

**BEFORE THE ARIZONA CORPORATION COMMISSION**

**COMMISSIONERS**

TOM FORESE, Chairman  
BOB BURNS  
DOUG LITTLE  
ANDY TOBIN  
BOYD W. DUNN

IN THE MATTER OF THE APPLICATION  
OF EPCOR WATER ARIZONA INC. FOR A  
DETERMINATION OF THE CURRENT  
FAIR VALUE OF ITS UTILITY PLANT AND  
PROPERTY AND FOR  
INCREASES/DECREASES IN ITS RATES  
AND CHARGES BASED THEREON FOR  
UTILITY SERVICE BY ITS AGUA FRIA,  
ANTHEM, CHAPARRAL, HAVASU,  
MOHAVE, NORTH MOHAVE, PARADISE  
VALLEY, SUN CITY, SUN CITY WEST,  
TUBAC, AND WILLOW VALLEY WATER  
DISTRICTS AND FOR CONSIDERATION  
OF CONSOLIDATION PROPOSALS

DOCKET NO: WS-01303A-17-\_\_\_\_\_

**DIRECT TESTIMONY  
OF  
JEFFREY W. STUCK  
ON BEHALF OF  
EPCOR WATER ARIZONA INC.**

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**DIRECT TESTIMONY  
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ON BEHALF OF  
EPCOR WATER ARIZONA INC.  
JULY 21, 2017**

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1 EXECUTIVE SUMMARY

2 Jeffrey W. Stuck describes the water service areas and facilities for the Anthem, Chaparral,  
3 Havasu, Mohave, North Mohave, Paradise Valley, Tubac, and Willow Valley Water  
4 Districts, owned and operated by EPCOR Water Arizona Inc. (“EWAZ” or “the  
5 Company”). These service areas comprise a total land area of approximately 54,755 acres  
6 (85.56 square miles) scattered across the north and eastern greater Phoenix area, north  
7 western and central portion of western Arizona along the Colorado River, and within a  
8 portion of Santa Cruz County in southern Arizona. Water production in these districts is a  
9 combination of groundwater from numerous wells and surface water treated at the Anthem  
10 Water Campus and the Shea Water Treatment Plant. All groundwater is chlorinated, and  
11 some well water is treated for arsenic. The source of the surface water is a combination of  
12 Colorado River purchased from the CAWCD as well as water purchased from the Ak-Chin  
13 Indian community.

14 The combined 12-month rolling non-revenue water percentage for these eight districts at the  
15 end of 2016 was 7.1 percent.

16 The Company is also proposing continuation of its existing and previously-approved tank  
17 maintenance program for its storage reservoirs in Chaparral, Havasu, Mohave, and Paradise  
18 Valley Water Districts spanning 10 to 18 years to ensure maintenance occurs at a frequency  
19 that balances the timing necessary to effectively extend the life of these assets through  
20 maintenance activities and in a manner that is not overly burdensome to the customers. A  
21 new tank maintenance program is proposed for the North Mohave Water District. The total  
22 anticipated annual costs for the maintenance plans are estimated at \$202,184 for Chaparral,  
23 \$76,320 for Havasu, \$244,608 for Mohave, \$114,583 for North Mohave, and \$123,658 for  
24 Paradise Valley. The Tank Maintenance Programs are attached as Exhibits JWS-1 to JWS-  
25 5 of my Direct Testimony and the normalizing of the expense for ratemaking purposes is

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1 described in Jon P. Boizelle's Direct Testimony. The Company is also seeking continuation  
2 of its authorization for deferral accounting for the Anthem Water District and new deferral  
3 accounting authorization for upcoming maintenance in its Willow Valley Water District.

1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND TELEPHONE**  
3 **NUMBER.**

4 A. My name is Jeffrey W. Stuck. My business address is 6215 N. Cattletrack Road,  
5 Scottsdale, Arizona, and my business phone is 623-445-3125.

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

7 A. I am employed by EPCOR USA (“EUSA”) as Director of Operations for the Eastern  
8 Division.

9 **Q. PLEASE DESCRIBE YOUR PRIMARY RESPONSIBILITIES FOR THE**  
10 **COMPANY.**

11 A. My primary responsibilities are for water treatment and distribution, wastewater  
12 collection and treatment, and ensuring safe and reliable water and wastewater service  
13 for EPCOR Water Arizona Inc. (“EWAZ” or “Company”), which includes the  
14 following districts: Mohave Water, Mohave Wastewater, Havasu Water, North  
15 Mohave Water, Paradise Valley Water, Tubac Water, Anthem Water, and Anthem  
16 Wastewater. I also oversee the operations of Chaparral City Water Company  
17 (“Chaparral”).<sup>1</sup> On May 9, 2016, EWAZ completed the purchase of Willow Valley  
18 Water Company and since that time, my responsibilities have been extended to also  
19 oversee the operations of that district as well.

20 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE AND**  
21 **EDUCATION.**

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<sup>1</sup> On May 12, 2017, EWAZ filed an application to merge Chaparral City Water Company with EWAZ – Docket No. WS-01303A-17-0141 and W-02113A-17-0141. If approved, Chaparral City Water Company would become a separate district of EWAZ and part of its Eastern Operations.

