

Exhibit No.:  
Issues: Cash Working Capital  
Witness: Harold Walker, III  
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Sponsoring Party: Missouri-American Water Company  
Case No.: WR-2022-0303  
SR-2022-0304  
Date: July 1, 2022

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO. WR-2022-0303**

**CASE NO. SR-2022-0304**

**DIRECT TESTIMONY**

**OF**

**HAROLD WALKER, III**

**ON BEHALF OF**

**MISSOURI-AMERICAN WATER COMPANY**

## AFFIDAVIT

I, Harold Walker, III, under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am Manager, Financial Studies for Gannett Fleming Valuation and Rate Consultants, LLC, that the accompanying testimony has been prepared by me or under my direction and supervision; that if inquiries were made as to the facts in said testimony, I would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of my knowledge and belief.



Harold Walker, III

July 1, 2022

Dated

**DIRECT TESTIMONY  
HAROLD WALKER, III  
MISSOURI-AMERICAN WATER COMPANY  
CASE NO.: WR-2022-0303  
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**DIRECT TESTIMONY**

**HAROLD WALKER, III**

**I. INTRODUCTION**

1

2 **Q. Please state your name and address.**

3 A. My name is Harold Walker, III. My business address is 1010 Adams Avenue,  
4 Audubon, Pennsylvania, 19403.

5 **Q. By whom are you employed?**

6 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager,  
7 Financial Studies.

8 **Q. What is your educational background and employment experience?**

9 A. My educational background, business experience and qualifications are provided in the  
10 Appendix attached to this testimony.

11

**II. SCOPE OF TESTIMONY**

12 **Q. What is the purpose of your Direct Testimony?**

13 A. The purpose of my Direct Testimony is to recommend appropriate working capital  
14 allowances for inclusion in Missouri-American Water Company's (MAWC or the  
15 Company) rate base. My recommendations are based upon the results of four lead-lag  
16 studies that were performed under my direct supervision. The four studies are for St.  
17 Louis County, Other Missouri Water, Other Missouri Sewer, and Arnold Sewer tariff  
18 groups.

19 **Q. Have you prepared Schedules presenting the results of your studies?**

20 A. Yes. I have prepared 38 Schedules identified as Schedule HW-1 through Schedule HW-

1 38 summarizing the Company's working capital claim in this proceeding.

2 **III. PRINCIPLES OF CASH WORKING CAPITAL**

3 **Q. What is cash working capital?**

4 A. Cash working capital is the amount of funds necessary to finance the day-to-day  
5 operations of the Company.

6 **Q. How is cash working capital treated for ratemaking purposes?**

7 A. It is included in the determination of a utility's rate base.

8 **Q. Why is cash working capital included as an element of rate base?**

9 A. Cash working capital bridges the gap between the time when funds are provided to the  
10 Company by investors to allow the Company to provide service to customers, and the  
11 time revenues are received from customers as reimbursement for these services.  
12 Working capital is included in rate base to compensate investors for the use of their  
13 funds over and above their investment in plant, and to provide investors with a return  
14 on the funds required by the Company for daily operations.

15 **Q. How was the cash working capital requirement determined?**

16 A. I conducted four lead-lag studies to determine the timing of MAWC's cash inflows and  
17 outflows and analyze the level of funding required to operate on a day-to-day basis. In  
18 Missouri, a utility's cash working capital is measured by calculating: (1) the amount of  
19 time elapsed between when the Company provides a service to its customers and when  
20 the Company receives payments from its customers; and (2) the amount of time elapsed  
21 between when the Company receives goods and services and when the Company pays  
22 its suppliers for those goods and services. The difference between these two elapsed

1 periods of time is known as the “net lag.”

2 The net lag is multiplied by the average daily cost of service (or revenue requirement)  
3 to determine the cash working capital requirement.

4 **Q. Please describe the components of a cash working capital analysis.**

5 A. The two primary components of a cash working capital analysis are revenue lags and  
6 expense leads. The revenue lag is the elapsed time between the delivery of a company’s  
7 product to its customers and when a company receives payment for the delivery of the  
8 product. Investor-provided funds are required to keep a company running during the  
9 revenue lag time period, when the revenue stream is temporarily insufficient to finance  
10 daily operational needs.

11 The expense lead is the elapsed time between when a good or service is provided to a  
12 company and when a company pays its supplier for the good or service. During the  
13 expense lead time period, cash received from customers may temporarily exceed a  
14 company’s payments to its suppliers for goods or services, and the excess may be used  
15 to repay investor-provided funds.

16 The net difference between the revenue lag and expense lead determines a company’s  
17 cash working capital requirement.

18 **Q. Generally speaking, how did you calculate the revenue lag?**

19 A. The revenue lag is the sum of three distinct components: the service period lag, the  
20 billing lag, and the collection lag.

21 **Q. What is the service period lag?**

22 A. The service period lag is the average time between meter readings. The average, or  
23 mid-point, between meter readings, based on monthly meter readings, is roughly 17

1 days. The mid-point service period lag is produced by dividing the service period of  
2 roughly 34 days by two.

3 **Q. What is the billing lag?**

4 A. The billing lag is the time from the meter reading date to the date the customer is billed.  
5 On the customer billing date, the bill is mailed to the customer, and the total billing  
6 amount for the cycle is recorded to MAWC's accounts receivable. The bills are  
7 prepared and mailed roughly 2 days after meters are read.

8 **Q. What is the collection lag?**

9 A. The collection lag is the average number of days from the date the bills are mailed to  
10 customers to the date payments are received by MAWC. This was determined by  
11 summing the daily accounts receivable balance during the 12 months ended September  
12 30, 2021 (recent period available at the time of filing) and dividing by the sum of the  
13 daily receipts for the same period.

14 **Q. Generally speaking, how did you calculate the expense lead?**

15 A. The expense lead is the sum of two distinct components: the service lead and the  
16 payment lead. The service lead is the average time that a service or good was provided  
17 to the Company. If a service or good was provided for 20 days, the 20-day service  
18 period is divided by two to produce a midpoint of 10 days for the service period lead.  
19 The payment lead is the number of days from the end of the service period to the  
20 payment date for the service or good. If payment for the service or good was provided  
21 on the 30th day and the end of the service period was the 20th day, the payment lead is  
22 10 days (30 days – 20 days). MAWC's expenses can be separated into five major sub-  
23 accounts: operating expenses, taxes other than income taxes, income taxes, interest and

1 preferred stock expense. In each of these sub-accounts, the lead days were calculated  
2 for each invoice or account by adding the midpoints of the service periods (the service  
3 lead) to the date the Company paid the invoices or accounts (the payment lead).

4 **Q. Why are midpoints used in cash working capital analysis?**

5 A. Midpoints are used to determine the average period during which a service or good is  
6 rendered or provided, prior to, or subsequent to, payment for the service. The midpoint  
7 assumes that service is provided evenly over the service and payment period. For  
8 example, if a service is provided over a 30-day period prior to the payment for service,  
9 then on average, service was provided for 15 days ( $30 \div 2$ ) before payment.

10 **Q. Did you consider only a part of MAWC's overall cost of service in your lead-lag  
11 studies?**

12 A. Yes, I considered only a portion of MAWC's cost of service items in my lead-lag  
13 studies to be consistent with the "Partial Revenues" lag used in past Company filings.  
14 In Missouri, "Partial Revenues" do not include the return on equity.

15 A lead-lag study based on "Partial Revenues" likely understates the full cash working  
16 capital requirement and affords the minimum cash working capital requirement. A  
17 lead-lag study based on the entire revenue requirement and cost of service provides a  
18 more accurate measure of the cash working capital requirement.

