, for all Reclaimed Water which

the Company delivers to SMI under the terms of this Agreement, and all taxes and governmental levies invoiced by Gold Canyon, plus an additional monthly charge equal to the Company's minimum charge (excluding water) for the applicable meter size as determined under Paragraph 11 of this Agreement. The Company will render an invoice to SMI each month for Reclaimed Water delivered to SMI during the preceding month. Reclaimed Water billed by each invoice will be priced at the price in effect at the time of delivery. Each such invoice will be due and payable twenty (20) days after it is received by SMI. All taxes and governmental levies, if any, imposed on the production, sale or delivery of Reclaimed Water by the Company to SMI shall be included in said invoice.

9. SMI will be responsible for the construction, operation, maintenance, repair, and replacement of all facilities owned, operated or used by it to accept deliveries of Reclaimed Water beyond the place it accepts delivery from the Company to SMI. Except for amounts payable under Paragraph 4 of this Agreement, the Company will not be responsible for any costs associated with any Reclaimed Water it delivers to SMI after delivery of same to SMI.

10. Subject to the last sentence of this Paragraph 10, SMI agrees not to resell, deliver, furnish or otherwise provide Reclaimed Water to any person or entity in any of the Company's certificated areas. SMI further agrees that it will use Reclaimed Water delivered by the Company under this Agreement only on the Golf Course and in accordance with all applicable laws and regulations pertaining to the use of Reclaimed Water. SMI releases and agrees to indemnify, hold harmless and defend the Company, its directors, officers, employees and agents from and against any claim or cause of action or any liability, loss or expense, including reasonable attorney's fees, which the Company may incur or suffer by reason of any claim asserted by any person or entity

arising out of SMI's use of Reclaimed Water following delivery of Reclaimed Water to it by the Company. Notwithstanding the foregoing, SMI shall have the right at any time and from time to time to assign all or any part of its rights hereunder in accordance with Paragraph 14 of this Agreement.

11. Gold Canyon and SMI agree to allow the Company to install on their facilities at all points of delivery as provided in this Agreement, at the Company's cost, a water meter sized by the Company to measure the quantity of Reclaimed Water delivered to SMI. The readings from these water meters shall be the basis for all purchases and sales of Reclaimed Water under this Agreement.

Any party hereto may test the meter at its expense. If such meter is tested, the test results will be provided to the other parties by the party making the test.

12. This Agreement is subject to, and will become effective upon, the Commission's approval of this Agreement. Immediately upon such approval, Gold Canyon will amend the Application in the Docket to delete in its entirety any request for a certificate of convenience and necessity to provide Reclaimed Water service within the area designated in the Application, it being understood that such deletion shall not impair Gold Canyon's ability to sell Reclaimed Water to the Company pursuant to this Agreement. The Company agrees to withdraw its intervention in the Docket provided that the Commission approves Gold Canyon's amendment to the Application as provided herein or otherwise allows Gold Canyon to cease prosecuting that portion of the Application. Gold Canyon and SMI further agree that they: (1) will not request a certificate of convenience and necessity in the future to provide Reclaimed Water service within any of the Company's certificated areas; and (2) will not support the application of any other entity for such authority. If the

parties do not receive the Commission's approval of the action contemplated by the second sentence of this Paragraph 12 or if the Commission does not approve this Agreement, this Agreement shall be null and void and of no further effect as to any of the parties hereto and the parties shall be free to pursue whatever remedies or action they deem appropriate with respect to the Application, the Docket and the authority sought therein. If any party hereto determines that the Commission has approved the action contemplated by the second sentence of this Paragraph 12, or that the Commission has approved this Agreement, it may notify the other parties, in writing. Unless at least one of the other parties objects to the notice within ten (10) days thereof, the contingency of Commission approval shall be deemed satisfied, and this Agreement shall be in full force and effect.

13a. The parties hereto acknowledge that SMI and/or others may in the future own or operate within the area subject to the Application one or more other golf courses (the "Other Golf Course(s)") and/or other areas (the "Other Areas") that can use Reclaimed Water. Gold Canyon therefore agrees to supply the Company with Reclaimed Water in such quantities as Gold Canyon has available to it and which SMI desires to purchase from the Company for use on the Other Golf Course(s) or the Other Areas, and the Company agrees to sell same to SMI in accordance with the terms and conditions of this Agreement with all references to the Golf Course hereunder to be deemed to include a reference to the Other Golf Course(s) and the Other Areas.

b. Gold Canyon will deliver Reclaimed Water to the Company for delivery and sale to SMI at such points of delivery as SMI designates, for use on the Other Golf Course(s) or the Other Areas, for the price and upon the terms and conditions set forth in this Agreement.

c. It shall be the responsibility of SMI to construct or to have constructed any pipelines or other facilities necessary for the delivery of Reclaimed Water to the Other Golf Course(s) or the Other Areas, and the Company will have no responsibility whatsoever to construct such pipelines or other facilities.

14. SMI and any successors and assigns hereunder shall have the right at any time and from time to time to assign all or any part of their rights hereunder to one or more individuals or entities, retaining such rights as are deemed appropriate. Upon any such assignment, the assignee shall assume the obligations of SMI hereunder attributable to the rights assigned and SMI shall thereupon be deemed released from said obligations. Each reference to SMI hereunder shall be deemed to include a reference to its successors and assigns hereunder.

15. The Company hereby represents and warrants to Gold Canyon and SMI that it has the authority referred to in Recital A on page 1 hereof and that it will maintain transaction privilege (sales) tax licenses from the State of Arizona; Pinal County, if required by law (should it enact a transaction privilege (sales) tax), and any city or town to which the real property subject to the Application may be annexed (should such city or town have or enact a transaction privilege (sales) tax).

16. Each party to this Agreement represents and warrants to the other that it is authorized to enter into this Agreement and upon the execution hereof by the party and the other parties hereto, this Agreement, subject to the provisions of Paragraph 12 hereof, shall be binding and enforceable against the party in accordance with its terms.

17. The parties agree that the Company's provision of service to SMI shall be according to the terms and conditions of this Agreement and that the Company will not file a tariff for such with the Commission.

18. Written notices to any party to this Agreement concerning the Agreement shall be sent by certified mail or hand delivered, except that invoices and other similar communications may be sent by first class mail, addressed as follows:

To the Company:

Arizona Water Company
3805 North Black Canyon Highway
Post Office Box 29006
Phoenix, Arizona 85038-9006
Attention: President

To Gold Canyon:

Gold Canyon Sewer Company
4820 South Mill Avenue
Tempe, Arizona 85282
Attention: Mr. H. Jon Paynter

with a copy to:

Ronald E. Lowe, Esq.
Steptoe & Johnson
3300 North Central Avenue
Suite 1650
Phoenix, Arizona 85012

To SMI:

Superstition Mountain Investment, Ltd.
4812 South Mill Avenue
Tempe, Arizona 85282
Attention: Mr. Richard C. Kraemer

with a copy to:

Ronald E. Lowe, Esq.
Steptoe & Johnson
3300 North Central Avenue
Suite 1650
Phoenix, Arizona 85012

19. This Agreement shall remain in effect until terminated by the mutual agreement of the parties.

20. Revisions to this Agreement may be made provided they are in writing, signed and approved by duly authorized representatives of the parties hereto.

21. This Agreement contains the entire agreement by the Company, Gold Canyon and SMI with regard to the matter set forth in it and shall be binding upon and inure to the benefit of the parties hereto, jointly and severally, and the successors and assigns of each.

22. If, after initiation of operations under this Agreement, any party believes this Agreement is not functioning in accordance with the party's intention, such party should notify the other parties, in writing, of its desire to discuss, negotiate and resolve the perceived inequity and the parties shall meet as often as necessary and expend all good faith efforts in order to resolve the concern of the party providing notice of its desire for negotiations.

23. In the event any litigation arises out of this Agreement, the prevailing party or parties in such litigation shall be entitled to recover from the losing party or parties in such litigation all costs, expenses and fees incurred therein by said prevailing party or parties (including such attorneys' fees as shall be fixed by the court).

24. The Company, Gold Canyon and SMI agree that they will execute any further instruments and perform any further acts which are or may become reasonably necessary to carry out the terms of this Agreement, including, but not limited to, acts or instruments related to the Arizona Department of Environmental Quality.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day, month and year first hereinabove written by their duly authorized representatives.

ARIZONA WATER COMPANY

By R. E. Polanski

Its PRESIDENT

GOLD CANYON SEWER COMPANY

By

Its PRES.

SUPERSTITION MOUNTAIN INVESTMENT, LTD., an Illinois limited partnership

By KINGS RANCH LIMITED PARTNERSHIP, an Illinois limited partnership, general partner

By SMI MANAGEMENT, INC., an Illinois corporation, general partner

By

Its ASST. SEC.

EXHIBIT WMG-1

EXHIBIT
webber
CT-126
ADMITTED

EXHIBIT "A"

SETTLEMENT AGREEMENT

This Settlement Agreement ("Agreement") is entered into as of May 15th, 2008 between Arizona Water Company and Global Water Resources, LLC and its subsidiaries and affiliates, including but not limited to Global Water Inc., Global Water - Santa Cruz Water Company, Global Water - Palo Verde Utilities Company, Francisco Grande Utility Company, CP Water Company, Global Water - Picacho Cove Water Company and Global Water - Picacho Cove Utilities Company (collectively, "Global" or the "Global Entities"). Arizona Water Company and the Global Entities are referred to as the "Parties."

RECITALS

A. Arizona Water Company and certain of the Global Entities are parties to certain cases pending before the Arizona Corporation Commission ("Commission") that are listed in Exhibit A to this Agreement and incorporated by this reference. Collectively, these cases are referred to as the "Related Proceedings."

B. In the Related Proceedings, one or more of the Parties filed an application for extension of its Certificate of Convenience and Necessity ("CCN"), intervened in and protested one or more of the CCN applications, filed a complaint with the Commission involving one or more of the Parties, sought Commission approval for the transfer of their CCN, or intervened in and protested an application for the transfer of CCNs.

C. The Parties desire to end their disputes and to provide for the resolution of the Related Proceedings on certain terms and conditions that are in the public interest. The Parties' agreement concerning a comprehensive settlement of their disputes in the Related Proceedings has compelling public benefits. It is therefore in the public interest for the Commission to

approve this Agreement, including the planning areas and CCN Applications amended as set forth below, for the following reasons, among others:

(1) Arizona Water Company, Global Water - Santa Cruz Water Company, Francisco Grande Utility Company, CP Water Company, and Global Water - Picacho Cove Water Company (collectively, the "Concurring Water Utilities") have identified and established logical and supportable geographic boundaries between their respective CCNs and planning areas, such as major thoroughfares like Kortsen Road and John Wayne Parkway;

(2) The expanded use of reclaimed water in areas where the CCNs and planning areas of Arizona Water Company and Global Water - Palo Verde Utilities Company overlap (the "Overlap Areas") will reduce reliance on other water sources and on the Central Arizona Groundwater Conservation District;

(3) Two large, regionally significant water providers will set aside their differences and work cooperatively in a manner that will assist in water conservation efforts and prudent, sustainable uses of groundwater and other water resources; and

(4) The Parties, Commission and Commission Staff will be spared the expense and resources necessary to adjudicate the numerous disputed cases between the Parties.

