Exhibit No.:
Issues: UPIS Additions, Residential Usage Normalization, Platte County Water Treatment Facility Retirement
Witness: Kevin H. Dunn
Exhibit Type: Direct
Sponsoring Party: Missouri-American Water Company
Case No.: WR-2011-0337
SR-2011-0338
Date: June 30, 2011

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2011-0337
CASE NO. SR-2011-0338

DIRECT TESTIMONY

OF

KEVIN H. DUNN

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

MAWC Exhibit No. 16
Date 2-21-12 Reporter JC
File No. WR-2011-0337

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE	)))))	CASE NO. WR-2011-XXXX CASE NO. SR-2011-XXXX

AFFIDAVIT OF KEVIN H. DUNN

Kevin H. Dunn, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Kevin H. Dunn"; that said testimony and schedules were prepared by him and/or under his direction and supervision; that if inquires were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge.

Kevin H. Dunn

State of Missouri
County of St. Louis
SUBSCRIBED and sworn to
Before me this 24th day of June 2011.

Notary Public

My commission expires:

STACI A. OLSEN
Notary Public – Notary Seal
STATE OF MISSOURI
St. Charles County
Commission Number 09519210
My commission expires March 20, 2013

DIRECT TESTIMONY
KEVIN H. DUNN
MISSOURI-AMERICAN WATER COMPANY
CASE NO.WR-2011-0337
CASE NO.SR-2011-0338

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DIRECT TESTIMONY

Kevin H. Dunn

I. WITNESS INTRODUCTION

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. Kevin H. Dunn, 727 Craig Rd., St. Louis, MO 63141.

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

A. I am employed by Missouri-American Water Company ("MAWC" or "Company") as Director, Engineering. MAWC is a subsidiary of American Water Works Company, Inc. ("American Water").

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received my Bachelor of Science degree in Civil Engineering from the University of Missouri - Columbia in 1984.

Q. ARE YOU A LICENSED PROFESSIONAL ENGINEER?

A. Yes, I am a registered Professional Engineer in Missouri.

Q. DO YOU HOLD OTHER RELATED WATER CERTIFICATES?

A. Yes, I have Class A and DSIII Public Water Supply Operator Certificates from the Missouri Department of Natural Resources.

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE IN THE WATER UTILITY INDUSTRY.

A. In 1984, I began work with St. Louis County Water Company as a System Engineer. This work included the participation in various designs and relocations and installations of mains throughout St. Louis County. From 1989 to 1994, I was in charge of various water treatment plant facility operations, maintenance and capital projects, which led to my promotion to Superintendent for all of the water treatment facilities in St. Louis County. In August of 1994, I was transferred back into Engineering, first as Special Projects Engineer and, then, Superintendent of Production Engineering where I oversaw or performed the project management of various major water treatment facility upgrades, depreciation studies, planning studies to match future growth, and maintenance studies to determine life cycle replacements. After the merger of St. Louis County Water with MAWC in 1999, I performed a similar role under the title of Engineering Manager and I was responsible for the eastern districts in Missouri, which included St. Louis County, St. Charles, Mexico, and Jefferson City. In 2002, I was promoted to Director of Engineering for Missouri and became responsible for all of the capital projects and planning for all of the Missouri districts. In 2004, I was promoted to a position with American Water Works Service Company, Inc. ("Service Company") as the Central Region Director, Production, where I was responsible for all water and wastewater treatment facilities in the Central Region. My new role mainly involved directing the treatment operations and maintenance work for the

American Water districts located in Missouri, Illinois, Iowa, Indiana, Ohio, and Michigan. In late 2007, I was transferred to my current position as Director, Engineering for MAWC.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to describe the Company's investments in, and additions to, Utility Plant in Service ("UPIS") since the end of the true-up period of MAWC's last rate case, April 30, 2010; to describe the calculation for residential usage normalization based on the decline of residential base usage; and to describe the reasons for retiring the Platte County Water Treatment Facility by May 31, 2018.