1 A. I hold a Bachelor of Science Degree from Arizona State University. I have worked  
2 in the water industry for over 24 years. I began my career working at the Arizona  
3 Department of Water Resources where my duties included water rights investigations  
4 associated with the Little Colorado River Adjudication. In 1992, I began working for  
5 the Arizona Department of Environmental Quality in the Safe Drinking Water  
6 Program. Over the next 13 years, I held many positions in the ADEQ Safe Drinking  
7 Water Program with the last being the position of Safe Drinking Water Program  
8 Manager. In 2005, I joined EWUS (then Arizona American Water Company) as the  
9 Western Region Environmental Director. Since 2007, I have been employed as the  
10 Eastern Division Operations Director with responsibilities including overseeing  
11 water and wastewater operations in the communities of Paradise Valley, Anthem,  
12 Bullhead City, and Lake Havasu. In 2012, my responsibilities were expanded to  
13 include Chaparral, which provides service in and around Fountain Hills, Arizona.  
14 Upon the completion of the purchases of North Mohave Water system in 2014 and  
15 the Willow Valley Water Company in 2016 by EWAZ, my responsibilities were  
16 expanded to include those two new operating districts.

17 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

18 A. Yes.

19 **II. PURPOSE OF TESTIMONY**

20 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?**

21 A. The purpose of my testimony in this proceeding is to describe the service areas,  
22 systems and facilities for the eight districts that comprise the Eastern Division for  
23 EWAZ and are included in this case: Paradise Valley Water, Mohave Water,  
24 Chaparral Water, North Mohave Water, Willow Valley Water, Havasu Water, Tubac  
25 Water and Anthem Water.

1           **A     PARADISE VALLEY WATER DISTRICT SYSTEM.**

2           **Q.     PLEASE DESCRIBE THE PARADISE VALLEY WATER DISTRICT.**

3           A.     The Paradise Valley Water District is located in Maricopa County. It serves  
4           approximately half of the Town of Paradise Valley and portions of the City of  
5           Scottsdale. There are approximately 4,750 customers in the district.

6           **Q.     PLEASE DESCRIBE THE PARADISE VALLEY WATER PRODUCTION  
7           AND DISTRIBUTION SYSTEM.**

8           A.     Our Paradise Valley Water District customers currently receive treated water from  
9           six wells located on the eastern edge of the service territory. The wells range in  
10          depth from 1,000 feet to 1,800 feet and have flow rates from 1,300 gallons per  
11          minute (“gpm”) to 2,900 gpm. The distribution system covers about 5,851 acres (9.1  
12          square miles) and consists of approximately 129 miles of mains ranging in size from  
13          two inches to 30 inches in diameter. The system has nine pressure zones due to the  
14          varying elevations in the service area. The combined capacity of the 13 storage tanks  
15          is 4.529 million gallons. All water from our Paradise Valley Water wells is pumped  
16          to the Paradise Valley Arsenic Removal Facility for chlorination, storage and arsenic  
17          removal.

18          **Q.     DOES THE PARADISE VALLEY DISTRICT HAVE A TANK  
19          MAINTENANCE PROGRAM?**

20          A.     Yes. Decision No. 75268 (September 8, 2015) approved a 14-year tank maintenance  
21          program including total estimated maintenance costs of \$1,731,208, or \$123,658 per  
22          year as displayed in Exhibit JWS-4. The Company’s Application includes  
23          continuation of this plan as approved by the Commission and the Company is not  
24          proposing to adjust the tank maintenance program at this time.



1           **B       MOHAVE WATER DISTRICT SYSTEM.**

2           **Q.       PLEASE DESCRIBE THE MOHAVE WATER DISTRICT SYSTEM.**

3           A.       The Mohave Water District is located within Bullhead City and in unincorporated  
4           areas of Mohave County. The overall service area covers approximately 17,331  
5           acres (27.08 square miles). There are approximately 15,800 customers in the district.  
6           The topography within the service area ranges in elevation from 590 feet to 1,260  
7           feet. The Mohave Water District has one operating center and five separate water  
8           systems:

- 9           • The Bullhead City water system (Public Water System (“PWS”) # 08-032), also  
10           known as the Main System, serves a majority of the Bullhead City area in  
11           Mohave County, with a certificated area of approximately 25 square miles.
- 12           • The Camp Mohave water system (PWS # 08-037) serves an unincorporated  
13           portion of southern Bullhead City, Mohave County, with a 0.5 square mile  
14           certificated area.
- 15           • The Lake Mohave Highlands system (PWS # 08-062) serves an area located to  
16           the north of the main Bullhead City service area, with a service area of  
17           approximately 0.6 square miles.
- 18           • The Desert Foothills system (PWS # 08-137) serves an area in the northwest  
19           corner of the main Bullhead City service area, with a service area of  
20           approximately 0.6 square miles.
- 21           • The Rio Vista Ranches system (PWS # 08-333) serves a subdivision in southern  
22           Bullhead City, Mohave County, with a 0.5 square-mile certificated area.

23           **Q.       PLEASE DESCRIBE THE MOHAVE WATER DISTRICT WATER**  
24           **PRODUCTION, TREATMENT AND DISTRIBUTION SYSTEM.**

1 A. The five systems within the Mohave Water District each have their own water  
2 production, storage, and distribution facilities. All water in the Mohave Water  
3 District is provided from wells. The terrain of this service territory is varied, rocky  
4 and desert. As a result, maintaining proper pressure in the many pressure zones is  
5 the primary operational challenge. The water distribution system consists of  
6 approximately 199.7 miles of main, ranging in size from 2-inches to 18-inches. The  
7 treatment provided in the Mohave Water District is in the form of chlorination before  
8 the water enters the distribution system and there is an AdEdge AD26  
9 oxidation/filtration technology for iron and manganese removal with a granular  
10 activated carbon filter for Total Organic Carbon (“TOC”) reduction in the Camp  
11 Mohave system.