D. A central premise and material consideration of the Parties' settlement of the Related Proceedings is their agreement about the urgent need for the Concurring Water Utilities to undertake and continue their long-term master planning process. The Parties' planning areas lie within an Active Management Area that has limited access to surface water with projected continued record growth. The resulting demands on water resources require the Concurring

Water Utilities to engage in long-term water resource and service planning to assure that current and future customers continue to receive reliable water service. That process requires the Concurring Water Utilities to plan, design, construct, finance, and operate water supply, treatment, storage, and transmission and distribution infrastructure to meet the public water supply requirements within defined geographic areas which include their existing CCNs and in their respective CCN extensions and planning areas as provided for in this Agreement.

NOW, THEREFORE, in consideration of the mutual promises, obligations, representations and covenants contained in this Agreement, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. Compromise of Dispute. The Parties acknowledge, represent and warrant the truth, accuracy and correctness of the foregoing recitals. The Parties each agree that this Agreement is a compromise of disputed claims, and that fully implementing this Agreement will advance important public policies favoring orderly and efficient regional planning, development, and management of water supplies.

2. Planning Area Boundary Settlement. As part of a comprehensive settlement of their disputes in the Related Proceedings, the Parties have reached agreement on the logical and supportable geographic boundaries between the Concurring Water Utilities' respective planning areas. Arizona Water Company shall amend its Pinal Valley Water System Planning Area and Global shall amend its planning areas (collectively the "Planning Areas") as set forth on the Settlement Map dated April 18, 2008 which is attached as Exhibit B to this Agreement and incorporated by this reference (the "Settlement Map").

3. Amendments to CCN Applications.

a. Arizona Water Company shall amend its CCN application in Docket W-01445A-06-0199 to exclude from its application the area shown on the Settlement Map as Arizona Water Company CCN Application Deletion Area.

b. Arizona Water Company shall amend its Planning Area and amend its CCN application in Docket W-01445A-06-0199 to include the area west to John Wayne Parkway, as shown on the Settlement Map as Arizona Water Company Addition to CCN Application Area.

c. Global Water - Santa Cruz Water Company shall amend its CCN application in Docket W-03576A-05-0926 to exclude the areas shown on the Settlement Map as Santa Cruz Water Company CCN Application Deletion Areas.

d. Global Water - Santa Cruz Water Company shall include within its Planning Area those areas shown on the Settlement Map as Arizona Water Company CCN Application Deletion Area which are not presently included in Global Water - Santa Cruz Water Company's CCN application in Docket W-03576A-05-0926.

e. The Concurring Water Utilities shall jointly apply for and support the Commission's approval of the Parties' Planning Areas and CCN applications as amended in accordance with the Settlement Map (the "Amended Planning Areas and CCN Applications").

4. Procedures to Enforce Settlement.

a. The Parties shall prepare and file a joint, stipulated motion identifying and jointly supporting and requesting Commission approval of the Amended Planning Areas and CCN Applications in accordance with the Commission's procedures.

b. Global shall withdraw its objections to Arizona Water Company's CCN application in Docket W-01445A-06-0199 et seq., as amended.

c. Arizona Water Company shall withdraw its objection to Global's application for approval of the transfer to Global Water - Santa Cruz Water Company and Global Water - Palo Verde Utilities Company of the CCNs of Francisco Grande Utility Company and CP Water Company.

d. Arizona Water Company shall withdraw its objections to Global Water - Santa Cruz Water Company's CCN application in Docket W-03576A-05-0926, as amended.

e. Arizona Water Company shall withdraw its objection to Global Water - Palo Verde Utilities Company's applications for wastewater CCNs in Arizona Water Company's existing CCN or its amended CCN application.

f. The Concurring Water Utilities shall jointly request and actively support Commission approval of Arizona Water Company's CCN application in Docket No. W-01445A-04-0743.

g. Following the Commission's approval of the Amended Planning Areas and CCN Applications, Arizona Water Company and Global shall jointly request the Commission to dismiss Arizona Water Company's complaint against Global, without prejudice, in accordance with the terms of this Agreement.

5. Condition of Commission Approval of Amended Planning Areas and CCN Applications; Contingencies. The terms and conditions of this Agreement are expressly subject to, among other things, the condition that the Commission approve the Amended Planning Areas

and CCN Applications. Any Party may withdraw from this Agreement and terminate any of the agreements and understandings contained herein if the Commission: (i) does not approve the Amended Planning Areas and CCN Applications; (ii) does not dismiss the complaint case as contemplated in this Agreement; or (iii) imposes conditions or restrictions in any order which any Party determines to be materially burdensome or unacceptable. If the Commission's decision or decisions in the Related Proceedings causes a Party to invoke one of the foregoing contingencies, the Parties agree to jointly apply for rehearing and, if one of the Parties deems it appropriate, support an appeal of the Commission's decision or decisions in a court of competent jurisdiction. The Parties shall communicate the substance of this provision to the Commission so that the Commission understands that the settlement is subject to the foregoing contingencies, and the joint motion to the Commission to approve the Concurring Water Utilities' Amended Planning Areas and CCN Applications shall include language providing that if the Commission fails to issue an order adopting all material terms of this Agreement, any or all of the Parties may withdraw from this Agreement.

6. Agreement Not To Interfere.

a. The Parties shall respect and not interfere with each other's existing CCNs or CCNs to be approved in the Related Proceedings as set forth on the Settlement Map.

b. The Parties shall respect and not interfere with each other's Planning Areas as set forth on the Settlement Map in the same fashion and to the same extent as they shall respect and not interfere with each other's CCNs.

c. The Parties' respect and non-interference with each other's CCNs and Planning Areas means they shall not apply for, or encourage others to apply for, water CCNs in the other

Parties' CCNs or Planning Areas. The Parties shall not directly or indirectly solicit or encourage any person, entity, landowner, or developer to request water service from any entity other than the Concurring Water Utility in whose CCN or Planning Area such water service is requested.

7. Agreement to Cooperate.

a. Global, including without limitation its subsidiary Global Water - Palo Verde Utilities Company, shall enter into an agreement with Arizona Water Company to supply available reclaimed water to Arizona Water Company, if requested, to be sold and delivered by Arizona Water Company within its CCN and Planning Area. In order to ensure that maximum efficiencies can be attained by Arizona Water Company in its deployment of potable and reclaimed water, neither Global nor Global Water - Palo Verde Utilities Company shall sell or distribute reclaimed water within Arizona Water Company's CCN or Planning Area except to Arizona Water Company, which shall be the retail provider of reclaimed water in such areas. Global Water – Palo Verde Utilities Company shall not be obligated to sell reclaimed water to Arizona Water Company in any amount in excess of the amount of reclaimed water generated in the Overlap Areas.

b. Global and Arizona Water Company shall work cooperatively in connection with Global's efforts to provide wastewater service within the western part of Arizona Water Company's CCN and Planning Area in places where the City of Casa Grande or other entity is not planning to provide wastewater service.

8. Operations in the Overlap Areas. The Managers of Arizona Water Company's Casa Grande Division and Global Water - Palo Verde Utilities Company shall meet as required to exchange information and coordinate the provision of service in the Overlap Areas.

9. Resolution of Complaint. Arizona Water Company shall withdraw the Complaint against the Global Entities as follows:

a. Following the Commission's approval of the Amended Planning Areas and CCN Applications, the Parties shall jointly request the Commission to dismiss the Complaint without prejudice.

b. The Parties agree that such disposition of the Complaint shall not be deemed to be an admission of liability, responsibility, or wrongdoing by Global nor an admission, acknowledgment, acceptance, or approval by Arizona Water Company of any of Global's activities or practices.

c. Arizona Water Company agrees not to raise or pursue allegations such as those asserted in its Complaint against Global as long as Global does not protest, oppose, or interfere with any CCN or prospective CCN of Arizona Water Company. Nothing in the foregoing prohibits either Party from filing competing CCN applications or raising or pursuing such allegations or arguments as they deem appropriate in areas outside of those set forth in the Settlement Map.

10. Fees and Costs. The Parties agree that each Party shall bear its own attorney fees, costs, expert witness fees, and other litigation expenses for each of the Related Proceedings and this Agreement. In the event a dispute arises between the Parties to enforce the terms of this Agreement, the successful or prevailing Party to such dispute shall be entitled to an award of its reasonable attorneys' fees, costs and expenses, whether or not an action is filed.

11. Advice and Assistance of Counsel. Each Party represents and warrants that the terms of this Agreement have been completely read, fully understood and voluntarily accepted, with advice of counsel, and that each of the Parties has participated in its preparation.

12. Entire Agreement. This Agreement shall constitute the entire agreement between the Parties with respect to its subject matter, and supersedes any prior verbal or written agreement. No modification of this Agreement shall be binding upon any Party unless it is in writing and executed by duly authorized representatives of the Parties.

13. Parties Affected by Agreement. The terms and conditions, representations and covenants of this Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors, personal representatives, heirs and assigns.

14. Time of the Essence. Time is of the essence and each Party shall diligently perform its obligations hereunder in a timely fashion in accordance with the provisions of this Agreement.

15. Governing Law. This Agreement shall be governed by and construed according to the laws of the State of Arizona.

16. Additional Acts. The Parties agree to cooperate fully to take all additional actions that may be necessary or appropriate to give full force and effect to the terms and intent of this Agreement.

17. Counterparts. This Agreement may be executed in any number of counterparts. Each such counterpart shall be deemed to be an original instrument, but all such counterparts together shall constitute one agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

Arizona Water Company

William M Garfield

By: WILLIAM M. GARFIELD
Its: President

Global Water Resources, LLC

By:
Its:

Global Water Inc.

By:
Its:

Global Water – Santa Cruz Water Company

By:
Its:

Global Water – Palo Verde Utilities Company

By:
Its:

Francisco Grande Utility Company

By:
Its:

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

Arizona Water Company

By:
Its:

Global Water Resources, LLC

By: Trevor T. Hill
Its: President

Global Water Inc.

By: Trevor T. Hill
Its: President

Global Water – Santa Cruz Water Company

By: Trevor T. Hill
Its: President

Global Water – Palo Verde Utilities Company

By: Trevor T. Hill
Its: President

Francisco Grande Utility Company

By: Trevor T. Hill
Its: President

CP Water Company

By: Trevor T. Hill
Its: President

Global Water - Picacho Cove Water Company

By: Trevor T. Hill
Its: President

Global Water – Picacho Cove Utilities Company

By: Trevor T. Hill
Its: President

EXHIBIT FKS-11

EXHIBIT
CT-127
ADMITTED

794380.1

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING ("MOU") is made and entered into as of the 25th day of July, 2014, by and between ARIZONA WATER COMPANY, an Arizona corporation ("Arizona Water") and PERC WATER CORPORATION, a California corporation ("PERC").