19 **Q. Were the four lead-lag studies that you conducted for the Company prepared  
20 using similar methods and techniques?**

21 A. Yes. The lead-lag studies were prepared using the same methods and techniques. Since  
22 the methods are identical, I will discuss the lead-lag study prepared for St. Louis  
23 County in detail as a means of explaining the methodology used for Other Missouri



1 Water, Other Missouri Sewer, and Arnold Sewer.

2 **Q. Why did you conduct four lead-lag studies in four MAWC rate zones?**

3 A. MAWC required four lead-lag studies for the four rate zones because each rate zone  
4 has a different composition of “Partial Revenues” associated with it and have different  
5 cash working capital needs. The lag days for revenues in each rate zone are the same  
6 because service, billings and receivables were measured on a total Company basis.  
7 Similarly, the lead days for expenses and taxes in each rate zone are the same because  
8 payables are generated from a central system and were also analyzed collectively.

9 **Q. What data set did you utilize in your lead-lag studies?**

10 A. The data sets were selected after developing an understanding of the Company’s  
11 collections, payment policies, and procedures. I requested representative data sets from  
12 the Company. Once the requested raw data had been provided, data validation was  
13 performed by comparing an actual invoice or a bill with data from the utility’s systems  
14 to ensure accuracy.

15 The revenue lag data set for the Company was based on an accounts receivable analysis  
16 of the beginning balance, the daily charges to this balance as bills were processed and  
17 mailed, and the daily receipts for all the days of the year during the 12 months ended  
18 September 30, 2021. The revenue lag data set for the Company also included an  
19 analysis of the cycle billing, the beginning and ending service dates (meter read dates),  
20 the total amount of billings (revenues), and the date bills were mailed (or posted).

21 The expense lead data set was based on information generated from the Company’s  
22 central accounts payable system. The expense lead data sets for the 12 months ended  
23 September 30, 2021, were analyzed to develop the service beginning and ending dates,

1 the amount purchased, and the date of payment. Generally speaking, sampling was  
2 randomly done for the invoices within each expense and tax category. In instances  
3 where there were large differences in the dollar amount of the invoices in a single  
4 expense category, sampling was focused on the largest invoices within the expense  
5 category. For example, the larger electric accounts were sampled instead of the smaller  
6 electric accounts. The samples analyzed averaged 77% of the Company's total expense  
7 and tax dollars.<sup>1</sup>

8 **Q. What time period do your lead-lag studies encompass?**

9 A. The lead-lag studies in this case analyzed the net revenues and the associated net cost  
10 of service during the 12 months ended September 30, 2021, to derive the lag (lead)  
11 days. The lag (lead) days were then used to develop the pro forma weighted net revenue  
12 requirement for the 12-months ended May 31, 2023, and the associated weighted net  
13 cost of service to calculate the Company's working capital requirement.

14 **IV. RESULTS OF THE LEAD-LAG STUDIES**

15 **Q. What are the results of the lead-lag studies?**

16 A. Schedule HW-1 summarizes MAWC's cash working capital requirements. The cash  
17 working capital requirement for St. Louis County is -\$3,361,019 (negative). The cash  
18 working capital requirement for the Other Missouri Water rate zone is -\$377,942  
19 (negative); the cash working capital requirement for the Other Missouri Sewer rate  
20 zone is -\$391,614 (negative); and the cash working capital requirement for the Arnold

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<sup>1</sup> Sampling for the total expense and tax dollars paid totaled 77% and reflected a range of sampling from 17% to over 100% of the total line-item dollars (or expenses). Sampling of total line-item dollars greater than 100% of the expense occurred for those line items which included the capital portion, employee contributions, or deferred amounts.

1 Sewer rate zone is -\$236,806 (negative). The cash working capital requirement for  
2 Total Water, which includes St. Louis County and the Other Missouri Water rate zone,  
3 is -\$3,738,956 (negative). The cash working capital requirement for Total Sewer,  
4 which includes Arnold Sewer and the Other Missouri Sewer rate zone, is -\$628,423  
5 (negative). When the results for Total Water and Total Sewer are combined, they show  
6 a Total Company cash working capital requirement of -\$4,367,379 (negative).

7 **Q. Please describe Schedule HW-1.**

8 A. Schedule HW-1 calculates the working capital requirements based on the “Partial  
9 Revenues” lag used in past Company filings. Schedule HW-1 is the source of  
10 information for the lead days and lag days data that is also shown on the Company’s  
11 filing Schedule CAS-7, Working Capital.

12 As shown on Schedule HW-1, the cash working capital requirement is based on the net  
13 lag days required to finance each expense line item. The net lag day calculations use  
14 revenue lag days and subtract their respective expense lead days to determine the  
15 appropriate net lag day which was multiplied by the average daily expense (expenses /  
16 365 days) line item. The lag days for the receipt of the revenue requirement is  
17 developed on Schedule HW-2. The lead days for the payments of the partial cost of  
18 service is developed on Schedules HW-4 through HW-38 and the schedule references  
19 for the lead days for the partial cost of service is shown on page 1 of Schedule HW-3.

20 **Q. Please explain the procedures used to determine the revenue lag.**

21 A. Schedule HW-2 summarizes the development of the 45.7-day revenue lag for the  
22 Company. The Company’s 45.7-day revenue lag was used for each rate zone. The

1 revenue lags reflect the Company's service, billings, and collections frequencies.

2 **Q. Please explain the procedures used to determine the service period and the billing**  
3 **lag days for customer revenues.**

4 A. The lag days for the service period and the billing lag are developed on page 2 of  
5 Schedule HW-2. As mentioned previously, the service period lag was measured from  
6 the midpoint of the service period to the meter reading date, and the billing lag was  
7 measured from the meter reading date to the billing date.

8 A weighted average service period lag of 17.3 days is shown on page 2 of Schedule  
9 HW-2. MAWC's bills are prepared, mailed, and recorded to accounts receivable 2.1  
10 days after meters are read. Adding the service period lag to the billing lag produces a  
11 combined 19.4-day service period and billing lag (17.3 days + 2.1 days = 19.4 days) as  
12 shown on page 2 of Schedule HW-2.

13 **Q. Please describe the procedure used to calculate the collection lag.**

14 A. As mentioned previously, the collection lag is the average number of days from the  
15 date the bills were mailed to the date payments are received and was determined by  
16 summing the daily accounts receivable balance during the test year and dividing by the  
17 sum of the daily test year receipts. This results in an average collection lag of 26.3 days  
18 as shown on page 3 of Schedule HW-2.

19 **Q. Please summarize the total revenue lag.**

20 A. The total revenue lag of 45.7 lag days is the result of adding the 19.4-day service period  
21 and billing lag and an average collection lag of 26.3 days as shown on page 1 of

1 Schedule HW-2.

2 **Q. Please explain the calculation of lead days for the cost of service expenses shown**  
3 **on Schedule HW-1.**

4 A. For each cost of service expense item that is shown, the lead days were calculated for  
5 each invoice or account based on the midpoints of the service periods to the dates the  
6 Company paid the invoices or accounts. Schedule HW-3 shows the schedule references  
7 for the partial cost of service lead days for the Company.

8 **Q. How were the lead days determined for the operating expenses sub-account line**  
9 **items shown on Schedule HW-1?**

10 A. For the operating expense sub-accounts line items shown, the lead days were  
11 determined for each invoice or account sampled based on the midpoints of the service  
12 periods to the dates the Company paid the invoices or accounts. As explained  
13 previously, sampling was randomly done for the invoices within each expense and tax  
14 category.