II. UPIS ADDITIONS

Q. WHAT ARE MAWC'S EXPECTED INVESTMENTS IN PLANT IN SERVICE FROM MAY 1, 2010 THROUGH DECEMBER 31, 2011?

A. The anticipated investments in capital additions, by District, are indicated in the table below:

Investments thru December 2011	
Brunswick	138,867
Jefferson City	12,461,345
Joplin	4,312,488
Mexico	1,373,292
Platte County	1,826,631
St. Joseph	4,100,620
St. Louis Metro	88,269,949
Warrensburg	787,758
Warren County Water	100,238
Cedar Hill Sewer	259,432
Parkville Sewer	(3,462)
Warren County Sewer	50,537
TOTAL	113,677,696

Q. PLEASE LIST THE SIGNIFICANT CAPITAL PROJECTS THAT ARE OR WILL BE COMPLETED DURING THIS PROCEEDING.

A. Significant individual projects at each district are as follows:

Brunswick

- Replace Backwash Turbidity Monitor.
- Purchase fire hydrant flushing tools.
- Replace failed service lines.
- Install variable speed drive on high service pump #1.

Jefferson City

- Install new raw water intake pump station to replace the existing station that was built in the 1890's.
- Replace 8" cast iron on the 400 block of Jefferson St with 400 ft of 8" ductile iron.
- Relocate 160 ft of 12" cast iron main on Tanner Bridge Rd and Ellis Blvd
- Replace 8" cast iron on Monroe St with 1,000 ft of 8" ductile iron.
- Replace high service pump #2
- Replace SCADA computers.

Joplin

- Relocate 571 ft of 12" main on Connecticut Ave at new KCS railroad
- Relocate 100 ft of 6" main on Porter
- Relocate 1000 ft of 12" on Zora at Main
- Replace 75 ft of 16" and 60 ft of 6" under the railroad at 5th St. and Murphy Blvd.
- Replace 235 failed service lines
- Add telemetry for the Webb City vault and Quapaw site to capture pressure and flow data

Mexico

- Replace 4" cast iron main on Holt with 1,800 ft of 8" plastic main
- Replace 6" cast iron main on Trinity with 450 ft of 6" plastic main
- Relocate 1400 ft of 8" main on Curtis and Concordia for City's Storm Sewer Project

- Replace 206 failed service lines
- Replace SCADA program logic controllers throughout the system
- Replace high service #1 pump/motor combination with new higher efficiency combination
- Replace filter media on three filters

Platte County

- Relocate 2,392 ft of 12" and 3,402 ft of 8" main on the Highway 45 MODOT project
- Relocate 260 ft of 12" main on Mattox Ave around box culvert for the City of Riverside
- Replace 18 failed service lines

St. Joseph

- Relocate 37 ft of 6" main on Lake Ave at Cherokee
- Repair Karnes Tank interior roof members and install safety cable
- Repair Industrial Park tank interior roof members and install safety cable
- Install variable frequency drives at Agency Tank
- Replace medium voltage coils on well pumps #2 and #5
- Replace 229 failed service lines

St. Louis Metro

- Complete several Main Relocations resulting from Public Works Improvements
    - Replace 650 ft of 8", 123 ft of 36" 70 ft of 24" and 50 ft of 20" on Olive Blvd in conjunction with the MODOT Rte 141

- Replace 5100 ft of 20", 100 ft of 8" and 100 ft of 6" on Sappington Rd
- Replace 4200 ft of 12" main on Clayton Rd in Town &n Country
- Relocate 2549 ft of 12", 115 ft of 8", and 160 ft of 6" main on the Thoele Rd St. Charles County Project
- Relocate 405 ft of 12" main on Guttermuth Rd in conjunction with the St. Charles County Highway Project
- Relocate 1400 ft of 12" main on Ehlmann Rd
- Replace 18" and 12" mains with 5445 ft of 24", 400 ft of 20", 360 ft of 18", 450 ft of 16", and 30 ft of 30" main on Page Ave Highway Relocation Project in St. Charles