RECITALS

A. Arizona Water is a public service corporation that owns and operates water systems and provides water service in various cities, towns, and communities located in eight counties in Arizona under and subject to the jurisdiction of the Arizona Corporation Commission (the "Commission"). Arizona Water also anticipates providing sewer/wastewater service to future developments in portions of its service areas where no other sewer/wastewater service provider is available to provide such service, including but not limited to the areas shown on Attachment A, hereto.

B. PERC designs, builds, and operates sewer/wastewater treatment facilities in Arizona and California.

C. The parties are interested in a cooperative arrangement whereby Arizona Water may invite PERC to assist Arizona Water in providing sewer/wastewater service to developments or identified regions in Arizona Water's existing service areas or additions to those existing service areas.

TERMS OF UNDERSTANDING

In consideration of the mutual understandings, covenants, promises, representations, and agreements contained in this MOU and other good and valuable consideration, the parties hereto agree as follows:

1. Cooperation. Arizona Water and PERC intend to cooperate as follows:

a. Arizona Water plans to provide water service to developments within its existing service areas and to additions to its existing service areas and to invite PERC to join with Arizona Water to provide sewer/wastewater service to such developments where no other sewer/wastewater service provider is available to provide such service.

b. Arizona Water will notify PERC of the opportunity to join with Arizona Water to provide sewer/wastewater service in a development or identified region within Arizona Water's service area or an intended addition to Arizona Water's existing service area.

c. PERC may accept or respond by meeting and conferring with Arizona Water representatives about the particular details and requirements for providing such sewer/wastewater service.

d. The parties will cooperate fully in connection with planning their respective services to such developments or regions, including, if necessary, to support Arizona Water's efforts to obtain Commission approval for it to provide such services and, if necessary, such additional service areas.

e. Any agreement between the parties to provide sewer/wastewater service in Arizona Water's service areas will provide mutually acceptable terms and conditions for PERC to deliver all or part of the effluent or reclaimed water PERC produces to Arizona Water for direct or indirect beneficial use by its customers.

2. Non-Disclosure.

a. Except as the parties otherwise agree, neither party will disclose any of the information disclosed, shared, provided by, or obtained from the other party, because any such disclosure will prejudice such other party's ability to successfully conduct its business, and because any such disclosure will cause irreparable harm. Exceptions to the foregoing include information which:

- at the time of disclosure was readily available to the public;
- becomes readily available to the public, other than through a breach of this MOU;
- either party can establish was in its possession prior to the date of disclosure of such information; or
- is required to be disclosed to the Commission in connection with a proceeding in which Arizona Water or PERC are parties, or in accordance with the order or decree of the Commission or a court of competent jurisdiction or by applicable law or regulation, provided that both parties agree to give each other thirty (30) days advance written notice prior to disclosure in order that the affected party may seek a protective order or other appropriate relief.

b. Each party understands that the parties' joint or cooperative disclosure of such information in connection with the developments referred to in section 1 above, or a disclosure with the written consent of the parties, will not violate the terms of this section.

3. Time is of the Essence. Arizona Water and PERC agree that time is of the essence and that each will diligently perform its commitments hereunder in a timely fashion.

4. Notice Provisions. All notices pursuant to this MOU shall be in writing and sent by first class mail or by courier (such as Federal Express) or by hand delivery addressed as follows:

To Arizona Water: Arizona Water Company
3805 N. Black Canyon Highway
Phoenix, Arizona 85015-5351
Attention: President

or

Post Office Box 29006
Phoenix, Arizona 85038-9006
Attention: President

To PERC: PERC Water Corporation
959 South Coast Drive, Suite 315
Costa Mesa, CA 92626
Attention: President

or to such other address or addresses as either party may designate by written notice to the other party. Notices shall be deemed given, received, and effective on the date of delivery, if hand delivered or delivered by courier, or two business days after deposit in the U.S. Mail, postage prepaid, with proof of mailing from the U.S. Postal Service.

5. Execution in Counterparts. This MOU may be executed in any number of counterparts, and each executed counterpart shall have the same force and effect as an original instrument.

6. Succession. This MOU shall inure to the benefit of the successors and assigns of the parties hereto. Any assignment requires the non-assigning party's prior written approval, which shall not be unreasonably withheld. As a condition precedent to the non-assigning party's approval of any assignment, the assignee must be acceptable to the non-assigning party and satisfy the non-assigning party of the assignee's ability to fully perform hereunder. Any assignee must assume all obligations of the assigning party hereunder and, upon the non-assigning party's written approval, the assigning party shall be released from any further obligation hereunder.

7. Complete Agreement. This instrument contains the entire understanding between the parties with respect to the subject matter contained herein and no amendment or modification shall be binding unless made in writing and signed by duly authorized representatives of the parties hereto.

8. Headings. Headings on each paragraph or subparagraph are merely for convenience and shall under no circumstances be used to interpret or construe this MOU.

9. Duration. This MOU shall remain in effect until terminated by either of the parties hereto, or two years from the date of this MOU, whichever occurs first.

10. Attorney's Fees. In the event any claim, controversy, or legal action arises out of this MOU, the prevailing party shall be entitled to recover from the other party all costs, expenses, and fees incurred therein by said prevailing party (including such attorney's fees and costs as shall be fixed by the court).

11. Forum Selection and Choice of Law. Any action or suit arising out of or relating to this MOU shall take place in a court of competent jurisdiction in Maricopa County, Arizona. Arizona law shall govern this MOU without regard to the choice of law provisions thereof.

12. Further Instruments. Arizona Water and PERC agree that they shall execute any further instruments and perform any further acts which are or may become reasonably necessary to carry out the terms of this MOU.

13. Waiver. No waiver hereunder, expressed or implied, shall imply any other waiver, at the same or subsequent time, whether of the same obligation or of any other obligation. No waiver hereunder shall be deemed effective unless expressly set forth in writing.

14. Drafter. Both parties have drafted this MOU and this MOU shall not be construed against either party as the drafter thereof.

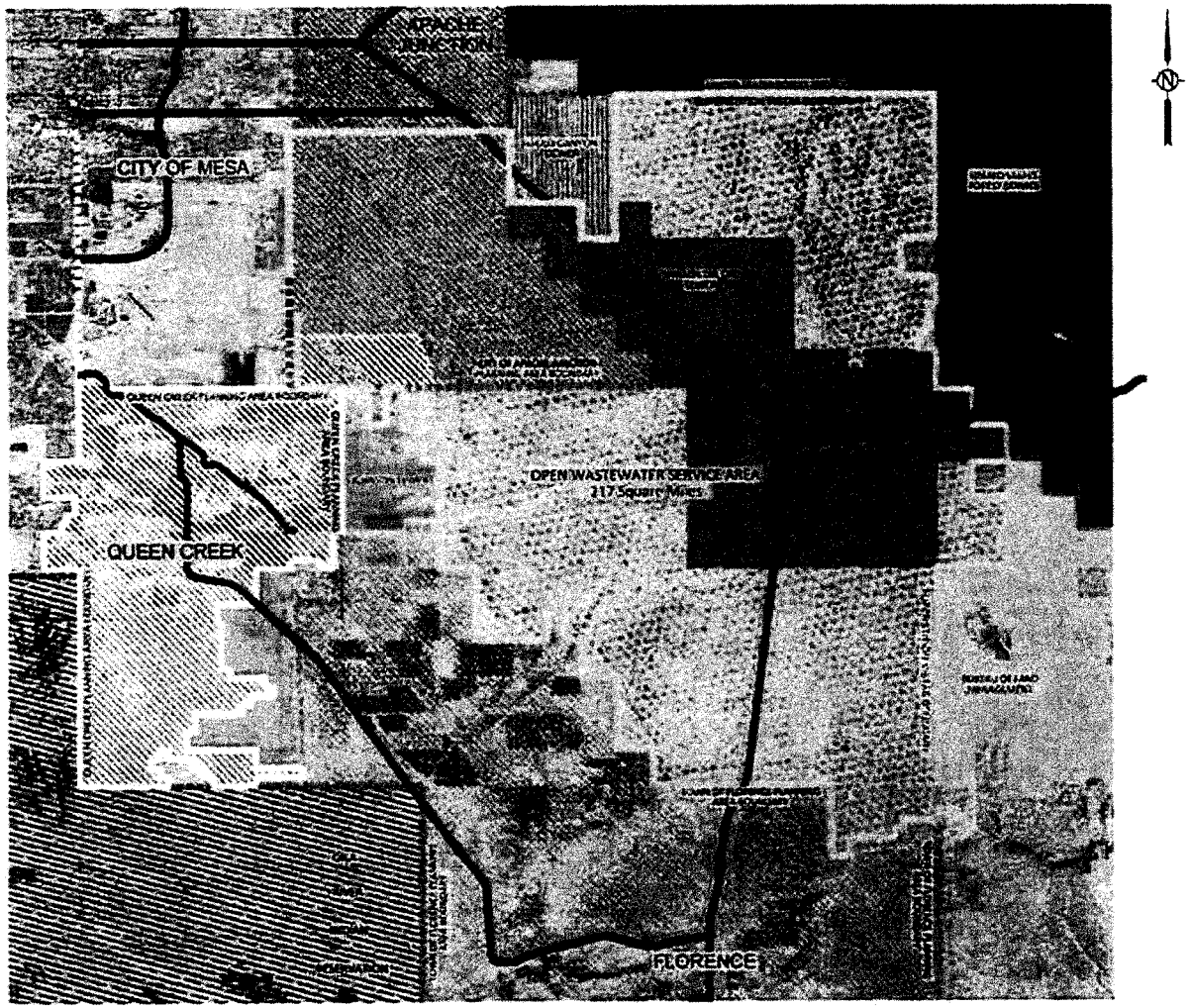
IN WITNESS WHEREOF, each of the parties hereto has caused this instrument to be executed by their respective officers theretofore duly authorized as of the date first written above.