15 For example, the weighted average lead days for fuel and power equal 21.6 days (see  
16 Schedule HW-6). The lead days for fuel and power expense were calculated for each  
17 invoice examined based on the midpoints of the service periods to the dates the  
18 Company paid the invoices. In total, 60% of the fuel and power expenses were sampled.  
19 Similar analyses were conducted for chemicals expense (see Schedule HW-4),  
20 customer accounting expense (see Schedule HW-5), insurance other than group  
21 expense (see Schedule HW-7), salaries and wages expense (see Schedule HW-8),  
22 purchased water expense (see Schedule HW-9), support services expense (see Schedule  
23 HW-10), waste disposal expense (see Schedule HW-11), group insurance expense (see

1 Schedule HW-12), OBEB expense (see Schedule HW-13), pensions expense (see  
2 Schedule HW-14), 401k expense (see Schedule HW-15), ESPP expense (see Schedule  
3 HW-16), VEBA expense (see Schedule HW-17), other benefits expense (see Schedule  
4 HW-18), rents expense (see Schedule HW-19), miscellaneous (see Schedule HW-20  
5 through 28), and maintenance supplies expense (see Schedule HW-29). A zero lead  
6 has been assigned for regulatory expense to recognize the full revenue lag related to  
7 this expense.

8 **Q. How were the lead days determined for the taxes other than income taxes sub-**  
9 **account line items shown on Schedule HW-1?**

10 A. For most of the taxes other than income taxes sub-account line items shown, the lead  
11 days were calculated based on the midpoint of the tax liability period to the payment  
12 date, weighted by the actual amount paid. The exception to this was payroll taxes,  
13 where the lead days were calculated based on the midpoint of the tax liability period to  
14 the payment date. These tax sub-accounts are shown on Schedules HW-30 through  
15 HW-32. These taxes include payroll taxes (see Schedule HW-30), property taxes (see  
16 Schedule HW-31), and PSC fees (see Schedule HW-32).

17 **Q. How were the lead days determined for the income taxes sub-account line items**  
18 **shown on Schedule HW-1?**

19 A. For the federal taxes (current) and state taxes (current) sub-account line items shown,  
20 the lead days were calculated based on the midpoint of the tax period to the payment  
21 date, weighted by the percent of the payment required. The derivation of the federal  
22 taxes (current) 35.6 lead days is shown on Schedule HW-33 and the derivation of the

1 state taxes (current) 35.6 lead days is shown on Schedule HW-34.

2 **Q. How were the lead days determined for interest expense and preferred stock sub-**  
3 **account line items shown on Schedule HW-1?**

4 A. For the interest expense sub-account line items, the lead days were calculated based on  
5 the midpoint of the interest period to the payment date. The derivation of the interest  
6 expense lead days is shown on Schedules HW-35 through HW-37 and the preferred  
7 stock expense lead days is shown on Schedule HW-38.

8 **Q. Please summarize your determination of the working capital requirement shown**  
9 **on Schedule HW-1.**

10 A. The cash working capital requirement for St. Louis County is -\$3,361,019 (negative) is  
11 shown on page 4 of Schedule HW-1. The cash working capital requirement for the  
12 Other Missouri Water rate zone is -\$377,942 (negative) (page 5 of Schedule HW-1);  
13 the cash working capital requirement for the Other Missouri Sewer rate zone is -  
14 \$391,614 (negative) (page 7 of Schedule HW-1); and the cash working capital  
15 requirement for the Arnold Sewer rate zone is -\$236,806 (negative) (page 6 of Schedule  
16 HW-1). The cash working capital requirement for Total Water, which includes St.  
17 Louis County and the Other Missouri Water rate zone, is -\$3,738,956 (negative) (page  
18 2 of Schedule HW-1). The cash working capital requirement for Total Sewer, which  
19 includes Arnold Sewer and the Other Missouri Sewer rate zone, is -\$628,423 (negative)  
20 (page 3 of Schedule HW-1). When the results for Total Water and Total Sewer are  
21 combined, they show a Total Company cash working capital requirement of -

1           \$4,367,379 (negative) (page 1 of Schedule HW-1).

2   **Q.    Does this conclude your Direct Testimony?**

3   **A.    Yes, it does.**



Professional Qualifications

of

Harold Walker, III

Manager, Financial Studies

Gannett Fleming Valuation and Rate Consultants, LLC.

**EDUCATION**

Mr. Walker graduated from Pennsylvania State University in 1984 with a Bachelor of Science Degree in Finance. His studies concentrated on securities analysis and portfolio management with an emphasis on economics and quantitative business analysis. He has also completed the regulation and the rate-making process courses presented by the College of Business Administration and Economics Center for Public Utilities at New Mexico State University. Additionally, he has attended programs presented by The Institute of Chartered Financial Analysts (CFA).

Mr. Walker was awarded the professional designation “Certified Rate of Return Analyst” (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience, and the successful completion of a comprehensive examination. He is also a member of the Society of Utility and Regulatory Financial Analysts (SURFA) and has attended numerous financial forums sponsored by the Society. The SURFA forums are recognized by the Association for Investment Management and Research (AIMR) and the National Association of State Boards of Accountancy for continuing education credits.

Mr. Walker is also a licensed Municipal Advisor Representative (Series 50) by Municipal Securities Rulemaking Board (MSRB) and Financial Industry Regulatory Authority (FINRA).

**BUSINESS EXPERIENCE**

Prior to joining Gannett Fleming Valuation and Rate Consultants, LLC., Mr. Walker was employed by AUS Consultants - Utility Services. He held various positions during his eleven years with AUS, concluding his employment there as a Vice President. His duties included providing and supervising financial and economic studies on behalf of investor owned and municipally owned water, wastewater, electric, natural gas distribution and transmission, oil pipeline and telephone utilities as well as resource recovery companies.

In 1996, Mr. Walker joined Gannett Fleming Valuation and Rate Consultants, LLC. In his capacity as Manager, Financial Studies and for the past twenty-five years, he has continuously studied rates of return requirements for regulated firms. In this regard, he supervised the preparation of rate of return studies in connection with his testimony and in the past, for other individuals. He also assisted and/or developed dividend policy studies, nuclear prudence studies, calculated fixed charge rates for avoided costs involving cogeneration projects, financial decision studies for capital budgeting purposes and developed financial models for determining future capital requirements and the effect of those requirements on investors and ratepayers, valued utility property for acquisition and divestiture, and assisted in the private placement of fixed capital securities for public utilities.

Head, Gannett Fleming GASB 34 Task Force responsible for developing Governmental Accounting Standards Board (GASB) 34 services and educating Gannett Fleming personnel and Gannett Fleming clients on GASB 34 and how it may affect them. The GASB 34 related services include inventory of assets, valuation of assets, salvage estimation, annual depreciation rate determination, estimation of depreciation reserve, asset service life determination, asset condition assessment, condition assessment documentation, maintenance estimate for asset preservation, establishment of condition level index, geographic information system (GIS) and data management services, management discussion and analysis (MD&A) reporting, required supplemental information (RSI) reporting, auditor interface, and GASB 34 compliance review.

In 2004, Mr. Walker was elected to serve on the Board of Directors of SURFA. Previously, he served as an ex officio director as an advisor to SURFA's existing President. In 2000, Mr. Walker was elected President of SURFA for the 2001-2002 term. Prior to that, he was elected to serve on the Board of Directors of SURFA during the period 1997-1998 and 1999-2000. Currently, he also serves on the Pennsylvania Municipal Authorities Association, Electric Deregulation Committee.

**EXPERT TESTIMONY**

Mr. Walker has submitted testimony or been deposed on several topics before regulatory commissions and courts in 26 states including: Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Idaho, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, Nevada, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. His testimonies covered various subjects including lead-lag studies, fair rate of return, fair market value, the taking of natural resources, benchmarking, appropriate capital structure and fixed capital cost rates, depreciation, purchased water adjustments, synchronization of interest charges for income tax purposes, valuation, cash working capital, financial analyses of investment alternatives, and fair value. The following tabulation provides a listing of the electric power, natural gas distribution, telephone, wastewater, and water service utility cases in which he has been involved as a witness.