12 **Q. PLEASE DESCRIBE EACH OF THE FIVE INDIVIDUAL PUBLIC WATER**  
13 **SYSTEMS THAT ARE WITHIN THE MOHAVE WATER DISTRICT.**

14 A. The Bullhead City system consists of six groundwater production wells, ten storage  
15 tanks, two booster station sites, and a distribution system serving 14,300 customers.  
16 The storage tanks provide a combination of both gravity and pumped storage for the  
17 system. There are currently 3.2-million gallons (“MG”) of gravity storage and 1.48  
18 MG of pumped storage in the Main System.

19 The Camp Mohave system has one pumping site consisting of a well, a storage tank,  
20 pumping facilities and a distribution system serving 97 customers. This system is  
21 where the AdEdge AD26 iron and manganese removal plant with the granular  
22 activated carbon finishing filter for TOC reduction is located.

23 The Lake Mohave Highlands system is comprised of two production wells, three  
24 above-ground storage tanks, three booster pump stations and a distribution network

1 serving 249 customers. The storage tanks provide pumped storage for the system  
2 with total volume of 0.49 MG. This system has an emergency tie-in with the  
3 recently acquired North Mohave system served by a 4-inch meter.

4 The Desert Foothills system is supplied by two production wells, two storage tanks,  
5 two booster pump stations and a distribution network serving 1,028 customers.

6 The storage tanks provide a combination of both gravity and pumped storage for the  
7 system with a total volume of 0.5 MG.

8 The Rio Vista Ranches system receives its water from the Bermuda Water Company  
9 through an interconnection with Bermuda Water Company. This system only has a  
10 distribution system serving approximately 97 customers.

11 **Q. DOES THE MOHAVE DISTRICT HAVE A TANK MAINTENANCE**  
12 **PROGRAM?**

13 A. Yes. Decision No. 73145 (May 1, 2012) approved a 15-year tank maintenance  
14 program, including total estimated maintenance costs of \$3,669,120, or \$244,608 per  
15 year as shown in Exhibit JWS-2. The Company's Application includes continuation  
16 of this plan as approved by the Commission and the Company is not proposing to  
17 adjust the program at this time.

18 **C HAVASU WATER DISTRICT SYSTEM.**

19 **Q. PLEASE DESCRIBE THE HAVASU WATER DISTRICT.**

20 A. The Havasu Water District covers approximately 3,481 acres (5.44 square miles).  
21 Topography within the area currently serviced ranges in elevation from 475 feet to  
22 770 feet, and the pipe network consists of approximately 30.8 miles of main, ranging  
23 in size from 2- to 16-inches. The Havasu Water District's water production facilities  
24 include four production wells, five ground level storage tanks, five booster pump

1 stations, and five pressure regulating valves. This system also has an arsenic  
2 removal facility that uses an absorption media process that treats all water entering  
3 the distribution system.

4 **Q. DOES THE HAVASU WATER DISTRICT ALSO HAVE A TANK**  
5 **MAINTENANCE PROGRAM?**

6 A. Yes. Decision No. 73145 approved a 10-year tank maintenance program including  
7 total estimated maintenance costs of \$763,200, or \$76,320 per year as displayed in  
8 Exhibit JWS-3. The Company's Application includes continuation of this plan as  
9 approved by the Commission. The Company is not proposing to adjust the program  
10 at this time.

11 **D WILLOW VALLEY WATER DISTRICT SYSTEM.**

12 **Q. PLEASE DESCRIBE THE WILLOW VALLEY WATER DISTRICT**  
13 **SYSTEM.**

14 A. The Willow Valley Water District is located in the Mohave Valley within Mohave  
15 County. The overall service area covers approximately 2,745 acres (4.29 square  
16 miles). There are approximately 1,800 customers in the district. Topography within  
17 the area is relatively flat and the pipe network consists of approximately 126,729 feet  
18 of main ranging in size from 2 inches to 10 inches. The Willow Valley Water District  
19 has one operating center and two separate water systems:

- 20 • The King Street system (PWS # 08-040) serves the majority of the Willow Valley  
21 area in Mohave County, with a service area of approximately 350 acres.
- 22 • The Cimarron system (PWS # 08-129) serves a smaller portion of customers to  
23 the east of Highway 95 in Mohave County, with a service area of approximately  
24 120 acres.

1 **Q. PLEASE DESCRIBE THE WILLOW VALLEY WATER DISTRICT WATER**  
2 **PRODUCTION, TREATMENT AND DISTRIBUTION SYSTEM.**

3 A. The two systems within the Willow Valley Water District each have their own water  
4 production, storage, and distribution facilities. All water in the Willow Valley Water  
5 District is provided from wells. The water quality has elevated levels of iron and  
6 manganese, and as a result, treatment to control these constituents is the primary  
7 operational challenge. Each of the separate public water systems employs a chlorine  
8 dioxide and filtration treatment process which is designed to oxidize the iron and  
9 manganese from the source water.

10 Specifically, the King Street system has two wells that are all routed through a  
11 central chlorine dioxide and filtration treatment system. There are approximately  
12 1,381 customers connected to the King Street system. The Cimarron system has two  
13 wells that are all routed through a central chlorine dioxide and filtration treatment  
14 system. There are approximately 131 customers connected to the Cimarron system.