ARIZONA WATER COMPANY,
an Arizona corporation

By: William M Mansfield
Its: President and COO

PERC WATER CORPORATION,
a California corporation

By: _____
Its: President

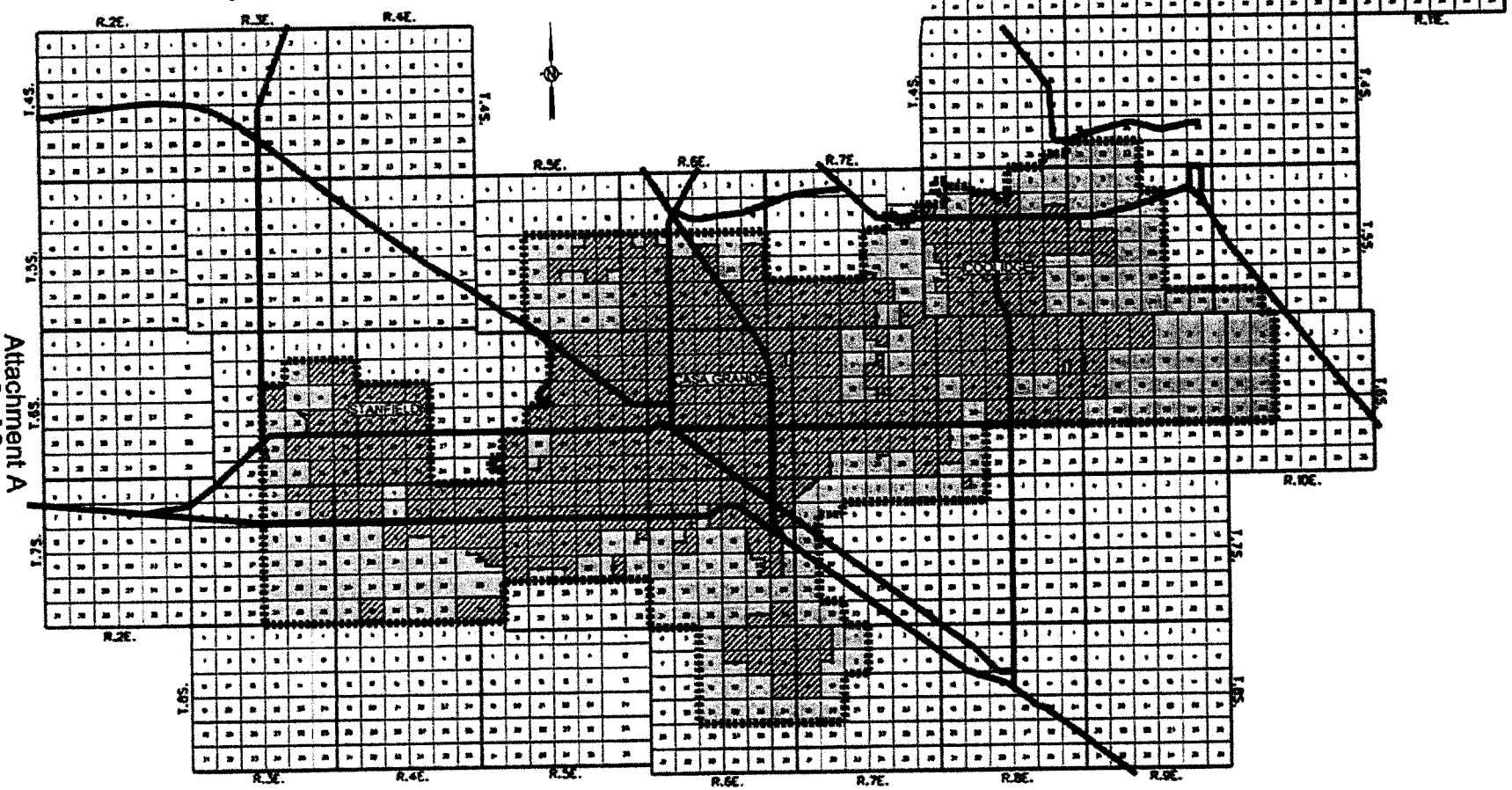


Superstition Vistas

SUPERSTITION VISTAS LEGEND

- Superstition Vistas Study Area
- Arizona Water Company CCN within the Superstition Vista Study Area
- Bureau of Land Management
- United States Forest Service
- Entrada Del Oro Sewer
- Johnson Sewer
- Gold Canyon Sewer (Liberty)
- City of Apache Junction Planning Area
- Town of Florence Planning Area
- City of Queen Creek Planning Area
- Gila River Indian Community

Arizona Water Company Pinal Valley Water System Planning Area



Arizona Water Company Pinal Valley CCN (269 Sq. Mi.)

Arizona Water Company Pinal Valley Water System Planning Area Boundary (477 Sq.Mi.)

Attachment A
2 of 2

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER- CHAIRMAN
WILLIAM A. MUNDELL
MIKE GLEASON
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY.	DOCKET NO. W-01445A-06-0199
IN THE MATTER OF THE APPLICATION OF PALO VERDE UTILITIES COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY	DOCKET NO. SW-03575A-05-0926
IN THE MATTER OF THE APPLICATION OF SANTA CRUZ WATER COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY	DOCKET NO. W-03576A-05-0926

Direct Testimony of

Rita Maguire
Maguire & Pearce, PLLC

EXHIBIT
CT-128
ADMITTED

on Behalf of

Palo Verde Utilities Company and
Santa Cruz Water Company

January 26, 2007

Q. Please state your name and employer.

A. My name is Rita Maguire. I am a Member of the law firm of Maguire & Pearce, PLLC.

Q. Please state your business address.

A. 2999 North 44th Street, Suite 630, Phoenix, Arizona 85018.

Q. Please describe your educational background and work experience.

A. I am a graduate of Arizona State University with a Bachelor of Science Degree (1977), a Master of Business Administration (1979) and a Juris Doctorate (1988). From 1993 through 2001, I served as the Director of the Arizona Department of Water Resources ("ADWR"). I was responsible for all final administrative actions of the agency including those taken pursuant to the Arizona Groundwater Management Act. This included review and approval of any Designations or Certificates of Assured Water Supply. During my tenure as Director, ADWR promulgated the Assured Water Supply Rules ("AWS Rules"). In addition, the Third Management Plan was developed and adopted under my direction which is in effect until 2010. I also served a Co-Chair of Governor Hull's Water Management Commission which made a number of recommendations concerning the operation of the Assured Water Supply Rules in the Pinal Active Management Area.

Before serving as ADWR's Director, I was the Environmental Policy Advisor to Governor Symington. Among my responsibilities in that position was to work with the state legislature, stakeholders and the general public regarding the operations of the state's ten natural resource agencies. I also have extensive professional experience drafting state legislation having served as a Committee Research Analyst in the Arizona Legislature during four legislative sessions. My private sector experience includes working as a licensed attorney in the areas of environmental, water, utilities and administrative law. I am also the founding President of the Arizona Center for Public Policy, a non-partisan

research organization that publishes objective research on major public policy issues in Arizona. As the author of numerous studies and publications on surface water and groundwater management, I am a recognized expert in water policy in the Southwest. My 20 plus years of experience in public policy development and application, as well as management positions in both the private and public sectors, and as a licensed attorney, all provide a demonstrated level of expertise in natural resources policy at the state, regional and national levels of government.

Q. On whose behalf are you testifying in this case?

A. I have been retained by Global Water Resources, LLC ("Global") to testify on behalf of Santa Cruz Water Company and Palo Verde Utilities Company.

Q. Have you previously testified before the Arizona Corporation Commission?

A. Yes.

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

A. The purpose of my testimony is to provide the Commission with insight into the driving principals behind the Arizona Groundwater Management Act ("GMA") and the key regulatory programs ADWR promulgated pursuant to the GMA. My testimony will include a brief history of the state's water laws, the state's water budget and projected water needs in the future. I will also discuss the major challenges facing the state, particularly in the Pinal County Active Management Area ("Pinal AMA"), to ensure the long-term availability of high quality, reliable and affordable water supplies for its residents.

Q. Would you briefly describe the history of water management in Arizona?

A. Arizona's regulation of water dates back to 1919 when the legislature adopted the state's Public Water Code (A.R.S. § 45-151 et. seq.) providing that surface water could only be appropriated upon the filing of an application with the state's water commission. Over time, the state's regulation of water has evolved to recognize four distinct categories of water: (1) appropriable surface water[1]; (2) percolating groundwater; (3) Colorado River water; and, (4) effluent. Different laws apply to each type of water and how it is to be used, delivered and managed in Arizona.

Q. Would you briefly describe Arizona's water budget, specifically, how much water is used annually and what are the primary sources of water?

A. Arizona's annual demand is approximately 7.2 million acre feet ("a-f"). The major surface water supplies come from the Colorado River system (2.8 million a-f) and the Gila River system (less than 2.0 million a-f). The ADWR estimates that effluent accounts for about 4% of the state's total water budget. The rest is pumped groundwater.[2]

Q. Could you describe the concerns about groundwater management in Arizona?

A. When it comes to groundwater, Arizona has long been at the forefront of its management and conservation. Despite its arid climate, Arizona has vast supplies of groundwater. But it took many centuries to store the quantities of groundwater located in the state's aquifers. For this reason, groundwater is not considered a renewable source of water. Furthermore, groundwater pumping far exceeds natural recharge rates in Arizona's most populated areas. Overdrafting of aquifers leads to aquifer compaction which permanently reduces an

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[1] Some surface water rights in the state have been determined through judicial action in state and federal courts. They are known as decreed rights. Surface water rights have been decreed along the Gila River in Pinal County in the Benson v. Allison Decree (1917) which includes parts of the Gila River Indian Community (GRIC) and the Globe Equity No. 59 (1935) which takes in part of the GRIC, San Carlos Apache Reservation and non-Indian land above and below Coolidge Dam.

[2] ADWR Water Atlas, Vol. 1, p. 21, June 2006.

aquifer's storage capacity and leads to earth fissures and subsidence on the land surface above the aquifer. In addition, as the water table declines, groundwater becomes more expensive to extract and diminishes in quality. Most importantly, when groundwater supplies are over utilized, they are no longer available when drought conditions diminish surface water supplies, a frequent occurrence in Arizona.

Q. Was it these concerns that lead to state leaders adopting the GMA?

A. Yes. Concern about the local impacts of groundwater overdraft led state leaders to adopt the GMA in 1980 (A.R.S. § 45-401 et. seq.). The GMA put most of the state's highly populated areas on the path of sustainable groundwater supplies by requiring the "safe yield" of the aquifers in designated Active Management Areas ("AMAs") by 2025. The GMA defines safe yield as a "groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an AMA and the annual amount of natural and artificial recharge in the AMA."[3] Four of the state's five AMAs use safe yield as the principal means for determining how groundwater is managed within their boundaries.[4]

Q. What happens to the state's water supplies when droughts occur?

A. Dendrohydrologists at the University of Arizona and elsewhere have concluded that extended dry/wet cycles of approximately 20-30 years may be a normal climatic condition in the southwest.[5] The Colorado Basin, which includes most of Arizona, currently is in the ninth year of a severe drought. Lake Mead has dropped 70 feet since the drought began in 2000, reducing the water in storage by nearly 50%.[6] Consequently, the seven states that

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[3] A.R.S. § 45-561.12.

[4] The Groundwater Management Act established four AMAs, in Phoenix, Prescott, Tucson, and in Pinal County. In 1994, the Santa Cruz AMA was created. The Pinal AMA is the only AMA that is not managed for the safe yield of its aquifer.