<u>Client</u>	<u>Docket No.</u>
Alpena Power Company	U-10020
Armstrong Telephone Company - Northern Division	92-0884-T-42T
Armstrong Telephone Company - Northern Division	95-0571-T-42T
Artesian Water Company, Inc.	90 10
Artesian Water Company, Inc.	06 158
Aqua Illinois Consolidated Water Divisions and Consolidated Sewer Divisions	11-0436
Aqua Illinois Hawthorn Woods Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Hawthorn Woods Water Division	07 0620/07 0621/08 0067
Aqua Illinois Kankakee Water Division	10-0194
Aqua Illinois Kankakee Water Division	14-0419
Aqua Illinois Vermilion Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Water Division	07 0620/07 0621/08 0067
Aqua Pennsylvania Wastewater Inc	A-2016-2580061
Aqua Pennsylvania Wastewater Inc	A-2017-2605434
Aqua Pennsylvania Wastewater Inc	A-2018-3001582

Aqua Pennsylvania Wastewater Inc	A-2019-3008491
Aqua Pennsylvania Wastewater Inc	A-2019-3009052
Aqua Pennsylvania Wastewater Inc	A-2019-3015173
Aqua Pennsylvania Wastewater Inc	A-2021-3024267
Aqua Pennsylvania Wastewater Inc	A-2021-3026132
Aqua Pennsylvania Wastewater Inc	A-2021-3027268
Aqua Virginia - Alpha Water Corporation	Pue-2009-00059
Aqua Virginia - Blue Ridge Utility Company, Inc.	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Earlysville Forest Water Company	Pue-2009-00059
Aqua Virginia - Heritage Homes of Virginia	Pue-2009-00059
Aqua Virginia - Indian River Water Company	Pue-2009-00059
Aqua Virginia - James River Service Corp.	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Water)	Pue-2009-00059
Aqua Virginia - Lake Shawnee	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Wastewater)	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Water)	Pue-2009-00059
Aqua Virginia - Mountainview Water Company, Inc.	Pue-2009-00059
Aqua Virginia - Powhatan Water Works, Inc.	Pue-2009-00059
Aqua Virginia - Rainbow Forest Water Corporation	Pue-2009-00059
Aqua Virginia - Shawnee Land	Pue-2009-00059
Aqua Virginia - Sydnor Water Corporation	Pue-2009-00059
Aqua Virginia - Water Distributors, Inc.	Pue-2009-00059
Atlantic City Sewerage Company	WR21071006
Berkshire Gas Company	18-40
Berkshire Gas Company	22-20
Borough of Brentwood	A-2021-3024058
Borough of Hanover	R-2009-2106908
Borough of Hanover	R-2012-2311725
Borough of Hanover	R-2014-242830

Borough of Hanover	R-2021-3026116
Borough of Hanover	P-2021-3026854
Borough of Royersford	A-2020-3019634
Chaparral City Water Company	W 02113a 04 0616
California-American Water Company	CIVCV156413
Connecticut-American Water Company	99-08-32
Connecticut Water Company	06 07 08
Citizens Utilities Company Colorado Gas Division	-
Citizens Utilities Company Vermont Electric Division	5426
Citizens Utilities Home Water Company	R 901664
Citizens Utilities Water Company of Pennsylvania	R 901663
City of Bethlehem - Bureau of Water	R-00984375
City of Bethlehem - Bureau of Water	R 00072492
City of Bethlehem - Bureau of Water	R-2013-2390244
City of Bethlehem - Bureau of Water	R-2020-3020256
City of Dubois – Bureau of Water	R-2013-2350509
City of Dubois – Bureau of Water	R-2016-2554150
City of Lancaster Sewer Fund	R-00005109
City of Lancaster Sewer Fund	R-00049862
City of Lancaster Sewer Fund	R-2012-2310366
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Water Fund	R-00984567
City of Lancaster Water Fund	R-00016114
City of Lancaster Water Fund	R 00051167
City of Lancaster Water Fund	R-2010-2179103
City of Lancaster Water Fund	R-2014-2418872
City of Lancaster Water Fund	R-2021-3026682
Coastland Corporation	15-cvs-216
Consumers Pennsylvania Water Company Roaring Creek Division	R-00973869
Consumers Pennsylvania Water Company Shenango Valley Division	R-00973972

Country Knolls Water Works, Inc.	90 W 0458
East Resources, Inc. - West Virginia Utility	06 0445 G 42T
Elizabethtown Water Company	WR06030257
Forest Park, Inc.	19-W-0168 & 19-W-0269
Hampton Water Works Company	DW 99-057
Hidden Valley Utility Services, LP	R-2018-3001306
Hidden Valley Utility Services, LP	R-2018-3001307
Illinois American Water Company	16-0093
Illinois American Water Company	22-0210
Indian Rock Water Company	R-911971
Indiana Natural Gas Corporation	38891
Jamaica Water Supply Company	-
Kane Borough Authority	A-2019-3014248
Kentucky American Water Company, Inc.	2007 00134
Middlesex Water Company	WR 89030266J
Millcreek Township Water Authority	55 198 Y 00021 11
Missouri-American Water Company	WR 2000-281
Missouri-American Water Company	SR 2000-282
Mount Holly Water Company	WR06030257
Nevada Power Company d/b/a NV Energy	20-06003
New Jersey American Water Company	WR 89080702J
New Jersey American Water Company	WR 90090950J
New Jersey American Water Company	WR 03070511
New Jersey American Water Company	WR-06030257
New Jersey American Water Company	WR08010020
New Jersey American Water Company	WR10040260
New Jersey American Water Company	WR11070460
New Jersey American Water Company	WR15010035
New Jersey American Water Company	WR17090985
New Jersey American Water Company	WR19121516
New Jersey Natural Gas Company	GR19030420
New Jersey Natural Gas Company	GR21030679
Newtown Artesian Water Company	R-911977
Newtown Artesian Water Company	R-00943157
Newtown Artesian Water Company	R-2009-2117550
Newtown Artesian Water Company	R-2011-2230259
Newtown Artesian Water Company	R-2017-2624240

Newtown Artesian Water Company	R-2019-3006904
North Maine Utilities	14-0396
Northern Indiana Fuel & Light Company	38770
Oklahoma Natural Gas Company	PUD-940000477
Palmetto Utilities, Inc.	2020-281-S
Palmetto Wastewater Reclamation, LLC	2018-82-S
Pennichuck Water Works, Inc.	DW 04 048
Pennichuck Water Works, Inc.	DW 06 073
Pennichuck Water Works, Inc.	DW 08 073
Pennsylvania Gas & Water Company (Gas)	R-891261
Pennsylvania Gas & Water Co. (Water)	R 901726
Pennsylvania Gas & Water Co. (Water)	R-911966
Pennsylvania Gas & Water Co. (Water)	R-22404
Pennsylvania Gas & Water Co. (Water)	R-00922482
Pennsylvania Gas & Water Co. (Water)	R-00932667
Philadelphia Gas Works	R-2020-3017206
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Public Service Electric and Gas Company	GR18010030
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Sierra Pacific Power Company d/b/a NV Energy	19-06002
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Suez Water Delaware, Inc.	19-0615
Suez Water Idaho, Inc.	SUZ-W-20-02
Suez Water New Jersey, Inc.	WR18050593
Suez Water New Jersey, Inc.	WR20110729
Suez Water Owego-Nichols, Inc.	17-W-0528
Suez Water Pennsylvania, Inc.	R-2018-3000834
Suez Water Pennsylvania, Inc.	A-2018-3003519
Suez Water Pennsylvania, Inc.	A-2018-3003517
Suez Water Rhode Island, Inc.	Docket No. 4800
Suez Water Owego-Nichols, Inc.	19-W-0168 & 19-W-0269
Suez Water New York, Inc.	19-W-0168 & 19-W-0269
Suez Westchester, Inc.	19-W-0168 & 19-W-0269
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United Water New Rochelle	W-95-W-1168