- Replace mains as part of the obsolete main replacement program
- Install treatment to meet new NPDES permit requirements for the South Plant Residual Lagoons
- Replace South Plant wash water rate of flow valve
- Replace South Plant Raw Water Intake Valves #1 and #5
- Replace six power poles on intake road at Central Plant
- Replace Central Plant 3 High Service A Switchgear switches
- Overhaul Central Plant 3 Filter #1 and Filter Plant Filter #12
- Replace two Central Plant #1 Coag Baffle Walls and Floc Drives
- Replace Central Plant HS Pump #7
- Replace filter media in Central Plant Filters #1 and #12

- Replace Synchronous Controls on Central Plant #12 High Service High Pump
- Replace Liquid Ferric feed pumps at Meramec Plant
- Replace Carbon Mixer at Meramec Plant
- Overhaul North Plant Filters #1 and #6

Warrensburg

- Replace roof hatch and ladders, and install riser handrail and safety cable on North Tank
- Replace #7 well pump

Warren County Water

- Replace 6 failed service lines

Cedar Hill Sewer

- Replace Lagoon Aerator
- Replace Cedar Springs Lift Station
- Install SCADA radio

Warren County Sewer

- Install 4 dissolved oxygen monitors to operate blowers more efficiently
- Replace 11 failed laterals

Former Aqua Systems – MAWC will increase these systems' Utility Plant by approximately $1.2 million.

III. RESIDENTIAL USAGE NORMALIZATION

Q. WHY SHOULD RESIDENTIAL USAGE BE NORMALIZED?

A. A "normal" usage level should represent the customers' usage that would occur based on average weather patterns. This normal usage is used in ratemaking to set revenues for the residential customer class. Weather extremes will increase or decrease customers' outside the home usage. In addition, the Company has observed a significant and continuing residential declining usage trend that should be taken into account.

Q. HOW CAN RESIDENTIAL WATER USAGE BE NORMALIZED?

A. A statistical model for weather normalization, such as the one presented in the Company's last rate case by Dr. Edward Spitznagel Jr., would accomplish this result. In the water industry, customer consumption expectations cannot be simply estimated through heating or cooling degree comparisons as they often are in the electric and gas industries. For example, Dr. Spitznagel's modeling assumptions took into account not only temperatures, but precipitation and drought tolerance indices, as well. After normalizing for these factors, he also considered trend-line analyses reflecting permanent changes in consumption patterns over time. His statistical model proved to be quite accurate during the summer of 2010 in St. Louis. Although weather in the area exhibited extremely hot temperatures (hottest summer in last 65 years), the consistent precipitation (15th highest in last 65 years) kept residential discretionary usage below normal levels. As accurate as that approach proved to be, however, any model with

such a great number of factors and variables can be complicated to perform, difficult to comprehend and costly. As a result, the Company is proposing a simpler, but still accurate alternative method that reviews the residential customer baseline usage pattern from 10 years of non-weather months' (i.e., winter months with little or no outdoor use) usage and then add to this the ten year average of the customers' discretionary usage (e.g. lawn watering, etc).

Q. WHY NOT USE A SIMPLE AVERAGE BASED ON THE AVERAGE ANNUAL RESIDENTIAL CUSTOMER USAGE OVER A SET PERIOD?

A. An annual average does not take into account the significant and continuing residential declining usage trend that we have observed. This trend is common throughout the United States and will be discussed further in the testimony of MAWC witness Gary Naumick. Because an average of historical data can not account for this anticipated decline, an average of annual averages would calculate a higher residential usage rate. Chart 1 below displays a graph of St. Louis County's actual last ten years of annual customer usage along with projected normalized annual usage from 2011 – 2015; as well as a projection using the six year average method similar to that proposed by the Commission Staff in the last case. This data illustrates that the average of annual averages projects higher usage than has been experienced.