[5] Jenna McPhee, Andrew Comrie, and Gregg Garfin, *Drought and Climate in Arizona: Top Ten Questions and Answers* 20 (Climate Assessment for the Southwest 2004), *available at* http://www.ispe.arizona.edu/climas/learn/drought/DroughtQ&A.pdf.

[6] See attached Exhibit 1.

share the Colorado River[7] are negotiating an agreement that would allocate shortages among the water providers in these states should storage within the system's reservoirs continue to decline.

The risk of drought is only one of several threats to the security of Arizona's water supplies from the Colorado River. It is widely acknowledged today that the River was over allocated when it was divided among the seven states and Mexico in the 1920's. Back then, hydrologists believed that average annual flows in the Colorado River were between 16 to 18 million a-f. We now believe that the River's annual average flows are closer to 13 to 15 million a-f. Unfortunately, the combined rights to the River equal 16.5 million a-f annually, exceeding the River's normal flows by about 2 million a-f.

This over-allocation of the River creates an inherent threat to the security of the River's supplies. Another threat to Arizona's Colorado River allocation is the junior priority status of the 1.5 million a-f of Colorado River water delivered through the Central Arizona Project ("CAP"). When drought conditions reduce deliveries to the three Lower Basin states (Arizona, California and Nevada), Arizona's CAP supplies are the first to be cut back. When this happens, groundwater recovery wells within the CAP service area (Maricopa, Pinal and Pima counties) must pump groundwater to replace lost surface water.

Q. Is Arizona's other source of surface water, the Gila River system, immune from drought?

A. Arizona's second major source of surface water comes from the Gila River system which includes the Salt, Verde and Gila Rivers. It is generally believed that the state's two major surface water systems do not experience droughts at the same time. But both the Colorado River system and the Gila River system experienced severe drought conditions from 2000

[7] Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming.

to 2003. This caused the Salt River Project ("SRP") to substantially reduce its deliveries to the Phoenix metropolitan area and to rely heavily on groundwater wells to replace some of its surface water supplies to its municipal customers. SRP became the largest purchaser of excess CAP water during two of those years. The drought has also caused a number of cities in the area to initiate early drought response programs.

Q. How have water providers generally dealt with drought conditions?

A. As the population increases throughout the Southwest, the impacts of drought conditions are felt more quickly. In order to mitigate the impacts, water providers are actively engaged in developing alternative supplies to replace surface water reduced by droughts. They also seek to reduce the demand for potable drinking water by utilizing reclaimed water and effluent wherever possible. For example, Southern Nevada Water Authority is able to use almost twice its annual allocation of Colorado River water by returning highly treated wastewater to the Colorado River via the Las Vegas Wash which flows into Lake Mead. By treating Colorado River water after it is used, and returning it to the lake, Las Vegas receives return-flow credits that enable the city to sustain a much larger population than would otherwise be possible. This water is later delivered downstream to Colorado River contractors in California and Arizona, including CAP water.

Q. Would you briefly describe groundwater management in the Pinal AMA?

A. The Pinal AMA is the only AMA in which the safe yield goal does not apply. But an effort is underway to apply that goal to municipal and industrial uses of groundwater in recognition of the rapid pace of growth in the AMA.[8] If the safe yield goal is adopted, every proposed subdivision will be limited in the amount of groundwater in its water budget, and access to groundwater will be limited to a depth of 1,100 feet below land

[8] The modified Pinal AMA Assured Water Supply Rules were originally anticipated to be adopted by January 1, 2007. However, they have been delayed due to extensive comments received during the public comment period. The Pinal AMA staff is now hoping to have the Rules in place sometime during the fall of 2007.

surface.[9] The ADWR will use these criteria when determining whether a proposed subdivision meets the requirements of the state's Assured Water Supply ("AWS") Program, before the local governing authority may approve the development to go forward to construction. These requirements are intended to preserve groundwater in the basin, maximize the efficient use of water and promote its long-term water availability.

Q. What is the expected municipal growth potential in the Pinal AMA?

A. Economic forecasters are projecting that the Phoenix and Tucson metropolitan areas will continue to grow along Interstate 10, merging in Pinal County within a decade.[10] Referred to as the "Arizona Sun Corridor" this regional metropolitan area is expected to have a population of more than 10 million by 2040.

Q. Because of this growth, are you concerned about the ability to manage groundwater within the Pinal AMA?

A. Yes. Unlike the Phoenix and Tucson AMAs, the Pinal AMA aquifer is not currently managed for safe yield. Instead, its management goal is to "allow development of non-irrigation uses and to preserve existing agricultural economies for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.[11] The result is that access to groundwater is relatively unrestricted for municipal and industrial uses, and little or no groundwater replenishment is required for new subdivisions in the AMA. Consequently, ADWR predicts that groundwater demands in the Pinal AMA will exceed the AMA's renewable groundwater supplies within the next two to three years

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[9] Proposed A.C.C. R12-15-716 (B)(2)(b), submitted to the Governors Regulatory Review Council or "G.R.R.C." on August 16, 2006. Note, the AWS Rules in the Phoenix, Tucson and Prescott AMA limit access to groundwater to a maximum depth of 1,000 feet.

[10] Marshall Vest, Director, Economic and Business Research Center, University of Arizona's Eller College of Management, Forecast Update, 3rd Quarter 2006 (Aug. 30, 2006).

[11] A.R.S. § 45-562 (B).

unless the new safe yield requirements are adopted.[12] This dire forecast prompted elected officials, community leaders and regulators to work towards adoption of a revised management goal in the Pinal AMA for municipal and industrial development. Concerns about the basin's potential overdraft prompted the Gila River Indian Community ("GRIC") to call for a buffer zone adjacent to the reservation that would impose additional groundwater pumping restrictions on non-Indian development as part of the Arizona Water Settlements Act.[13]

Q. How will the future development in the Pinal AMA impact its groundwater supplies?

A. Perhaps more so than any other AMA, the Pinal AMA's water needs are the most difficult to predict. In addition to the booming residential development occurring along I-10, the AMA is the principal location for the accumulation of long-term storage credits by the Arizona Water Bank Authority ("AWBA"). More than one million acre-feet of long-term storage credits are available to the AWBA for recovery in the future. These credits will be recovered from the AMA's aquifer on behalf of the state's municipalities with CAP subcontracts, as well as California's and Nevada's major municipal providers with Colorado River contracts. Pinal County is also home to three Native American communities whose use of water is unregulated by the state. Both the GRIC and the Ak Chin Tribe actively farm their lands and have indicated their intentions to continue to do so indefinitely.

Q. Please explain how the Assured Water Supply Program and its rules work.

A. The AWS provisions of the GMA, and the related AWS Rules promulgated by ADWR in 1995, require all new subdivisions in an AMA to demonstrate that sufficient water supplies of adequate quality are legally, physically, and continuously available for 100 years. In

[12] Pinal AMA Groundwater Users Advisory Committee Final Subcommittee Report, *Assured Water Supply Rules Modification Concepts* 3 (Feb. 2006).

[13] Public Law 108-451, December 10, 2004.

addition to these consumer protections, the AWS Rules require substantial use of renewable supplies, such as CAP water and effluent, and permit only minimal use of mined groundwater in order to achieve safe yield. This program has often been referred to as the state's insurance policy against drought conditions. Minimizing the use of finite groundwater supplies and emphasizing the use of renewable surface water, reclaimed water and effluent promotes efficient use of scarce resources and provides greater assurance that water will be available even when drought conditions substantially reduce the state's surface water supplies.

Two types of permits are issued to municipal water providers under the AWS Rules, and there are two significant differences between them. First, Certificates of Assured Water Supply ("CAWS") only cover the demands of subdivided land, which may not include ancillary commercial growth. ADWR typically issues a CAWS to a developer or builder who must demonstrate a 100-year assured water supply before plats can be recorded or parcels sold. Second, once the CAWS is issued and lots sold, it is irrevocable regardless of changes in the available water supply. The Arizona Corporation Commission has recently confronted the crisis of private water providers without water supplies in the Desert Hills Water Company case. Although the subdivisions served by Desert Hills have lacked water over the past year, they still retain their Certificates of Assured Water Supply. [14]

Designations of Assured Water Supply ("DAWS") encompass a water provider's entire service area demand and are typically issued to cities. Unlike certificated providers, designated providers are subject to a rolling review of their water budgets. In other words, ADWR reviews the designated provider's needs over the next 100-year period every three to fifteen years depending on the requirements of the individual DAWS. This allows ADWR to check on the viability of the designated provider's long-term water budget and

[14] *See Desert Hills Water Company, Decision No. 68780 (June 19, 2006).*

provides an important protection to the water provider's customers. Designated providers must also submit an annual report to ADWR to maintain their DAWS. If, at any time during the projected life of a DAWS, demand outstrips supply, ADWR may suspend or revoke it.[15]

Q. What are the risks associated with Certificates of Assured Water Supply?

A. When the AWS Rules were enacted, it was envisioned that as a city's service area expanded, designated providers would eventually serve the subdivision development initially served under certificates. This would result in most municipal demand being met with renewable supplies that were regularly reviewed by ADWR, thereby ensuring that adequate supplies were always available. However, due to the significant and haphazard "leapfrog" residential development in the Phoenix AMA,[16] large residential areas will probably never be served by a designated water provider.[17] Instead, individual CAWS have been issued and the economies of scale and consumer protections that result from DAWS are lost.

Q. What other differences exist between Certificates versus Designations of Assured Water Supply?

A. The extraordinary amount and rapid pace of municipal development in the Pinal AMA make the distinctions between CAWS and DAWS more significant. It is important to remember that applications for CAWS are done on a subdivision by subdivision basis, preventing ADWR from evaluating the actual demand at progressive stages of build-out. The larger the size of a water provider's service area covered by multiple CAWS, the more difficult it will be for ADWR to address the cumulative impacts of growth because they are

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[15] See the Assured Water Supply Rule at R12-15-709.

[16] Tucson's situation is different because almost 90% of the AMA's residents are served by a single designated provider.

[17] Interview with Doug Dunham, Office Manager, Office of Assured/Adequate Water Supply, in Phoenix, Ariz. (June 30, 2006).

only able to look at projected rather than actual demand, and the two are seldom the same. More importantly, CAWS give the responsibility for assessing the available groundwater supplies, and forecasting demands, to the developer, not the water provider, who will ultimately be obligated to serve the area.