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West Virginia-American Water Company	15-0676-W-42T
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York Water Company	R-901813
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York Water Company	R-943053
York Water Company	R-963619
York Water Company	R-994605
York Water Company	R-00016236
Young Brothers, LLC	2019-0117



**Schedules**

**BEFORE THE  
MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO. WR-2022-0303  
CASE NO. SR-2022-0303**

**MISSOURI-AMERICAN WATER COMPANY**

**Lead-Lag Schedules**

**Schedule HW-1 Through Schedule HW-38**

**To Accompany the**

**Direct Testimony of Harold Walker, III**

**On Lead-Lag Study - Working Capital**

MISSOURI-AMERICAN WATER COMPANYCALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

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Schedule HW-2, Page 1	Summary of Total Revenue Lag Days
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Schedule HW-36	Interest On Long-Term Debt Lead Days
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TOTAL COMPANY

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates			Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
		Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag			
1							
2	Purchased Water	\$1,498,324	\$4,105			\$56,238	
3	Fuel and Power	12,614,879	34,561			832,927	
4	Chemicals	15,968,848	43,750			350,002	
5	Waste Disposal	3,122,160	8,554			(273,723)	
6	Labor	38,677,254	105,965			3,624,005	
7	Pensions	(210,164)	(576)			(28,041)	
8	OPEB	(4,597,604)	(12,596)			0	
9	Group Insurance	7,244,150	19,847			706,552	
10	401K	808,219	2,214			80,822	
11	DCP	1,115,804	3,057			111,581	
12	ESPP	127,035	348			2,019	
13	VEBA	140,329	384			(64,897)	
14	Other Benefits	827,269	2,266			15,865	
15	Support Services	40,373,441	110,612			5,298,323	
16	Contracted services	4,183,727	11,462			(35,533)	
17	Building Maintenance and Services	1,453,905	3,983			(27,883)	
18	Telecommunication expenses	1,278,743	3,503			47,296	
19	Postage, printing and stationary	0	0			0	
20	Office supplies and services	802,280	2,198			145,509	
21	Employee related expense travel & entertainment	593,590	1,626			(4,553)	
22	Rents	266,186	729			23,994	
23	Transportation	4,336,714	11,881			(42,773)	
24	Miscellaneous	2,811,646	7,703			89,357	
25	Uncollectible accounts expense	3,450,186	9,453			0	
26	Customer Accounting	1,629,900	4,465			(134,857)	
27	Regulatory Expense	346,551	949			43,390	
28	Insurance Other than Group	7,626,091	20,893			2,383,937	
29	Maintenance supplies and services	10,612,102	29,074			447,744	
30							
31	Total Operations and Maintenance	<u>157,101,565</u>				<u>13,647,301</u>	
32							
33	Depreciation	70,081,164	192,003			0	
34	Amortization	7,516,650	20,594			0	
35	Property Taxes	39,433,322	108,036			(12,121,696)	
36	Payroll Taxes	2,935,765	8,043			275,077	
37	PSC Fees	2,487,686	6,816			556,833	
38	Other General Taxes	(121,890)	(334)			(11,421)	
39	Current Federal Income Tax	(19,624,760)	(53,766)			(543,041)	
40	Current State Income Tax	(3,514,941)	(9,630)			(97,263)	
41	Deferred Income Taxes	14,795,957	40,537			0	
42	Amortization of Investment Tax Credit	(85,779)	(235)			0	
43	Interest Expense Deduction	54,733,502	149,955			(6,073,169)	
44	Preferred Stock	0	0			0	
45	Total Working Capital Requirement	<u>\$325,738,241</u>				<u>(\$4,367,379)</u>	
46							
47	Total Cash and Working Capital Requirement Used					<b>(\$4,367,379)</b>	
48							
49							

TOTAL WATER

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$1,498,324	\$4,105	45.70	32.00	13.70	\$56,238
3	Fuel and Power	12,044,249	32,998	45.70	21.60	24.10	795,250
4	Chemicals	15,839,834	43,397	45.70	37.70	8.00	347,174
5	Waste Disposal	539,074	1,477	45.70	77.70	(32.00)	(47,261)
6	Labor	37,636,840	103,115	45.70	11.50	34.20	3,526,520
7	Pensions	(209,281)	(573)	45.70	(3.00)	48.70	(27,923)
8	OPEB	(4,578,294)	(12,543)	45.70	45.70	0.00	0
9	Group Insurance	7,109,291	19,478	45.70	10.10	35.60	693,399
10	401K	961,110	2,633	45.70	9.20	36.50	96,111
11	DCP	1,087,959	2,981	45.70	9.20	36.50	108,796
12	ESPP	123,968	340	45.70	39.90	5.80	1,970
13	VEBA	139,805	383	45.70	214.50	(168.80)	(64,655)
14	Other Benefits	766,030	2,099	45.70	38.70	7.00	14,691
15	Support Services	40,188,992	110,107	45.70	(2.20)	47.90	5,274,117
16	Contracted services	4,166,155	11,414	45.70	48.80	(3.10)	(35,384)
17	Building Maintenance and Services	1,447,798	3,967	45.70	52.70	(7.00)	(27,766)
18	Telecommunication expenses	1,273,373	3,489	45.70	32.20	13.50	47,097
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	798,910	2,189	45.70	(20.50)	66.20	144,898
21	Employee related expense travel & entertainment	591,097	1,619	45.70	48.50	(2.80)	(4,534)
22	Rents	212,572	582	45.70	12.80	32.90	19,161
23	Transportation	4,066,848	11,142	45.70	49.30	(3.60)	(40,111)
24	Miscellaneous	2,494,980	6,836	45.70	34.10	11.60	79,293
25	Uncollectible accounts expense	3,274,447	8,971	45.70	45.70	0.00	0
26	Customer Accounting	1,623,190	4,447	45.70	75.90	(30.20)	(134,302)
27	Regulatory Expense	345,095	945	45.70	0.00	45.70	43,208
28	Insurance Other than Group	7,594,062	20,806	45.70	(68.40)	114.10	2,373,925
29	Maintenance supplies and services	10,222,316	28,006	45.70	30.30	15.40	431,298
30							
31	Total Operations and Maintenance	<u>151,258,744</u>					<u>13,671,210</u>
32							
33	Depreciation	66,864,283	183,190	45.70	45.70	0.00	0
34	Amortization	6,456,791	17,690	45.70	45.70	0.00	0
35	Property Taxes	38,109,922	104,411	45.70	157.90	(112.20)	(11,714,886)
36	Payroll Taxes	2,893,595	7,928	45.70	11.50	34.20	271,126
37	PSC Fees	2,477,238	6,787	45.70	(36.00)	81.70	554,494
38	Other General Taxes	(121,509)	(333)	45.70	11.50	34.20	(11,385)
39	Current Federal Income Tax	(19,788,395)	(54,215)	45.70	35.60	10.10	(547,569)
40	Current State Income Tax	(3,543,891)	(9,709)	45.70	35.60	10.10	(98,064)
41	Deferred Income Taxes	14,220,890	38,961	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(85,668)	(235)	45.70	45.70	0.00	0
43	Interest Expense Deduction	52,847,335	144,787	45.70	86.20	(40.50)	(5,863,882)
44	Preferred Stock	0	0	45.70	47.00	(1.30)	0
45	Total Working Capital Requirement	<u>\$311,589,335</u>					<u>(\$3,738,956)</u>
46							
47	Total Cash and Working Capital Requirement Used						<b>(\$3,738,956)</b>
48							
49							