15 **Q. DOES THE WILLOW VALLEY WATER DISTRICT HAVE A TANK**  
16 **MAINTENANCE PROGRAM?**

17 A. No. But the Willow Valley Water District only has two tanks to be maintained; and  
18 one of those tanks recently had rehabilitation and maintenance performed in 2017.  
19 Since there is only one more tank to maintain, the Company is requesting  
20 authorization by the Commission for deferral accounting to allow EWAZ to defer  
21 tank maintenance costs at the time the second tank is maintained. Deferral  
22 accounting will enable the Company to spread the costs of that future maintenance  
23 over more than one period for recovery from customers.

1           **E       NORTH MOHAVE WATER DISTRICT SYSTEM**

2           **Q.       PLEASE DESCRIBE THE NORTH MOHAVE WATER DISTRICT SYSTEM.**

3           A.       The North Mohave Water District system is located to the north of the main Bullhead  
4           City service area and has a service area of approximate 3,829 acres (5.98-square  
5           miles). There are eight wells and seven storage tanks in the North Mohave system  
6           that provide service to approximately 2,021 customers. The topography of the North  
7           Mohave system is hilly with an elevation range of 700 feet to 1,500 feet.

8           **Q.       DOES THE NORTH MOHAVE WATER DISTRICT SYSTEM PROVIDE**  
9           **SIGNIFICANT OPERATIONAL BENEFITS TO THE LAKE MOHAVE**  
10           **HIGHLANDS AND DESERT FOOTHILLS SYSTEMS WITHIN THE**  
11           **MOHAVE WATER DISTRICT?**

12          A.       Yes. The acquisition of the North Mohave Water District system presented an  
13          opportunity to interconnect three separate water systems to build redundancy,  
14          emergency back-up, and to also eliminate the need for investment in additional  
15          storage. An integral strategy to effective water utility management is to establish  
16          interconnections which provide redundancy, emergency back-up, and the use of  
17          common facilities wherever possible. Because of EWAZ's acquisition of the North  
18          Mohave Water District system, the Company was able to cost-effectively establish  
19          interconnections with both the Lake Mohave Highland and the Desert Foothills  
20          systems. Specifically regarding the Lake Mohave Highland system, the topography  
21          within that system ranges from 590 feet to 1,000 feet. The Lake Mohave Highland  
22          system production and storage facilities are located at the 590-foot elevation.  
23          Booster pumps are required to move water to the upper elevations of the Lake  
24          Mohave Highland system, and the volume of water that can be moved is affected by  
25          the capacity of the booster pumps as well as pressure at which those pumps must

1 operate. The Company identified a need to install storage at the higher elevation area  
2 of the Lake Mohave Highland system to ensure that proper water supply and pressure  
3 were maintained for all customers in the system. This storage tank was anticipated to  
4 cost approximately \$2 million, which included construction of the reservoir as well  
5 as acquisition of land upon which to place the tank. The acquisition of the North  
6 Mohave Water District system eliminated the need for installation of this storage  
7 tank, because it allowed interconnection of the North Mohave Water District system  
8 to the Lake Mohave Highland's water system at the 1,000-foot elevation. This  
9 interconnection, consisting of 268 feet of 8-inch pipe costing \$51,974, has created  
10 sufficient supply and pressure to properly service the upper elevations of the Lake  
11 Mohave Highland system and eliminated the need to install a new reservoir.

12 **Q. WHAT BENEFITS HAS EWAZ ACHIEVED THROUGH THE**  
13 **INTERCONNECTION WITH THE DESERT FOOTHILLS SYSTEM?**

14 A. The interconnection between the Desert Foothills and North Mohave water systems  
15 eliminated the need to install an additional well in the Desert Foothills system. The  
16 Desert Foothills system was identified as having a firm production deficit that  
17 needed to be addressed through the development of an additional well. When the  
18 North Mohave Water District system was acquired by the Company, an opportunity  
19 to interconnect the North Mohave Water District system with Desert Foothills (in  
20 lieu of developing a new well) became a viable alternative to drilling a new well.  
21 The cost of this interconnect was \$132,866.19 whereas the cost of an additional well  
22 would have been in the \$1 million range, a significant savings to customers.

23 **Q. IS IT FAIR TO SAY THAT THE INTERCONNECTION OF THESE THREE**  
24 **SYSTEMS IS AN EXAMPLE OF SUCCESSFULLY IMPLEMENTING**  
25 **EFFECTIVE WATER SYSTEM MANAGEMENT?**

1 A. Yes. These two interconnections were constructed and placed into service in 2014  
2 (Lake Mohave Highland) and 2016 (Desert Foothills), and are great examples of  
3 effectively interconnecting water utilities to build redundancy, emergency back-up,  
4 and operational efficiencies that benefit the utility and its customers. Ms. Sarah M.  
5 Clor quantifies the savings to customers resulting from the purchase of the North  
6 Mohave Water District system and the two interconnections within the Mohave  
7 Water District in her Direct Testimony.

8 **Q. ARE THERE ANY OTHER SHARED FACILITIES BETWEEN SYSTEMS IN**  
9 **THE DISTRICTS THAT YOU MANAGE?**

10 A. Yes. With the acquisition of the North Mohave and the Willow Valley systems, the  
11 Company has been able to consolidate the operations and customer care for these  
12 districts with the overall Mohave Water District operations. All operators are based  
13 in the Bullhead City area and stage from the same location. This allows the use of  
14 consolidated equipment as well as materials and supplies. All materials warehoused  
15 are now combined so the management of this process is also consolidated. On-call  
16 duties have been consolidated to include coverage of these additional districts as  
17 well. Customer Care has also been consolidated into one customer care process that  
18 is managed by the four Customer Care staff-persons based out of the Company's  
19 Gemstone office.