Q. Can CAWS' constrain ADWR's ability to monitor impacts of development on water supplies?

Yes. The CAWS' approach limits ADWR's review to a single snapshot of the water supplies available to a planned subdivision. This means ADWR cannot monitor the impacts of continued development in the surrounding area on the subdivision. In north Phoenix, for example, construction of unregulated "wildcat" subdivisions will likely reduce the amount of groundwater available to CAWS subdivisions in the area because groundwater pumping by these "wildcat" subdivisions reduces the supplies of all the nearby communities.[18] Unfortunately, current law provides no protection from these unregulated pumpers and no mechanism for reevaluating the available water supplies for a subdivision under a CAWS, as was the case with Desert Hills Water Company recently. The ACC was forced to issue an Order to Show Cause against Desert Hills Water Company due to its inability to provide water service throughout its entire CC&N.[19]

In contrast, applications for DAWS include the water provider's entire service area, thereby giving ADWR an opportunity to conduct a comprehensive analysis of the adequacy of the water supply for all development within the water provider's CC&N. The rolling review of DAWS also allows the Department to consider any changes in

[18] Interview with Doug Dunham, Office Manager, Office of Assured/Adequate Water Supply, in Phoenix, Ariz. (June 30, 2006).

[19] *See Desert Hills Water Company, Decision No. 68780 (June 19, 2006).*

groundwater availability due to new development in the vicinity of the provider's service area.

It is very hard to predict the future 100 years out. The CAWS attempts to do so with a one-time snapshot. The DAWS is preferable because it provides for ongoing review and supervision by ADWR to ensure that the water will be available.

Q. If groundwater is the only source of water available for residential development, and the safe yield goal of the GMA restricts access to groundwater, will municipal growth be prevented in the future?

A. As the population continues to grow within the AMAs, there is increasing pressure to modify the safe yield goal, or to create new programs that balance the pressure to develop with the need to protect our limited groundwater supplies. The Central Arizona Groundwater Replenishment District ("CAGRD") was created in 1993 in response to developers' concerns that access to renewable surface water supplies, as well as affordability, would limit future residential growth in Maricopa, Pinal and Pima counties. The CAGRD is a state authorized program, managed by the Central Arizona Water Conservation District ("CAWCD"), which allows developers/builders to build subdivisions dependent on excess groundwater pumping as long as they enroll the subdivision's lands (known as Member Lands) in the CAGRD. The CAGRD places water planning responsibility on developers rather than water providers which results in a piecemeal approach to infrastructure development and operation when separate water companies are used.[20]

[20] Id.

Q. Has the CAGRD fulfilled it mission to facilitate residential development in areas lacking access to renewable water supplies?

A. Yes. The success of the CAGRD has exceeded everyone's expectations, but not necessarily in a good way. In addition to developers and builders joining the CAGRD, so have a number of cities and towns, including Scottsdale, Tucson, and Peoria. In the Pinal AMA, Eloy, Florence and Casa Grande are looking to the CAGRD to meet their recharge obligations.[21] Each of these cities and towns enrolled in the CAGRD because they lack sufficient renewable water supplies to meet their current and future water needs requiring them to pump groundwater in excess of the AMA's AWS Rules.

The enrollment of these Member Service Areas has dramatically increased the future replenishment obligations of the District. This set off alarm bells at ADWR and the CAP due to concerns that in the future, the CAGRD may not have access to the amount of renewable water supplies it is contractually obligated to provide its members. The CAGRD is required to replenish in perpetuity all groundwater that is pumped by its members in excess of the groundwater allowance set by the AWS Rules.[22] The Governor's Water Management Commission included a recommendation in its Final Report that the CAGRD establish a replenishment reserve to help ensure that sufficient supplies are available the CAGRD to meet the long-term demands of its members.[23] This is because ADWR projects that CAP supplies will be fully utilized by 2030, leaving little or no excess water available for purchase by the CAGRD and others in search of renewable water supplies.[24]

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[21] www.cagrd.com/pdft.

[22] Governor's Water Management Commission, Final Report, p.13, December 2001.

[23] Id.

[24] Final Report of the Governor's Water Management Commission, p. 13, December, 2001.

There is also a concern that the rising cost of renewable surface water supplies will result in financial hardships for homeowners in subdivisions enrolled in the CAGRD. This is because the replenishment costs incurred by the District will be included in each homeowner's annual county property tax bill. The cost of replenishment is based on the cost of the replenished water and the replenishment services provided by the District, divided by the amount of water each home consumes annually. Because replenishment is mandated by state law, it must be done regardless of the cost. The assessment will increase over time as the cost of water and replenishment services increases. The CAGRD may impose a lien on the homeowner's property if the annual assessment is not paid. Unfortunately, although it is expected that the price of water will increase in the future, there is no way to predict how much or how fast it will increase. The price of water is a function of a number of different factors, many of which are simply out of our control.

Groundwater replenishment must occur within the same basin where the excess groundwater pumping occurred, although not necessarily within the same sub-basin.[25] The disconnect between where groundwater is pumped and where recharge can occur has contributed to the concern about the activities of the CAGRD. The Staff at ADWR argues that recharge of overdrafted groundwater should take place within the area of hydrologic impact. But cost considerations have prevented the adoption of this requirement. This means that in the Pinal AMA, which is made up of five sub-basins, recharge of the aquifer can fail to mitigate the direct impacts of overdraft if it does not occur in the same sub-basin as the withdrawals.

While the benefits of the CAGRD are many, there are reasons to be cautious about the District's ability to meet its long-term obligations. For this reason, it is always preferable

[25] A.R.S. § 48-3771(B).

to develop a water budget on renewable resources and minimal groundwater withdrawals, foregoing the need to join the CAGRD.

Q. Will the proposed revisions to the AWS Program in the Pinal AMA provide sufficient protections to its residents now and in the future?

A. The current management goal of the Pinal AMA seeks to preserve existing agricultural economies for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.[26] According to the ADWR, "[i]f substantial subdivision development continues as expected in the Pinal AMA, the AWS Program could play a significant role in support of the management goal to preserve future waters supplied for non-irrigation purposes."[27] But because the safe yield goal has not yet been adopted, new subdivisions in the AMA are permitted to rely almost exclusively on groundwater to meet their long-term needs. In fact, the CAGRD, which meets the replenishment obligations of enrolled subdivisions that pump excess groundwater, only provided 212 a-f of replenishment in the Pinal AMA in 2003, compared to 52,588 a-f replenished by the CAGRD in the Phoenix AMA that year.[28] The groundwater allowance in the Pinal AMA is even greater when a subdivision is located on land with an appurtenant irrigation grandfathered right ("IGR"). Unfortunately, the result of an extraordinarily generous groundwater allowance is less interest in developing on farmland. If raw desert is cheaper, and there is no need to obtain an IGR in order to pump groundwater in the AMA, there is a very real risk that both municipal development *and* farming will continue in the AMA. This will drain the aquifer at an even faster and more alarming rate.

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[26] A.R.S. §45-562(B).

[27] ADWR Notice of Proposed Rulemaking, Title 12, Chapter 15 filed with the Governor's Regulatory Review Commission, July, 2006.

[28] www.cap-az.com/recharge

Q. Would your concerns about the Pinal AMA remain even if safe yield is adopted?

A. Yes. Even if the safe yield goal is adopted, the modified AWS Rules under consideration for the Pinal AMA still permit a greater percentage of a subdivision's water budget to be made up of groundwater than in other AMAs. For example, the mined groundwater allowance in the Phoenix AMA is 4% and in the Tucson AMA it is 8%, but under the proposed municipal AWS Rules in the Pinal AMA, the mined groundwater allowance is calculated by multiplying the build-out population of the subdivision by an initial allocation factor of 10%. This formula will continue to make substantially more groundwater pumping possible in the Pinal AMA. In addition, extinguishment credits granted pursuant to the retirement of IGRs in the AMA will decrease at a much slower rate than in other AMAs. The ADWR has estimated that the average annual renewable groundwater supply in the Pinal AMA is 82,500 a-f/year.[29] This is the amount of water that can be withdrawn each year without depleting the aquifer. However, more than 272,000 acres of land have IGRs in the AMA. With an extinguishment rate of 1.5 a-f/year, these rights to pump the aquifer have the potential to overdraft the basin. These liberal guidelines are cause for concern. As previously mentioned, substantial amounts of groundwater are expected to continue to be pumped in the future by new subdivisions, the AWBA, Native American communities, and residual non-Indian agricultural users.

Furthermore, the AWS Rules in the Phoenix and Tucson AMAs provide an initial allocation of groundwater based on a very small percentage of estimated demand for CAWS, or historical demand for DAWS. The Pinal AMA AWS Rules, however, allocate groundwater based on 125 gpcd. This means municipal water providers serving water at the time of the effective date of the proposed rules will be allowed to pump groundwater under the prior allocation system. These water providers will also receive a "transition volume" of groundwater which is a permanent, annual allocation applicable to residential

[29] See Testimony of Phil Briggs, submitted January 26, 2007 in this docket..

lots within plats recorded as of the effective date of the revised rules and served before January 1, 2010.[30] In the other AMAs, the allocation of allowable groundwater use decreases over time. But in the Pinal AMA, the allocation actually increases for certain providers as their customer base grows.[31] Each of these provisions seriously undermines the consumer protections built into the AWS Program.

Q. What about the impacts of non-Indian agriculture on the Pinal AMA, even with safe yield?

A. Even though the Pinal AMA is likely to adopt a safe yield goal for its municipal sector, non-Indian agriculture will still be allowed to pump significant quantities of groundwater without the limitations of safe yield. Today, non-Indian agriculture in the AMA is largely dependent upon renewable CAP water to irrigate their lands. However, in exchange for receiving CAP water at subsidized rates through 2030, irrigation districts holding CAP non-Indian agricultural subcontracts relinquished their subcontract rights. After 2030, there is no guarantee that CAP water will be available at subsidized rates. It is expected that these CAP supplies will be used in the future to meet municipal demands within the CAP service area.[32] As this surface water supply is removed, the agricultural sector may shift to even greater reliance on groundwater. Because agriculture is not covered by the safe yield goal in the Pinal AMA, this is a cause for substantial concern. There is little doubt that the combination of rapid urban development, future recovery of groundwater by the AWBA, and continued agricultural activity on Indian and non-Indian land will place a significant strain on the groundwater supplies in the AMA.

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[30] ADWR proposed rule modification of Pinal AMA AWS Rules, submitted to the Secretary of State on November 22, 2006.

[31] ADWR proposed rule modification of Pinal AMA AWS Rules, Chapter 5, p. 5.

[32] Maricopa, Pinal and Pima counties.

Q. Generally, what is the status of development within the Pinal AMA at present?

A. Today, approximately 1.5 million homes are at some stage of the entitlement process in the Pinal AMA.[33] The vast majority of homes will be located in master planned subdivisions. Generally, master planned communities are developed in phases. If a master planned community is located within the service area of an undesignated provider, ADWR recommends that an Analysis of Assured Water Supply be obtained for each phase of development. An Analysis is an official determination by the ADWR verifying one or more requirements necessary to obtain a CAWS.[34] If an Analysis of Assured Water Supply proves physical availability, then ADWR reserves that volume of water for the proposed subdivision. That water is consequently unavailable to other water providers.