TOTAL SEWER

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$0	\$0	45.70	32.00	13.70	\$0
3	Fuel and Power	570,630	1,563	45.70	21.60	24.10	37,677
4	Chemicals	129,014	353	45.70	37.70	8.00	2,828
5	Waste Disposal	2,583,086	7,077	45.70	77.70	(32.00)	(226,462)
6	Labor	1,040,414	2,850	45.70	11.50	34.20	97,485
7	Pensions	(883)	(2)	45.70	(3.00)	48.70	(118)
8	OPEB	(19,310)	(53)	45.70	45.70	0.00	0
9	Group Insurance	134,859	369	45.70	10.10	35.60	13,153
10	401K	(152,891)	(419)	45.70	9.20	36.50	(15,289)
11	DCP	27,845	76	45.70	9.20	36.50	2,785
12	ESPP	3,067	8	45.70	39.90	5.80	49
13	VEBA	524	1	45.70	214.50	(168.80)	(242)
14	Other Benefits	61,239	168	45.70	38.70	7.00	1,174
15	Support Services	184,449	505	45.70	(2.20)	47.90	24,206
16	Contracted services	17,572	48	45.70	48.80	(3.10)	(149)
17	Building Maintenance and Services	6,107	17	45.70	52.70	(7.00)	(117)
18	Telecommunication expenses	5,370	15	45.70	32.20	13.50	199
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	3,370	9	45.70	(20.50)	66.20	611
21	Employee related expense travel & entertainment	2,493	7	45.70	48.50	(2.80)	(19)
22	Rents	53,614	147	45.70	12.80	32.90	4,833
23	Transportation	269,866	739	45.70	49.30	(3.60)	(2,662)
24	Miscellaneous	316,666	868	45.70	34.10	11.60	10,064
25	Uncollectible accounts expense	175,739	481	45.70	45.70	0.00	0
26	Customer Accounting	6,710	18	45.70	75.90	(30.20)	(555)
27	Regulatory Expense	1,456	4	45.70	0.00	45.70	182
28	Insurance Other than Group	32,029	88	45.70	(68.40)	114.10	10,012
29	Maintenance supplies and services	389,786	1,068	45.70	30.30	15.40	16,446
30							
31	Total Operations and Maintenance	<u>5,842,821</u>					<u>(23,909)</u>
32							
33	Depreciation	3,216,881	8,813	45.70	45.70	0.00	0
34	Amortization	1,059,859	2,904	45.70	45.70	0.00	0
35	Property Taxes	1,323,400	3,626	45.70	157.90	(112.20)	(406,810)
36	Payroll Taxes	42,170	116	45.70	11.50	34.20	3,951
37	PSC Fees	10,448	29	45.70	(36.00)	81.70	2,339
38	Other General Taxes	(381)	(1)	45.70	11.50	34.20	(36)
39	Current Federal Income Tax	163,635	448	45.70	35.60	10.10	4,528
40	Current State Income Tax	28,950	79	45.70	35.60	10.10	801
41	Deferred Income Taxes	575,067	1,576	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(111)	(0)	45.70	45.70	0.00	0
43	Interest Expense Deduction	1,886,167	5,168	45.70	86.20	(40.50)	(209,287)
44	Preferred Stock	0	0	45.70	47.00	(1.30)	0
45	Total Working Capital Requirement	<u>\$14,148,906</u>					<u>(\$628,423)</u>
46							
47	Total Cash and Working Capital Requirement Used						<u>(\$628,423)</u>
48							
49							

ST. LOUIS COUNTY

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$479,903	\$1,315	45.70	32.00	13.70	\$18,013
3	Fuel and Power	8,089,334	22,163	45.70	21.60	24.10	534,118
4	Chemicals	12,342,072	33,814	45.70	37.70	8.00	270,511
5	Waste Disposal	5,874	16	45.70	77.70	(32.00)	(515)
6	Labor	27,708,699	75,914	45.70	11.50	34.20	2,596,267
7	Pensions	(141,420)	(387)	45.70	(3.00)	48.70	(18,869)
8	OPEB	(3,093,727)	(8,476)	45.70	45.70	0.00	0
9	Group Insurance	4,891,635	13,402	45.70	10.10	35.60	477,102
10	401K	582,440	1,596	45.70	9.20	36.50	58,244
11	DCP	761,393	2,086	45.70	9.20	36.50	76,139
12	ESPP	82,506	226	45.70	39.90	5.80	1,311
13	VEBA	114,542	314	45.70	214.50	(168.80)	(52,972)
14	Other Benefits	514,358	1,409	45.70	38.70	7.00	9,864
15	Support Services	27,201,841	74,526	45.70	(2.20)	47.90	3,569,776
16	Contracted services	2,815,229	7,713	45.70	48.80	(3.10)	(23,910)
17	Building Maintenance and Services	978,332	2,680	45.70	52.70	(7.00)	(18,763)
18	Telecommunication expenses	860,467	2,357	45.70	32.20	13.50	31,825
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	539,854	1,479	45.70	(20.50)	66.20	97,913
21	Employee related expense travel & entertainment	399,427	1,094	45.70	48.50	(2.80)	(3,064)
22	Rents	125,603	344	45.70	12.80	32.90	11,321
23	Transportation	3,241,582	8,881	45.70	49.30	(3.60)	(31,972)
24	Miscellaneous	1,302,307	3,568	45.70	34.10	11.60	41,388
25	Uncollectible accounts expense	2,403,310	6,584	45.70	45.70	0.00	0
26	Customer Accounting	1,106,497	3,031	45.70	75.90	(30.20)	(91,551)
27	Regulatory Expense	233,194	639	45.70	0.00	45.70	29,197
28	Insurance Other than Group	5,131,597	14,059	45.70	(68.40)	114.10	1,604,151
29	Maintenance supplies and services	6,949,966	19,041	45.70	30.30	15.40	293,231
30							
31	Total Operations and Maintenance	<u>105,626,815</u>					<u>9,478,755</u>
32							
33	Depreciation	47,103,625	129,051	45.70	45.70	0.00	0
34	Amortization	5,160,359	14,138	45.70	45.70	0.00	0
35	Property Taxes	28,327,198	77,609	45.70	157.90	(112.20)	(8,707,703)
36	Payroll Taxes	2,102,386	5,760	45.70	11.50	34.20	196,991
37	PSC Fees	1,673,964	4,586	45.70	(36.00)	81.70	374,693
38	Other General Taxes	(93,694)	(257)	45.70	11.50	34.20	(8,779)
39	Current Federal Income Tax	(12,439,043)	(34,080)	45.70	35.60	10.10	(344,204)
40	Current State Income Tax	(2,237,508)	(6,130)	45.70	35.60	10.10	(61,915)
41	Deferred Income Taxes	9,065,741	24,838	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(74,894)	(205)	45.70	45.70	0.00	0
43	Interest Expense Deduction	38,652,659	105,898	45.70	86.20	(40.50)	(4,288,857)
44	Preferred Stock	0	0	45.70	47.00	(1.30)	0
45	Total Working Capital Requirement	<u>\$222,867,608</u>					<u>(\$3,361,019)</u>
46							
47	Total Cash and Working Capital Requirement Used						<b>(\$3,361,019)</b>
48							
49							