20 **Q. DOES THE NORTH MOHAVE WATER DISTRICT HAVE A TANK**  
21 **MAINTENANCE PROGRAM?**



1 A. No, however, the Company is requesting approval from the Commission in this  
2 Application of its proposed tank maintenance program for the North Mohave Water  
3 District. The Company's proposal here is modeled after tank maintenance programs  
4 that the Commission previously approved for certain of EWAZ's other water  
5 districts.

6 **Q. PLEASE PROVIDE BACKGROUND REGARDING THE REQUEST TO**  
7 **INCLUDE A TANK MAINTENANCE PROGRAM AS PART OF THE COST**  
8 **OF SERVICE FOR THE NORTH MOHAVE WATER DISTRICT.**

9 A. There are two 500,000 gallon storage tanks and five 300,000 gallon storage tanks in  
10 the North Mohave Water District. The Company's proposed tank maintenance  
11 program is to span a period of twelve years and is designed to ensure that  
12 maintenance occurs at a frequency that balances the timing necessary to effectively  
13 extend the life of these assets through maintenance activities and in a manner that is  
14 not overly burdensome to customers. There is no clear-cut industry standard for  
15 frequency of tank maintenance although many utilities use a 12 year maintenance  
16 cycle. As such, the request is based on the number of tanks in the district, the size of  
17 those tanks, the age of the tanks and the material from which they are constructed.

18 The tank maintenance plan for the North Mohave system is based on a 12-year  
19 schedule as described in Exhibit JWS-5. The total anticipated cost for the 12-year  
20 tank maintenance program is estimated to be \$1,375,000. This overall plan cost was  
21 derived from tank maintenance plan and repairs conducted in the Mohave Water  
22 District since its approval in 2012. The costs included in the plan are associated with  
23 stripping, treating and coating the tanks, as well as installing cathodic protection and  
24 repairing and/or replacing exterior appurtenances such as ladders, manways, and tank

1 valves which will be required for all finished water reservoirs in the plan. This will  
2 result in a normalized annual expense of \$114,583 as set forth in Exhibit JWS-5.

3 **F CHAPARRAL SYSTEM**

4 **Q. PLEASE DESCRIBE THE CHAPARRAL SYSTEM.**

5 A. The Chaparral system is located within the Town of Fountain Hills and a portion of  
6 the City of Scottsdale in Maricopa County, Arizona. The overall service area covers  
7 approximately 12,178 acres (19.03 square miles) and there are approximately 13,800  
8 customers within the service area. The topography within the service area ranges in  
9 elevation from 1,500 feet to 2,575 feet. Production facilities consist of the Shea  
10 Water Treatment Plant (“Shea WTP”) which is a 15-million gallon per day (“MGD”)  
11 surface water treatment plant employing a contact clarification and filtration process  
12 in three identical 5 MGD modules. The other production facilities are two  
13 groundwater wells, Well 10 and Well 11. Both Well 10 and Well 11 are used from  
14 June through September annually as firm supply and to ensure compliance with the  
15 U.S. Environmental Protection Agency disinfection byproducts regulations. Well 10  
16 consists of a well with production capacity of 1,400 gpm and includes a dual filter  
17 absorption arsenic removal facility. Well 11 consists of a well and local disinfection  
18 with a production capacity of 2,300 gpm. Without Well 10 and Well 11, the system  
19 would rely solely on the Shea WTP and the Central Arizona Project (“CAP”) water  
20 source. Well 10 and Well 11 are also used annually in December to allow routine  
21 annual maintenance of the Shea WTP. Without Well 10 and Well 11, a failure at the  
22 Shea WTP or the CAP water delivery system would result in widespread water  
23 outages in the service area.

24 The Chaparral distribution system consists of eight above ground finished water  
25 storage reservoirs and eight pump stations. The storage reservoirs and pump stations

1 provide a combination of both gravity and pumped storage to the system. The  
2 distribution network consists of approximately 220 miles of mains, ranging in size  
3 from 4-inches to 24-inches. The distribution system was incrementally constructed  
4 by a developer as new homes and additional sections were opened up to service.

5 **Q. DOES THE CHAPARRAL DISTRICT HAVE A TANK MAINTENANCE**  
6 **PROGRAM?**

7 A. Yes. Decision No. 74568 (June 20, 2014) approved an 18-year tank maintenance  
8 program including total estimated maintenance costs of \$3,639,307, or \$202,184 per  
9 year as displayed in Exhibit JWS-1. The Company's Application includes  
10 continuation of this plan as approved by the Commission and the Company is not  
11 adjusting the program at this time.

12 **G ANTHEM WATER DISTRICT SYSTEM.**

13 **Q. PLEASE DESCRIBE THE ANTHEM WATER DISTRICT SYSTEM.**

14 A. The Anthem Water District serves approximately 8,678 customers in an  
15 unincorporated area north of the city of Phoenix. The overall service area covers  
16 approximately 5,187 acres (8.11 square miles). The Anthem Water District is part of  
17 an integrated water/wastewater system comprised of a CAP raw water pumping  
18 station, a nine-mile pipeline that brings CAP water to the Anthem community, a  
19 water treatment plant, booster stations and reservoirs, and a network of water  
20 distribution facilities. The Anthem Water Campus ("Campus") is a combined water  
21 and wastewater treatment plant. The initial infrastructure at the Campus was  
22 constructed in 1999 and uses state-of-the-art membrane-treatment technology for  
23 water treatment. Specifically, the Anthem Water Treatment Plant uses membrane-  
24 filtration technology to treat raw surface water from the CAP for drinking and other  
25 potable uses by our Anthem customers.