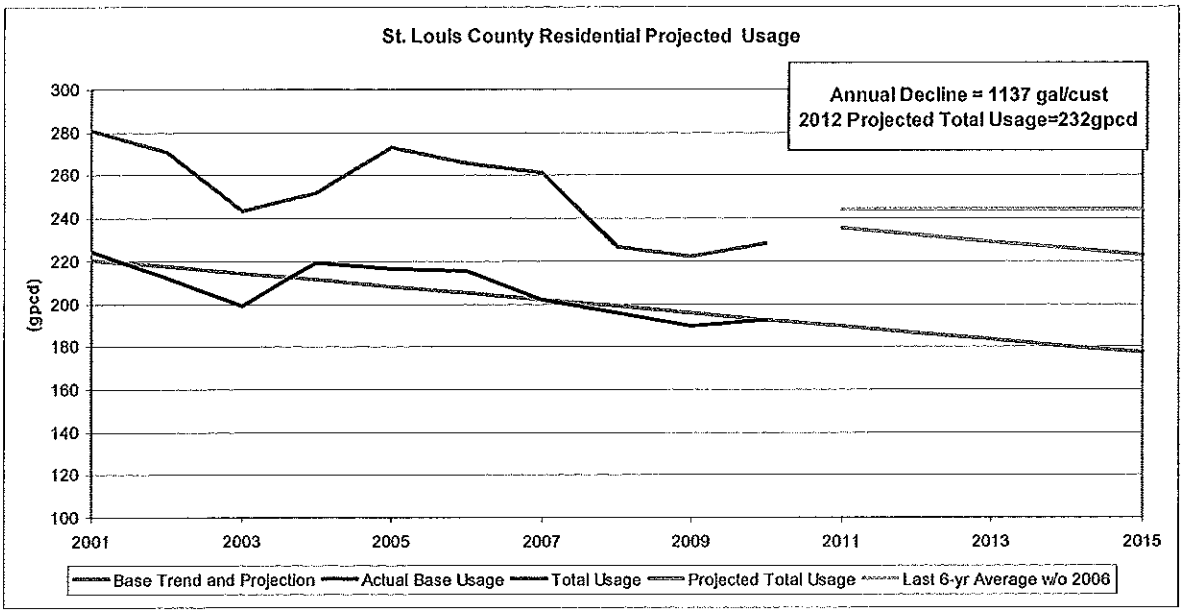

Chart 1

Q. HAVE YOU PERFORMED AN ANALYSIS ON BEHALF OF MAWC?

A. I have performed a residential baseline usage analysis.

Q. PLEASE DESCRIBE THE PROPOSED RESIDENTIAL BASELINE USAGE ANALYSIS.

A. An analysis of each district's non-weather months for the last 10 years was performed. This analysis determined a baseline usage period by taking the average of three consecutive months of usage to calculate a district annual usage in gallons per customer per day ("GPCD"). A linear regression analysis was then performed on the 10 years of data to create the "best fit" trend line for each district (see Chart 1 for St. Louis County). A calculation from the trend line formula then provides the baseline usage for 2012.

Q. WHY DOES THE BASELINE PERIOD AVERAGE THREE CONSECUTIVE MONTHS?

A. Some customers are billed monthly and some are billed quarterly. By including three consecutive months of quarterly cycle usage, the analysis accounts for the usage variability of all customers in all of the districts. If the model only used one month as the non-weather usage indicator, the one month billing of a quarterly cycle would only account for about one third of the total residential customers. Three consecutive months of quarterly customers represent all customers and their usage patterns. Thus, using a three consecutive month period allows for the total usage for all customers in all districts no matter the billing cycle. Moreover, in some years during which American Water was under foreign ownership, accounting information was reported based on cycles of four weeks, four weeks and five weeks rather than using the standard monthly reporting cycles utilized by most domestic corporations. Not only does averaging three consecutive months better represent the usage of all customers in a quarterly billing cycle but it also eliminates the need for adjustments due to the different reporting cycles previously used by the Company. Therefore all customers in each district are considered and all years can be analyzed.