ALL OTHER WATER

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$1,018,421	\$2,790	45.70	32.00	13.70	\$38,226
3	Fuel and Power	3,954,915	10,835	45.70	21.60	24.10	261,133
4	Chemicals	3,497,762	9,583	45.70	37.70	8.00	76,663
5	Waste Disposal	533,200	1,461	45.70	77.70	(32.00)	(46,746)
6	Labor	9,928,141	27,200	45.70	11.50	34.20	930,253
7	Pensions	(67,861)	(186)	45.70	(3.00)	48.70	(9,054)
8	OPEB	(1,484,567)	(4,067)	45.70	45.70	0.00	0
9	Group Insurance	2,217,656	6,076	45.70	10.10	35.60	216,297
10	401K	378,670	1,037	45.70	9.20	36.50	37,867
11	DCP	326,566	895	45.70	9.20	36.50	32,657
12	ESPP	41,463	114	45.70	39.90	5.80	659
13	VEBA	25,263	69	45.70	214.50	(168.80)	(11,683)
14	Other Benefits	251,673	690	45.70	38.70	7.00	4,827
15	Support Services	12,987,151	35,581	45.70	(2.20)	47.90	1,704,341
16	Contracted services	1,350,925	3,701	45.70	48.80	(3.10)	(11,474)
17	Building Maintenance and Services	469,466	1,286	45.70	52.70	(7.00)	(9,003)
18	Telecommunication expenses	412,906	1,131	45.70	32.20	13.50	15,272
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	259,056	710	45.70	(20.50)	66.20	46,985
21	Employee related expense travel & entertainment	191,670	525	45.70	48.50	(2.80)	(1,470)
22	Rents	86,969	238	45.70	12.80	32.90	7,839
23	Transportation	825,266	2,261	45.70	49.30	(3.60)	(8,140)
24	Miscellaneous	1,192,673	3,268	45.70	34.10	11.60	37,904
25	Uncollectible accounts expense	871,137	2,387	45.70	45.70	0.00	0
26	Customer Accounting	516,693	1,416	45.70	75.90	(30.20)	(42,751)
27	Regulatory Expense	111,901	307	45.70	0.00	45.70	14,011
28	Insurance Other than Group	2,462,465	6,746	45.70	(68.40)	114.10	769,773
29	Maintenance supplies and services	3,272,350	8,965	45.70	30.30	15.40	138,066
30							
31	Total Operations and Maintenance	<u>45,631,930</u>					<u>4,192,452</u>
32							
33	Depreciation	19,760,658	54,139	45.70	45.70	0.00	0
34	Amortization	1,296,431	3,552	45.70	45.70	0.00	0
35	Property Taxes	9,782,724	26,802	45.70	157.90	(112.20)	(3,007,183)
36	Payroll Taxes	791,209	2,168	45.70	11.50	34.20	74,135
37	PSC Fees	803,274	2,201	45.70	(36.00)	81.70	179,801
38	Other General Taxes	(27,814)	(76)	45.70	11.50	34.20	(2,606)
39	Current Federal Income Tax	(7,349,352)	(20,135)	45.70	35.60	10.10	(203,366)
40	Current State Income Tax	(1,306,385)	(3,579)	45.70	35.60	10.10	(36,149)
41	Deferred Income Taxes	5,155,149	14,124	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(10,774)	(30)	45.70	45.70	0.00	0
43	Interest Expense Deduction	14,194,676	38,890	45.70	86.20	(40.50)	(1,575,026)
44	Preferred Stock	0	0	45.70	47.00	(1.30)	0
45	Total Working Capital Requirement	<u>\$88,721,726</u>					<u>(\$377,942)</u>
46							
47	Total Cash and Working Capital Requirement Used						<b>(\$377,942)</b>
48							
49							

ARNOLD

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$0	\$0	45.70	32.00	13.70	\$0
3	Fuel and Power	5,990	16	45.70	21.60	24.10	396
4	Chemicals	0	0	45.70	37.70	8.00	0
5	Waste Disposal	1,269,743	3,479	45.70	77.70	(32.00)	(111,320)
6	Labor	173,277	475	45.70	11.50	34.20	16,236
7	Pensions	(84)	(0)	45.70	(3.00)	48.70	(11)
8	OPEB	(1,840)	(5)	45.70	45.70	0.00	0
9	Group Insurance	24,713	68	45.70	10.10	35.60	2,410
10	401K	4,573	13	45.70	9.20	36.50	457
11	DCP	3,006	8	45.70	9.20	36.50	301
12	ESPP	26	0	45.70	39.90	5.80	0
13	VEBA	0	0	45.70	214.50	(168.80)	0
14	Other Benefits	272	1	45.70	38.70	7.00	5
15	Support Services	16,011	44	45.70	(2.20)	47.90	2,101
16	Contracted services	1,673	5	45.70	48.80	(3.10)	(14)
17	Building Maintenance and Services	582	2	45.70	52.70	(7.00)	(11)
18	Telecommunication expenses	511	1	45.70	32.20	13.50	19
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	321	1	45.70	(20.50)	66.20	58
21	Employee related expense travel & entertainment	237	1	45.70	48.50	(2.80)	(2)
22	Rents	49,686	136	45.70	12.80	32.90	4,479
23	Transportation	122,117	335	45.70	49.30	(3.60)	(1,204)
24	Miscellaneous	2,660	7	45.70	34.10	11.60	85
25	Uncollectible accounts expense	64,149	176	45.70	45.70	0.00	0
26	Customer Accounting	639	2	45.70	75.90	(30.20)	(53)
27	Regulatory Expense	139	0	45.70	0.00	45.70	17
28	Insurance Other than Group	3,050	8	45.70	(68.40)	114.10	953
29	Maintenance supplies and services	22,646	62	45.70	30.30	15.40	955
30							
31	Total Operations and Maintenance	<u>1,764,097</u>					<u>(84,143)</u>
32							
33	Depreciation	503,484	1,379	45.70	45.70	0.00	0
34	Amortization	969,169	2,655	45.70	45.70	0.00	0
35	Property Taxes	378,617	1,037	45.70	157.90	(112.20)	(116,386)
36	Payroll Taxes	13,329	37	45.70	11.50	34.20	1,249
37	PSC Fees	995	3	45.70	(36.00)	81.70	223
38	Other General Taxes	(35)	(0)	45.70	11.50	34.20	(3)
39	Current Federal Income Tax	200,986	551	45.70	35.60	10.10	5,562
40	Current State Income Tax	35,651	98	45.70	35.60	10.10	987
41	Deferred Income Taxes	247,575	678	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(10)	(0)	45.70	45.70	0.00	0
43	Interest Expense Deduction	399,200	1,094	45.70	86.20	(40.50)	(44,295)
44	Preferred Stock	0	0	45.70	47.00	(1.30)	0
45	Total Working Capital Requirement	<u>\$4,513,058</u>					<u>(\$236,806)</u>
46							
47	Total Cash and Working Capital Requirement Used						<u>(\$236,806)</u>
48							
49							