1 **Q. DOES THE ANTHEM WATER DISTRICT HAVE A TANK MAINTENANCE**  
2 **PROGRAM?**

3 A. Yes. Decision No. 72047 (January 6, 2011) authorized the deferral of tank  
4 maintenance costs in the Anthem Water District for recovery in a future rate  
5 application. This Application includes a request to continue this deferral treatment of  
6 tank maintenance expenses as previously authorized by the Commission. The  
7 Company is not seeking recovery of any deferred tank maintenance costs at this time  
8 because the tanks have just reached the point in their lifecycle where maintenance is  
9 required.

10 **Q. WHAT SPECIFIC STEPS HAS THE COMPANY TAKEN TO ENSURE SAFE**  
11 **AND EFFICIENT SERVICE TO THE ANTHEM WATER DISTRICT**  
12 **CUSTOMERS?**

13 A. EWAZ adopted a three-pronged strategy designed to mitigate the risk of water  
14 system outage and to promote the efficient use of water within the Anthem Water  
15 District:

- 16 1. Water is delivered to Anthem and treated via the Company's raw water pipeline  
17 and treatment plant.
- 18 2. The Anthem Water District system has been interconnected with the City of  
19 Phoenix's water system, making potable water available through two additional  
20 points on the CAP system and from two additional water treatment plants owned  
21 by the City of Phoenix.
- 22 3. EWAZ has permitted a recharge facility and drilled recovery wells to allow use of  
23 recharged water.

1           **H     TUBAC WATER DISTRICT SYSTEM.**

2           **Q.     PLEASE DESCRIBE THE TUBAC WATER SYSTEM.**

3           A.     The Tubac Water District supplies potable water to the community of Tubac, which  
4           is located in Santa Cruz County in southern Arizona. The overall service area covers  
5           approximately 4,153 acres (6.49 square miles) and consists of approximately 600  
6           customers. The Tubac system consists of three wells having a combined well  
7           capacity of 1,300 gpm, one 500 gpm arsenic treatment facility capable of split stream  
8           treatment allowing up to 1000 gpm production, and one storage tank with a capacity  
9           of 50,000 gallons. The arsenic treatment facility consists of a 500 gpm granular iron  
10          media treatment facility located at the Well 5 site. Equipment includes two 9-ft  
11          diameter Severn Trent GIM arsenic removal vessels using Bayoxide E33 Media,  
12          facility piping and instrumentation. The two 9-ft diameter vessels are operated in a  
13          lead-lag configuration to extend the life of the arsenic media and lower O&M costs.  
14          The media lifecycle on these vessels general ranges from 12 to 18 months dependent  
15          on the influent arsenic concentrations.

16          **Q.     IN THE COMPANY’S LAST RATE CASE THAT INCLUDED THE TUBAC**  
17          **WATER DISTRICT, THE COMMISSION REQUIRED THE COMPANY TO**  
18          **PERFORM A HYDRAULIC ASSESSMENT OF THE SYSTEM TO**  
19          **DETERMINE THE NEED FOR AN ADDITIONAL STORAGE TANK.**  
20          **WHAT WAS THE RESULT OF THAT ASSESSMENT?**

21          A.     The Company performed the assessment and submitted a report on March 7, 2016 to  
22          the Commission that stated “Through further analysis, EPCOR completed a system  
23          evaluation and hydraulic analysis of key system components. A review of supply,  
24          demand, conveyance, and storage was completed. As a result of this engineering

1 analysis, a multi-year capital plan has been created to proactively address system  
2 needs.”

3 **Q. IS ANY FURTHER ANALYSIS OF THE TUBAC WATER DISTRICT’S**  
4 **HYDRAULIC CAPABILITIES REQUIRED AT THIS TIME?**

5 A. The Company does not believe any additional assessments are needed at this time.

6 **I NON-REVENUE WATER**

7 **Q. IN DECISION NO. 71345, THE COMPANY WAS DIRECTED BY THE**  
8 **COMMISSION TO FILE FIVE-YEAR PLANS TO ADDRESS NON-**  
9 **REVENUE WATER IN THE MOHAVE AND HAVASU WATER**  
10 **DISTRICTS. HAS THE COMPANY COMPLIED WITH THE**  
11 **COMMISSION’S DECISION?**

12 A. Yes. The Company submitted Five-Year Plans for the Mohave and Havasu Water  
13 Districts on March 1, 2013 and a Modified Five-Year Plan for the Havasu Water  
14 District on December 12, 2016 in response to a request from the Utilities Division  
15 Staff.

16 **Q. HAVE THE NON-REVENUE WATER STATISTICS IN THE MOHAVE**  
17 **WATER DISTRICT BEEN REDUCED FROM THE LEVEL EXPERIENCED**  
18 **DURING THE TEST YEAR IN DOCKET NO. W-01303A-10-0448?**

19 A. Yes. The non-revenue water in the test year ended June 30, 2010 was 19.27 percent  
20 in the Mohave Water District. In the Company’s 2016 Annual Report to the  
21 Commission, the 12-month rolling average for the public water systems in the  
22 Mohave Water District is reported as ranging from zero percent in the Rio Vista  
23 PWS to 13.52 percent in the Desert Foothills PWS or an overall non-revenue water  
24 of 6.77 percent.