Q. WHAT THREE MONTHS WERE USED IN THE STUDY?

A. This study uses bills issued during the period February through April for the three consecutive months of data, except for the district of Brunswick. No significant discretionary factor was found in the Brunswick district. Consequently, the whole

year was considered as the baseline period. The February – April range represents the lowest three consecutive month period of customer usage on which the baseline is calculated. Limited outdoor water usage occurs during this period and thus represents the best estimate of the baseline indoor usage that customers would use throughout the whole year.

Q. WHY IS THE NORMAL USAGE DETERMINED FOR THE CALENDAR YEAR 2012?

A. When determining the proper normalized residential usage per day, it is important to consider the date at which rates will become effective as a result of the rate case. The timing of the filing of this case suggests that rates will not be effective until 2012 and thus customer usage levels in 2012 will dictate the revenue generated. It is only reasonable that the 2012 projected baseline usage be considered for the calculation of normal usage. This will allow for consideration of the continued decline in customer usage at the time new rates are likely to become effective.

Q. WHAT IS THE PROJECTED ANNUAL USAGE DECLINE FOR EACH DISTRICT?

A. The analysis of the Missouri districts calculates an annual decline in usage from a low of 394 gallons/customer in Jefferson City to a high of 3,169 gallons/customer in Platte County:

District	Annual Decline (gallons/cust)
Brunswick	1,040
Mexico	682
Platte County	3,169
Warrensburg	1,065
Jeff City	394
St. Charles	1,306
Warren County	740
St. Joseph	807
Joplin	1,074
St. Louis Qtrly	1,137

Several key factors appear to cause this decline - increasing prevalence of low flow (water efficient) plumbing fixtures, conservation ethic of the customers, and price elasticity. These factors are more thoroughly discussed in the testimony of MAWC witness Gary Naumick.

Q. DO YOU EXPECT THE DECLINING USAGE TO CONTINUE?

A. Yes. MAWC customers live in well developed communities and it appears they will continue to replace plumbing fixtures and less efficient water using appliances with newer water efficient fixtures and appliances for an extended period. The ten year period for this model review was selected as a representative period of these type replacements in customers' homes. It is important to note that the decline in usage could possibly accelerate if customers embrace a greater conservation ethic, especially as the price of water increases.

Q. HOW IS THE NORMAL USAGE CALCULATED?

A. Once the baseline usage and the 2012 decline are determined the analysis then reviews the yearly discretionary usage per day. This figure is calculated by subtracting the yearly baseline usage from that year's average daily usage. The discretionary usage is smaller in wet summers approximately 5-25% of annual usage, like the last three years, than when the summers are dry and hot and the discretionary usage could get up to 40% of annual usage. With ten years of data, an average of discretionary usage can be used to calculate the portion of discretionary usage to be added to the baseline projection and determine the normal usage. The 2012 baseline, discretionary, and normal usage per district are:

	2012 Projections		
District	Baseline (GPCD)	Discretionary (GPCD)	Normal (GPCD)
Brunswick	100.09	0.00	100.09
Mexico	122.08	8.83	130.90
Platte County	133.41	76.61	210.02
Warrensburg	125.49	19.22	144.72
Jeff City	129.44	20.40	149.85
St. Charles	165.07	71.29	236.35
Warren County	147.28	36.55	183.84
St. Joseph	133.96	15.85	149.81
Joplin	133.09	33.18	166.26
St. Louis Qtrly	186.43	45.76	232.19

IV. PLATTE COUNTY WATER TREATMENT FACILITY RETIREMENT

Q. PLEASE DESCRIBE THE PLATTE COUNTY WATER TREATMENT FACILITY (PCWTF).

A. The Platte County Water Treatment Facility is a ground water iron-manganese removal and lime softening plant that fits tightly on the existing property. The oldest parts of this plant date back to 1898. Major improvements at the plant occurred in 1942, 1954, and 1976. Other equipment replacements and repairs have occurred throughout the life of the plant. The major items that date to 1898 are the 150,400 gallon clearwell and the 23,000 gallon backwash holding basin. The clearwell has a concrete wall interior with a stone revetment support as foundation.