In order to obtain an Analysis, the applicant must be the owner of the land subject to the application or have the written consent of the owner.[35] Without the consent of the landowners within the application area, ADWR will not perform the Analysis. While designated providers cannot obtain an Analysis, they can apply to the ADWR for a modification of their designation.[36] Once ADWR has approved a provider's designation, the current, committed, and projected water demands of the provider that will be met with groundwater are similarly reserved by ADWR to meet the future needs of the provider's customers.[37]

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[33] Statement made by Eric Anderson, Transportation Manager, Maricopa Association of Governments, during a panel discussion before Valley Leadership, January 5, 2007.

[34] A.A.C. R12-15-703(E).

[35] A.A.C. R12-15-703(A).

[36] Id.

[37] A.A.C. R14-15-716(B)(3)(c)(ii).

Q. How does a determination of physical availability differ from an Analysis?

A. In contrast, a Physical Availability Determination ("PAD") evaluates an area solely for the physical availability of water. PAD's do not reserve water for future development.[38] They are simply an analysis of hydrologic conditions in a local area, typically based upon the needs of a particular water provider. In fact, any person applying for a CAWS determination may use an existing physical availability determination to meet its physical availability requirement.

Q. Should the Commission rely on a PAD to demonstrate that a utility will have water?

A. No. Because the PAD does not reserve water, it does not provide an assurance that the water will be available to the utility. A PAD is simply not a substitute for an assured water supply.

Q. What is the role of conservation within the GMA?

A. An axiom of water management is that conservation is the surest, cheapest way to ensure that water is available to meet future needs. Many cities in the Southwest offer incentives to encourage homeowners and businesses to conserve water. For example, in Albuquerque New Mexico, that City's water conservation department offers customer rebates for xeriscape plantings, installation of low flow plumbing fixtures, even purchases of rainwater harvesting barrels. Since 1994, the City has actively promoted water conservation. As a result, Albuquerque experienced a 30% reduction in per capita usage with per person usage dropping from 250 gpcd to 174 gpcd in ten years.[39] The City has recently declared a goal of reducing water usage another 40% by 2014. Similarly, the Southern Nevada Water Authority ("SNWA"), the water provider for Las Vegas and other communities in Clark County, Nevada, pays homeowners $2 for every foot of turf

[38] A.A.C. R12-15-702(F).

[39] GPCD means Gallons Per Capita Per Day.

removed from their home's landscaping. Last year alone, SNWA spent $10 million on the program.[40] Both cities have drought restrictions in place that limit times for watering at home, even washing cars. These programs are no longer temporary responses to drought conditions, but are a permanent commitment by these cities to stretch every drop of water available to them.

Q. When did Arizona begin to adopt water-conservation measures?

A. Arizona's adoption of the GMA in 1980 was the first state-level effort to formalize the conservation of surface and groundwater supplies. Many citizens do not realize that water conservation is an intrinsic part of the deliveries to their homes and businesses. This is because the regulatory programs governing water conservation are enforced at the water provider's level. Every ten years, ADWR adopts a new Management Plan for each AMA which requires increasingly efficient utilization of the water they deliver or use. This authority was challenged by Arizona Water Company ("AWC") who argued that conservation measures should be imposed on the end user.

Fortunately, the Arizona Supreme Court disagreed and held that "the principal burden of achieving reductions in groundwater use [is] on water providers, who are charged in ADWR's management plans with reducing their total GPCD during each management period."[41] In the same challenge to ADWR's authority, AWC also attempted to limit the imposition of conservation measures to groundwater, excluding the delivery and use of Colorado River water from any requirements to conserve. Again, Arizona's Supreme Court disagreed, recognizing the importance of conserving all water, regardless of its source.

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[40] Statement made by Pat Mulroy, General Manager, SNWA during her speech at the Colorado River Water Users Annual Conference, December 14, 2006.

[41] Arizona Water Company v. Arizona Department of Water Resources, 91 P3d 990, 992 (Ariz. 2004), 208 Ariz. 147.

Q. Do you believe water conservation is a vital part of ensuring that Arizona has a sustainable future?

A. Most definitely. Water conservation is a critical part of stretching Arizona's scarce water supplies. State agencies and local governments, as well as the private sector, run a number of voluntary conservation programs intended to raise public awareness of the value of water, but more importantly, to maximize efficient water use. These programs are designed to cut waste without sacrificing function and often have an added bonus of reducing water bills. ADWR encourages household-scale conservation practices such as low-flow plumbing, water-saving technology, and xeriscaping for desert-friendly yards. These tools are a critical part of ADWR's Management Plans adopted pursuant to the GMA.

Q. How important is the use of reclaimed water and effluent to ensuring we have adequate water supplies in the future?

A. Using reclaimed water is critical. This is because the future development and use of the state's water resources will create additional wastewater. Reclaiming or reusing this wastewater has the potential to significantly increase the amount of water available for potable use. Consider that a typical residential home uses two-thirds of its potable water supply for outdoor landscaping, and up to 90% in the summertime.[42] Applying reclaimed water to these exterior household uses and interior non-potable uses dramatically reduces the residential demand for potable supplies. Hence, potable water supplies are more available for potable uses (drinking and bathing, for example).

[42] www.snwa.com.

Q. Has there been a movement towards exploring and implementing uses for reclaimed water and effluent?

A. Yes. Growth, uncertain demands for water, and drought conditions are three reasons why the state's water leaders are placing more and more emphasis on the use of reclaimed water and effluent to reduce the demand on potable drinking water supplies. The majority of the wastewater produced in the metropolitan areas has been treated in centralized wastewater treatment plants and then made available as reclaimed water. Today, regional estimates of the water supply assume between 30% and 70% of the reclaimed water produced will be put to use. As the scarcity and cost of water increases, water providers will find it cost-effective to invest in integrated water and wastewater systems that can utilize up to 100% of the reclaimed water produced. This water can reduce groundwater usage by substituting reclaimed water for use in public parks, cemeteries, golf courses, and other public areas. [43] The sooner water providers and state policies promote the use of reclaimed water and wastewater, our ability to meet the water needs of the state's communities will be more secure.

Q. Please summarize your conclusions

A. Growth in Pinal County, as well as growth in the greater Southwest, presents some very serious challenges to Arizona's ability to provide long-term, sustainable water supplies in the Pinal AMA. There is no doubt in my mind that water conservation is a vital part of ensuring a sustainable water budget that meets this state's needs. And the use of reclaimed water is a critical part of water conservation.

From a regulatory standpoint, Designations or Assured Water Supply are preferable to Certificates for a number of reasons. Designations encompass the entire demand of the water provider's service area and are subject to a rolling review by ADWR which ensures

[43] See, e.g. Global Water *at* www.gwresources.com.

the long-term security of the water supply. Certificates are based on a "one-time" look at the projected demand of a proposed subdivision. This demand is prepared by the subdivision's developer, not the water provider that will ultimately be responsible for delivering the subdivision's water.

While the CAGRD provides an opportunity for growth in areas with limited access to renewable surface water, the unanticipated popularity of the program has caused many to be concerned about the CAGRD's ability to meet its long-term replenishment obligations. A water provider's self-sustainability will not only enhance the security of the supplies of its customers, but will reduce the demands on the CAGRD.

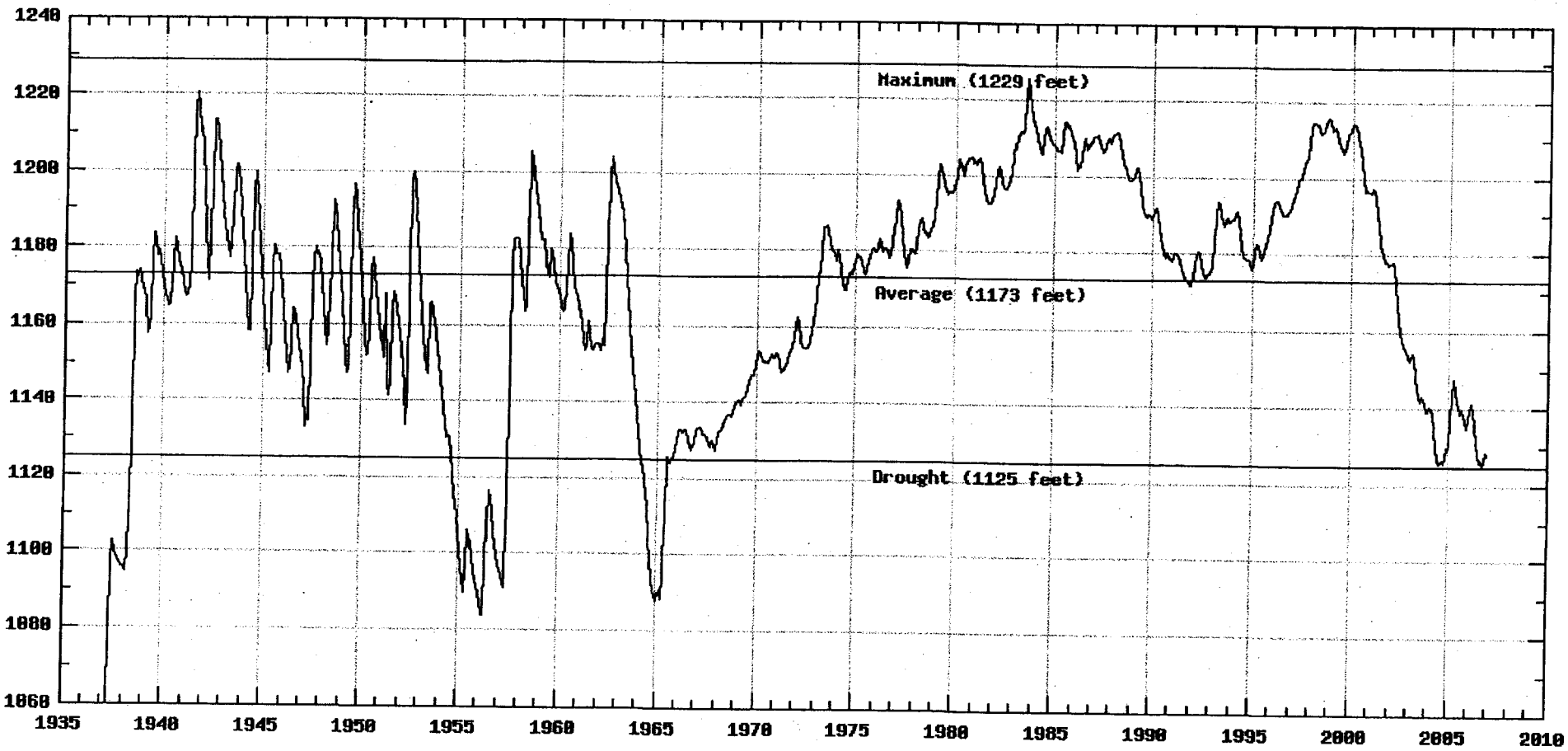
The time is now to adopt water management policies that will promote the most efficient utilization of the state's scarce water supplies. Every generation of Arizonans has left its mark on the stewardship of this precious resource, starting with the construction of SRP's reservoirs, to securing the state's rights to the Colorado River, to the completion of the CAP and the adoption of the GMA. All of the surface water in the state has been appropriated, and a substantial amount of groundwater is allocated, what remains is greater use and investment in water reclamation.