1 **Q. HAVE THE NON-REVENUE WATER STATISTICS IN THE HAVASU**  
2 **WATER DISTRICT BEEN REDUCED FROM THE LEVEL EXPERIENCED**  
3 **DURING THE TEST YEAR IN DOCKET NO. W-01303A-10-0448?**

4 A. Yes. The non-revenue water in the test year ended June 30, 2010 was 19.26 percent  
5 in the Havasu Water District. In the Company's 2016 Annual Report to the  
6 Commission, the 12-month rolling average for Havasu Water District is reported at  
7 15 percent, a reduction of more than 22 percent. The approach that is being  
8 employed is the same approach being used across all EWAZ water districts. This  
9 approach involves testing segments of the distribution system for leaks that are not  
10 surfacing and making any necessary repairs or replacements. This approach to non-  
11 revenue water reduction is very effective; however, it is very capital intensive and  
12 takes time to manifest itself in water loss reductions as reflected in non-revenue  
13 water reporting. EWAZ also continues to explore and use innovative methods for  
14 detecting underground water leaks by using technology such as infrared imaging to  
15 precisely located leaks that are not surfacing which allows repairs to be made in the  
16 most efficient and cost conscience manner.

17 **Q. WHEN THE COMPANY ACQUIRED THE WILLOW VALLEY SYSTEM**  
18 **FROM GLOBAL WATER RESOURCES, INC. IN MAY OF 2016, DID**  
19 **WILLOW VALLEY ALSO HAVE HIGH WATER LOSS STATISTICS WITH**  
20 **COMMISSION COMPLIANCE REPORTING RESPONSIBILITIES?**

21 A. Yes. And as a condition of the acquisition, the Commission ordered EWAZ to  
22 submit a report containing a detailed analysis and plan to reduce water loss in the  
23 Willow Valley Water system to 10 percent or less or alternatively, a detailed cost

1 benefit analysis supporting Willow Valley's conclusion that it would not be cost  
2 effective to reduce water losses in the Willow Valley system to less than 10 percent.<sup>2</sup>

3 **Q. WHEN WAS THIS REPORT DUE TO THE COMMISSION?**

4 A. The Commission had given the Company 90 days from the date of the Decision in  
5 which to file the compliance item. That provided EWAZ until June 8, 2016 for the  
6 report to be submitted, which was only 30 days after the purchase transaction closed.  
7 Since the acquisition transaction did not close until May 9, 2016, the Company  
8 sought an extension of the deadline to file its report, and the Commission granted an  
9 extension until December 31, 2016. The report was filed on December 29, 2016.

10 **Q. WHAT WAS THE PERCENTAGE OF WATER LOST IN 2014 WHEN THE**  
11 **COMMISSION ORDERED THE MONITORING OF WATER LOSSES BY**  
12 **WILLOW VALLEY?**

13 A. The water loss in the Willow Valley system exceeded 27 percent in 2014.

14 **Q. PLEASE DISCUSS THE NON-REVENUE WATER STATISTICS FOR THE**  
15 **WILLOW VALLEY WATER DISTRICT SINCE THE COMPANY TOOK**  
16 **OVER OWNERSHIP FROM GLOBAL WATER RESOURCES, INC. IN MAY**  
17 **OF 2016.**

18 A. EWAZ implemented water auditing as a routine business practice using a method  
19 that has clearly defined terms and meaningful performance indicators for Willow  
20 Valley. The Non-Revenue Water Program assists each district in identifying where  
21 water losses are occurring and also expresses, by volume and percentage, how much  
22 water is lost. The rolling non-revenue water percentage from June 2016 through

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<sup>2</sup> Decision No. 75484 (March 10, 2016) at 19.



1           November 2016 was 17.29 percent, which is a significant reduction from the  
2           historical comparison.

3   **Q.    DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

4   **A.    Yes.**

**EXHIBIT JWS-1**

**Chaparral System**

									Inspection Schedule								
State	Region	TANK NAME	TANK LOCATION	Material	Capacity	Erection Date	Diameter	Shell Height	YR 2	YR 4	YR 6	YR 8	YR 10	YR 12	YR 14	YR 16	YR 18
AZ	Eastern	Res. 1	Chaparral	steel	500,000	1972	65.0	18.0	X								
AZ	Eastern	Res 2	Chaparral	steel	1,500,000	1972	92.0	30.0	X								
AZ	Eastern	Res 3	Chaparral	steel	1,300,000	1974	96.0	24.0			X						
AZ	Eastern	Res 4	Chaparral	steel	500,000	2005	52.0	31.0									X
AZ	Eastern	Res 5	Chaparral	steel	1,200,000	1996	92.0	24.0					X				
AZ	Eastern	Res 6	Chaparral	steel	1,200,000	1996	92.0	24.0						X			
AZ	Eastern	Res 7	Chaparral	steel	1,200,000	1998	92.0	24.0							X		
AZ	Eastern	Res 8	Chaparral	steel	500,000	2005	60.0	24.0								X	
AZ	Eastern	Shea WTP	Chaparral	steel	3,500,000	1986	140.0	30.0				X					

Chaparral COST BASIS per Riley Industrial Services \$478,856  
 PRICE PER GALLON \$0.32  
 ESTIMATED COST

\$638,475      \$415,009    \$1,117,331    \$383,085    \$383,085    \$383,085    \$159,619    \$159,619