Q. WHY MUST THE PLATTE COUNTY WATER TREATMENT FACILITY (PCWTF) BE RETIRED BY MAY 31, 2018?

A. Renovations to the plant will be required and it is not practical or advisable to make those renovations at this site.

The concrete and stone for the clearwell show signs of cracking. In addition, the stone has missing sections of grout. This clearwell is a vital part of the treatment facility and further deterioration could lead to contamination from groundwater or possible infiltration of insects and rodents. The clearwell needs to be replaced to prevent the contamination. The existing site does not have sufficient space to place a new clearwell of equal or greater size while keeping the existing clearwell

in service. Therefore, in order to use the existing site, additional property adjacent to the PCWTF will need to be purchased. Limited land around the plant site is available for this construction and what may be possible for purchase would be subject to flooding.

The current plant and office site has been subjected to floods and remains vulnerable. In 1993 (flood of record), the existing plant site was flooded and there was approximately seven feet of river water on the main floor of the operating building. The wetted portion of the clearwell was below the height of the flood waters by approximately four inches.

The clearwell could be designed to be replaced where it is currently located but that would require major portions of the existing office and garage to be removed. The demolition and construction would require a significant outage of the plant during the construction phase of the replacement.

A more limited outage occurred in 1995 when the clearwell roof had to be replaced. During this outage, water was purchased from the City of Kansas City (at a higher cost than producing water from the plant) to supply water to Platte County. The project was scheduled during the lower customer demand period. The demolition and construction of a new clearwell would require the plant to be out of service for a longer period.

Therefore, replacing the clearwell on site would not be advisable as the major portions of the plant would remain susceptible to flooding.

Q. IS THE CLEARWELL REPLACEMENT THE ONLY REASON FOR RETIRING THE PCWTF?

A. Replacing the clearwell in the near future to prevent failure or exposure to contamination is the major reason for retiring the plant, but other structural and building façade deterioration exists. Steel roof support beams over both sets of filters have extensive corrosion due to being in the moist atmosphere. These beams could fail in a similar manner as what occurred in the winter of 2009 – 2010 when the portion of the plant roof over the operator area collapsed. Also, the brick façade of the PCWTF shows signs of stress and bricks have cracked and popped out in various sections of the exterior walls. Concrete spalling and other metal corrosion on the filters and settling basin are also occurring and will require repair/replacement in the near future. Overall, repairing or replacing the existing structures in place would be more expensive than building a plant on a new site. Furthermore, a new site would not be subject to the flooding of the current site.

Q. WHY IS THE RETIREMENT DATE MAY 31, 2018?

A. MAWC has considered the retirement of this plant for some time. In Burns & McDonnell's 2000 Report "Final Draft of the Water Demand Projections and Capital Improvement Options Study for Platte County District"; they state "The remaining useful life of the existing Water Treatment Plant has been estimated in about 10 years. Operation of the plant beyond this period of time is anticipated to be uneconomical. Therefore, retirement of the existing Water Treatment Plant is

assumed to occur in year 2010." MAWC continued to monitor the plant condition from this point and in 2008 conducted an in-house study prior to agreeing with the City of Kansas City for an additional connection at Briarcliff. This study concluded that the WTF would need to be replaced within 10 years, which is the year 2018.

The above conditions indicate a continuation of disintegration of the plant. The building of a new water treatment plant on a new site could take 5-6 years to purchase land, obtain funding and proper permitting of the plant and site, thus fitting the 2018 retirement date. The May date was selected to meet projected summer demand.

Q. WHAT WILL REPLACE THE PCWTF?

A. MAWC will continue to evaluate building a new treatment facility versus purchase of all water from the City of Kansas City. The selection will need to be determined within the next eighteen months. The 2008 Company study selected building a new plant matching the existing plant's capacity on a new site, while purchasing the remaining water to meet demands from Kansas City. However, a decision in this regard has not yet been made.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.