Q. Does this conclude your testimony?

A. Yes.

EXHIBIT

"1"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Average (1173 feet)
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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
JEFF HATCH-MILLER- CHAIRMAN
WILLIAM A. MUNDELL
MIKE GLEASON
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY.	DOCKET NO. W-01445A-06-0199
IN THE MATTER OF THE APPLICATION OF PALO VERDE UTILITIES COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY	DOCKET NO. SW-03575A-05-0926
IN THE MATTER OF THE APPLICATION OF SANTA CRUZ WATER COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY	DOCKET NO. W-03576A-05-0926

Rebuttal Testimony of

Rita Maguire
Maguire & Pearce, PLLC

on Behalf of

Palo Verde Utilities Company and
Santa Cruz Water Company

February 14, 2007

EXHIBIT
CT-129
ADMITTED

Q. Please state your name and employer.

A. My name is Rita Maguire. I am a Member of the law firm of Maguire & Pearce, PLLC.

Q. Did you file Direct Testimony in this case?

A. Yes.

Q. Please explain why the use of reclaimed water is important.

A. The ever-increasing demand for potable water in Pinal County and across Arizona requires maximizing the use of all types of water. Among the most innovative uses of our water supplies is the treatment and delivery of reclaimed water. Reclaiming wastewater and making it available for outdoor use, reduces the demand for potable water supplies and postpones the day when additional drinking water supplies must be acquired to meet residential demand. Municipalities across the country have for some time successfully delivered non-potable water to parks, golf courses, athletic fields and industrial customers. Los Angeles, for example, has adopted a goal of recycling 40% of the city's wastewater by 2010. Unfortunately, the use of effluent in Arizona represents only about 2% of the state's water budget. The percentage increases to 10 % within the Phoenix and Tucson AMAs but in Pinal County, effluent represents less than 1% of its water budget according to ADWR's Third Management Plan. Given the dramatic growth taking place in that AMA, every effort should be made by state agencies to promote the use of reclaimed water.

Q. Are there any other reasons for replacing potable water with reclaimed water whenever possible?

A. Reclaimed water is an extremely reliable source of water. In fact, it is often said that reclaimed water is the only water supply that grows with the population. In the 2004 Arizona Town Hall Report on "Arizona's Water Future" it was noted that "[w]hile

groundwater and surface water availability depends to a considerable extent on geography, effluent is a growing resource in all of the AMAs." (Town Hall Report at p. 82)

Q. Why aren't we seeing greater utilization of reclaimed water in our communities?

A. One of the challenges to increasing the use of reclaimed water is the cost to build the non-potable delivery systems in existing residential areas. The expense of tearing-up streets and curbing, rerouting existing utility infrastructure and most importantly, interfering with access to and use of private property, causes municipalities to shy away from initiating these projects after the fact. Tucson city representatives cite all of the above as reasons why they are not retrofitting existing subdivisions with non-potable water systems although they actively support the installation of these systems in new communities. Other cities in the state have no choice but to retrofit their water systems due to limited water budgets. For example, because Flagstaff's water supply is extremely vulnerable to drought, city officials have gone to extraordinary lengths to replace potable drinking water supplies with reclaimed water wherever possible. Flagstaff's efforts have been undertaken at a considerable cost to the city and has resulted in significant inconvenience to homeowners and businesses during the installation process. Today, that city requires.....

Q. What is ADWR's view toward the use of reclaimed water?

A. Wastewater is viewed by ADWR as a resource rather than a problematic by-product of water use.[1] The right to recharge effluent for groundwater storage credits is recognized under Arizona law, and ADWR regulatory policies give owners of effluent an incentive to put it to use. For example, when effluent is recharged in a *managed* Underground Storage Facility (USF) for the purpose of earning credits to pump groundwater, the recharging entity receives long-term storage credits for 50% of the water recharged. But if the effluent is recharged at a *constructed* USF, the recharging entity receives full credit for the

[1] For example, the Tucson AMA has identified recharged effluent as a significant factor in determining whether the AMA achieves Safe Yield in 2025 see, www.azwater.gov/WaterManagement/Content/AMA.

water stored. The difference in the percentage of long-term storage credits issued by ADWR is a reflection of the value the Department places on efficient utilization of effluent and the investments required from water providers to make this possible.

Beginning in 2005, ADWR began a stakeholder's process to evaluate ADWR's existing regulatory program for large municipal providers in Active Management Areas under the Third Management Plan. As part of this process, ADWR issued two survey reports about local and regional conservation programs.[2] Among the water supplies under evaluation is the use of reclaimed water. Because of the scarcity of available supplies, the Department views effluent as a valuable resource that can be used as to enhance the water resources in a providers' overall water supply portfolio; and therefore, the Department encourages its efficient use. In addition, to encourage the use of effluent for assured water supply purposes the Department, as part of its recent Pinal AMA Assured Water Supply rulemaking process, issued a policy statement clarifying the ability and regulatory requirements criteria for utilizing effluent as a 100 year assured supply. This will enable designated providers, like Global, to more easily demonstrate that reclaimed water supplies are available to support new growth in their service areas.

Q. Why has Arizona Water Company Prepared a CAP Water Use Plan but Global Water has not?

A. William Garfield's Direct Testimony before the ACC[3] states that Arizona Water Company has prepared a detailed, long-term water use plan discussing "all existing water supplies and demand patterns, how and when CAP water will be used through the year 2025, all future water sources that the Company plans to use, all major infrastructure components required to use CAP water, projected capital and operating and maintenance costs for

[2] *A Summary of Water Conservation Programs in Active Management Areas, available at* www.azwater.gov/conservation, and *A Web-based Summary of Conservation Programs in Arizona, California, Colorado, Nevada, New Mexico, and Utah, available at* Id.

[3] Pre-filed Direct Testimony of William M. Garfield on Behalf of Arizona Water Company dated January 29, 2007, pgs. 18-19.

future water supplies and numerous other matters." While this is an impressive list of information, it is a reflection of the limited oversight that ADWR has over an un-Designated water providers like AWC rather than a testament to its long-term planning activities. State law was amended in 2005 to require Community Water Systems to submit a System Water Plan to the Director of ADWR.[4] This requirement did not go into effect until January 1, 2007.[5] Designated water providers like Global are subject to rigorous and on-going evaluations of their municipal water supplies by ADWR and as a consequence, are exempt from these new requirements.[6]

Q. Does AWC's exclusive reliance on the CAGRD to replenish its excessive groundwater pumping from the Pinal AMA concern you?

A. Yes. As I stated in my Direct Testimony to the Commission, there are three key concerns about the ability of the CAGRD to perform in the future. First, many more entities have joined the CAGRD than was originally anticipated. Not only have private developers enrolled their subdivisions, entire cities and towns have enrolled.7 This has dramatically increased the future liabilities of the CAGRD. Second, because the CAGRD is required to replenish in perpetuity all groundwater that is pumped by its members in excess of the allowances established under ADWR's Assured Water Supply Rules, they will have to find large amounts of renewable water supplies to meet these obligations. As the population grows, so does the demand for renewable supplies, not only within the AMAs, but throughout the state and entire southwestern United States. And finally, the increased competition for renewable water supplies will inevitably drive up its cost, which in turn directly impacts the property owners within the Member Areas of the CAGRD. Maricopa County Treasurer, David Schweikert, reports that his office has already received numerous

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[4] A.R.S. Title 45, Chapter 1, Article 14 (Laws 2005, Ch. 223, § 1). Note, the specific statutory citation for Community Water Systems is A.R.S. § 45-341 et. seq,. not § 45-330 et. seq. as cited in Mr. Garfield's testimony.

[5] A.R.S. § 45-342.

[6] A.R.S. § 45-342 (E).

[7] See Maguire Direct Testimony at p. 14.

complaints from homeowners' associations that are surprised to see this annual fee attached to their property taxes. In order to avoid the imposition of a tax lien on their property, they are required to impose a special assessment to cover the unexpected cost. Because a number of factors outside the control of water managers determine how much renewable water will be available each year, its price is impossible to predict and could fluctuate dramatically from year to year, making it very hard to adequately budget for.

There is no doubt that the CAGRD provides a critical service within the CAP service area. But because of the many risks associated with it, enrollment should be a choice of last resort. Responsible water providers should make every effort to minimize dependency upon the CAGRD to meet the water demands that growth brings and look to other sources like CAP and reclaimed water to serve their customers. Despite the fact that since 1985, AWC has held CAP subcontracts for almost 11,000 acre feet of CAP water to be delivered through its Casa Grande and Coolidge water systems, the most water AWC has delivered to date is 2,554 acre-feet in 2005.[8]

Q. Is there anything more you would like to add to your testimony?

A. Yes. The three Lower Basin States (Arizona, California and Nevada) are experiencing unprecedented growth. This growth is taxing water managers' ability to provide long-term reliable, high quality, affordable water supplies to their customers. One of the recent responses in the Lower Basin is to move outside traditional political boundaries to find additional resources. For example, an application to export 14,000 acre-feet of groundwater from the Beaver Dam Wash area in northeastern Mohave County on behalf of the residents in Mesquite, Nevada is currently before the Director of ADWR.

[8] CAWCD 2005 Calendar Use CAP Use Report.

Not surprisingly, the proposal to export groundwater from Arizona to Nevada has caused a great uproar among the residents of the Beaver Dam Wash area. They are expressing concerns about the prospect of dry wells and subsidence due to groundwater overdraft. And, they are objecting to pure Arizona groundwater being transferred to Nevada, blended with arsenic-laden groundwater, and transported back. "They can't take this water into Nevada without having a negative impact on Arizona. There's just no way," Bob Frisby, Manager of the Beaver Dam Water Company, told the *Las Vegas Review-Journal* in December 2006. "It will dry us up." But there is a way, federal case law clearly recognizes the ability to export groundwater across state lines; the only is issue is to what extent the source state may limit the circumstances of the transfer.

The U.S. Supreme Court in *Sporhase v. Nebraska*,[9] identified several key factors for determining whether a groundwater supply could be exported including the degree to which the source state imposes restrictions on access to groundwater to pumpers within their state. The Arizona Groundwater Management Act is a significant shield against outside attempts to gain access to the state's groundwater supplies within the AMA's. It is unfortunate that a similar program does not exist outside the AMA's as well. However, even within the AMA's it is extremely important that every state agency with regulatory responsibility over the state's water supplies consistently act to protect groundwater. The best way to accomplish this is to adopt and enforce water management policies that promote the utilization of renewable water supplies and protect finite groundwater supplies even if in the short-term, the result is increased costs for water.

[9] 458 U.S 941,102 S.Ct. 3456, 73 L.Ed. 2d 1254 (1982).