TOTAL ESTIMATE PROGRAM COST \$3,639,307

**AVERAGE 18-YEAR ANNUALIZED COST \$202,183.75**

**EXHIBIT JWS-2**

**Havasu Water**

State	Region	TANK NAME	TIC JOB #	TANK LOCATION	Material	Capacity	Erection Date	Diameter	Shell Height	Inspection Schedule										
										1	2	3	4	5	6	7	8	9	10	
										2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AZ	Eastern	Havasu Booster #1		Lake Havasu City	steel	100,000	1965	27.0	24.0					X						
AZ	Eastern	Havasu Booster #2		Lake Havasu City	steel	100,000	1990	30.0	32.0									X		
AZ	Eastern	Havasu Booster #3		Lake Havasu City	steel	125,000	1991	30.0	24.0			X								
AZ	Eastern	Havasu Booster #4 (No. 1)		Lake Havasu City	steel	250,000	1994	70.0	24.0											
AZ	Eastern	Havasu Booster #4 (No. 2)		Lake Havasu City	steel	750,000	2003	52.0	32.0							X				

LAKE HAVASU COST BASIS per TCI REPORT \$144,000  
PRICE PER GALLON \$0.58  
ESTIMATED COST

\$144,000      \$72,000      \$57,600      \$432,000      \$57,600

TOTAL ESTIMATE PROGRAM COST \$763,200

**AVERAGE 10-YEAR ANNUALIZED COST \$76,320**

## **EXHIBIT JWS-3**

Mohave Water District

State	Region	TANK NAME	TANK LOCATION	Material	Capacity	Erection			Inspection Schedule																		
						Date	Diameter	Shell Height	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
						2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026							
AZ	Eastern	16-1 (No. 1)	Bullhead City	steel	1,000,000	1993	82.0	24.0								X											
AZ	Eastern	16-1 (No. 2)	Bullhead City	steel	420,000	1992	56.0	24.0				X															
AZ	Eastern	16-2 (No. 2)	Bullhead City	steel	1,000,000	1994	82.0	24.0									X										
AZ	Eastern	24-1	Bullhead City	steel	1,000,000	1999	82.0	24.0												X							
AZ	Eastern	Arizona Gateway	Bullhead City	steel	300,000	1995	72.0	24.0										X									
AZ	Eastern	Big Bend Acres	Bullhead City	steel	120,000	1987	30.0	24.0							X												
AZ	Eastern	Bullhead #4	Bullhead City	steel	120,000	1975 est	30.0	24.0		X																	
AZ	Eastern	Camp Mohave	Bullhead City	steel	250,000	1996	44.0	24.0												X							
AZ	Eastern	Desert Foothills (No. 1)	Bullhead City	steel	500,000	1997	60.0	24.0													X						
AZ	Eastern	Desert Foothills (No. 2)	Bullhead City	steel	500,000	2006	60.0	24.0														X			X		
AZ	Eastern	Desert Glen	Bullhead City	steel	200,000	1984	65.0	24.0					X														
AZ	Eastern	Lake Mohave Highlands	Bullhead City	steel	100,000	1972	27.0	24.0			X																
AZ	Eastern	Laredo Village	Bullhead City	steel	500,000	1990	60.0	24.0	X																		
AZ	Eastern	Pegasus Ranch	Bullhead City	steel	120,000	1971	30.0	24.0		X																	
AZ	Eastern	Rancho Colorado	Bullhead City	steel	250,000	2006	44.0	24.0																		X	
AZ	Eastern	Riverview Mall	Bullhead City	steel	40,000	1983		16.0				X															
AZ	Eastern	Silver Creek	Bullhead City	steel	300,000	1984	50.0	32.0						X													

BULLHEAD CITY COST BASIS per TCI REPORT \$273,000  
 PRICE PER GALLON \$0.55  
 ESTIMATED COST

\$273,000 \$131,040 \$54,600 \$229,320 \$131,040 \$163,800 \$65,520 \$546,000 \$546,000 \$163,800 \$136,500 546,000 \$273,000 \$273,000 \$136,500

TOTAL ESTIMATE PROGRAM COST \$3,669,120  
 AVERAGE 15-YEAR ANNUALIZED COST \$244,608

**EXHIBIT JWS-4**



Paradise Valley Water District

			Inspection Schedule													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
REGION	TANK NAME	TANK LOCATION	Year Ending 8/31/2016	Year Ending 8/31/2017	Year Ending 8/31/2018	Year Ending 8/31/2019	Year Ending 8/31/2020	Year Ending 8/31/2021	Year Ending 8/31/2022	Year Ending 8/31/2023	Year Ending 8/31/2024	Year Ending 8/31/2025	Year Ending 8/31/2026	Year Ending 8/31/2027	Year Ending 8/31/2028	Year Ending 8/31/2029
Eastern	60th Street Tank	Paradise Valley					x									
Eastern	Clearwater Hills #1	Paradise Valley				x										
Eastern	Clearwater Hills #2	Paradise Valley	x													
Eastern	Clearwater Hills #3	Paradise Valley								x						
Eastern	Club Estates Tank	Paradise Valley							x							
Eastern	Country Club #1	Paradise Valley														x
Eastern	Country Club #2	Paradise Valley										x				
Eastern	PVARF #1	Paradise Valley														
Eastern	PVARF #2	Paradise Valley														
Eastern	Racquet Club Tank	Paradise Valley			x											
Eastern	Stone Canyon Tank	Paradise Valley		x												

Total Cost by Tank From Page 2 of 2 \$ 128,700 \$ 99,990 \$ 157,514 \$ 151,514 \$ 263,560 \$ - \$ 102,580 \$ 78,650 \$ - \$ 331,300 \$ - \$ - \$ - \$ 417,400

TOTAL ESTIMATE PROGRAM COST \$ 1,731,208  
 AVERAGE 14-YEAR ANNUALIZED COST \$ 123,658

**EXHIBIT JWS-5**