ALL OTHER WW

SUMMARY CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Line Number	Expense Category	Present Rates Pro Forma For the 12 Months Ended 5/31/23	Average Daily Expense	Revenue Lag	Expense (Lead)/Lag	Net (Lead)/Lag	Cash Requirement
1							
2	Purchased Water	\$0	\$0	45.70	32.00	13.70	\$0
3	Fuel and Power	564,640	1,547	45.70	21.60	24.10	37,282
4	Chemicals	129,014	353	45.70	37.70	8.00	2,828
5	Waste Disposal	1,313,343	3,598	45.70	77.70	(32.00)	(115,142)
6	Labor	867,137	2,376	45.70	11.50	34.20	81,250
7	Pensions	(799)	(2)	45.70	(3.00)	48.70	(107)
8	OPEB	(17,470)	(48)	45.70	45.70	0.00	0
9	Group Insurance	110,146	302	45.70	10.10	35.60	10,743
10	401K	(157,464)	(431)	45.70	9.20	36.50	(15,746)
11	DCP	24,839	68	45.70	9.20	36.50	2,484
12	ESPP	3,041	8	45.70	39.90	5.80	48
13	VEBA	524	1	45.70	214.50	(168.80)	(242)
14	Other Benefits	60,967	167	45.70	38.70	7.00	1,169
15	Support Services	168,438	461	45.70	(2.20)	47.90	22,105
16	Contracted services	15,898	44	45.70	48.80	(3.10)	(135)
17	Building Maintenance and Services	5,525	15	45.70	52.70	(7.00)	(106)
18	Telecommunication expenses	4,859	13	45.70	32.20	13.50	180
19	Postage, printing and stationary	0	0	45.70	34.90	10.80	0
20	Office supplies and services	3,049	8	45.70	(20.50)	66.20	553
21	Employee related expense travel & entertainment	2,256	6	45.70	48.50	(2.80)	(17)
22	Rents	3,928	11	45.70	12.80	32.90	354
23	Transportation	147,749	405	45.70	49.30	(3.60)	(1,457)
24	Miscellaneous	314,006	860	45.70	34.10	11.60	9,979
25	Uncollectible accounts expense	111,590	306	45.70	45.70	0.00	0
26	Customer Accounting	6,071	17	45.70	75.90	(30.20)	(502)
27	Regulatory Expense	1,317	4	45.70	0.00	45.70	165
28	Insurance Other than Group	28,979	79	45.70	(68.40)	114.10	9,059
29	Maintenance supplies and services	367,140	1,006	45.70	30.30	15.40	15,490
30							
31	Total Operations and Maintenance	<u>4,078,723</u>					<u>60,235</u>
32							
33	Depreciation	2,713,397	7,434	45.70	45.70	0.00	0
34	Amortization	90,690	248	45.70	45.70	0.00	0
35	Property Taxes	944,783	2,588	45.70	157.90	(112.20)	(290,424)
36	Payroll Taxes	28,841	79	45.70	11.50	34.20	2,702
37	PSC Fees	9,453	26	45.70	(36.00)	81.70	2,116
38	Other General Taxes	(346)	(1)	45.70	11.50	34.20	(32)
39	Current Federal Income Tax	(37,351)	(102)	45.70	35.60	10.10	(1,034)
40	Current State Income Tax	(6,701)	(18)	45.70	35.60	10.10	(185)
41	Deferred Income Taxes	327,492	897	45.70	45.70	0.00	0
42	Amortization of Investment Tax Credit	(101)	(0)	45.70	45.70	0.00	0
43	Interest Expense Deduction	1,486,967	4,074	45.70	86.20	(40.50)	(164,992)
44	Preferred Stock	<u>0</u>	<u>0</u>	<u>45.70</u>	<u>47.00</u>	<u>(1.30)</u>	<u>0</u>
45	Total Working Capital Requirement	<u>\$9,635,847</u>					<u>(\$391,614)</u>
46							
47	Total Cash and Working Capital Requirement Used						<b>(\$391,614)</b>
48							
49							

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF TOTAL REVENUE LAG DAYS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Description</u>	<u>Total Company</u>	<u>St. Louis County</u>	<u>Other Missouri Sewer</u>	<u>Other Missouri Water</u>	<u>Arnold Sewer</u>
<u>Operating Revenues - Water, Sewer, &amp; Other:</u>					
Service Period & Billing Lag Days:					
(From mid-point of service period to					
A/R Posting Date. See page 2 of					
this Schedule)					
	19.4	19.4	19.4	19.4	19.4
Collection Lag:					
(Sum of daily accounts receivable balance					
divided by the sum of daily receipts.					
See page 3 of this Schedule)					
	26.3	26.3	26.3	26.3	26.3
Total Revenue Lag Days	45.7	45.7	45.7	45.7	45.7

MISSOURI-AMERICAN WATER COMPANY

CALCULATION OF SERVICE PERIOD AND BILLING LAG DAYS

<u>Description</u>	<u>Total Company</u>	<u>St. Louis County</u>	<u>Other Missouri Sewer</u>	<u>Other Missouri Water</u>	<u>Arnold Sewer</u>
Weighted Service Lag (September 2021)	\$550,619,779				
Billing Total (September 2021)	31,823,911				
Service Lag Days	17.3	17.3	17.3	17.3	17.3
Weighted Billing Lag (September 2021)	67,890,695				
Billing Total (September 2021)	31,823,911				
Billing Lag Days	2.1	2.1	2.1	2.1	2.1
Total Service Period & Billing Lag Days for Monthly Billing *	19.4	19.4	19.4	19.4	19.4

MISSOURI-AMERICAN WATER COMPANY

CALCULATION OF COLLECTION LAG DAYS

<u>Description</u>	<u>Total Company</u>
Sum of Net Daily Accounts Receivable Balance in a Year	\$9,145,400,369
Less:	
Uncollectibles Deducted From A/R Balance	<u>2,933,915</u>
Subtotal	9,142,466,454
Divided By The Sum of Daily Receipts in a Year	<u>346,968,508</u>
Total Service Period Collection Lag Days	<u><u>26.3</u></u>

MISSOURI-AMERICAN WATER COMPANY  
SUMMARY OF OPERATING EXPENSES AND TAXES LAG DAYS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Description</u> (1)	<u>Schedule Reference</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)	<u>(Lead)/ Lag Days</u> (5)=(4)/(3)
<u>Partial Expenses &amp; Taxes</u>				
Chemicals Expense	Schedule HW-4	1,996,537	75,364,132	37.7
Customer Accounting Expense	Schedule HW-5	483,008	36,671,164	75.9
Fuel and Power Expense	Schedule HW-6	7,203,244	155,372,065	21.6
Insurance Other Than Group Expense	Schedule HW-7	7,482,756	(512,090,393)	(68.4)
Salaries and Wages Expense	Schedule HW-8	30,290,539	348,341,194	11.5
Purchased Water Expense	Schedule HW-9	1,038,672	33,267,794	32.0
Support Services Expense	Schedule HW-10	48,417,041	(105,356,676)	(2.2)
Waste Disposal Expense	Schedule HW-11	1,377,196	107,052,471	77.7
Group Insurance Expense	Schedule HW-12	13,767,365	138,530,580	10.1
OPEB Expense	Schedule HW-13			45.7
Pensions Expense	Schedule HW-14	4,739,790	(14,211,000)	(3.0)
401k Expense	Schedule HW-15	3,267,791	30,047,039	9.2
ESPP Expense	Schedule HW-16	202,613	8,091,984	39.9
VEBA Expense	Schedule HW-17	256,200	54,954,900	214.5
Other Benefits Expense	Schedule HW-18	117,336	4,546,447	38.7
Rents Expense	Schedule HW-19	58,210	742,196	12.8
Miscellaneous	Schedule HW-20	13,504,751	541,795,562	40.1
Contracted Services Expense	Schedule HW-21	1,501,316	73,209,548	48.8
Building Maintenance and Services Expense	Schedule HW-22	359,957	18,974,207	52.7
Telecommunications Expense	Schedule HW-23	310,344	10,001,230	32.2
Postage, Printing, and Stationary Expense	Schedule HW-24	7,841	273,869	34.9
Office Supplies and Services Expense	Schedule HW-25	277,477	(5,683,341)	(20.5)
Employee Related Expenses	Schedule HW-26	106,604	5,175,278	48.5
Transportation Expense	Schedule HW-27	400,023	19,723,531	49.3
Miscellaneous Expenses	Schedule HW-28	348,722	11,907,381	34.1
Maintenance Supplies Expense	Schedule HW-29	1,070,910	32,490,168	30.3
Payroll Taxes	Schedule HW-30	4,512,006	51,888,073	11.5
Property Taxes	Schedule HW-31	28,342,715	4,474,103,965	157.9
PSC Fees	Schedule HW-32	2,423,192	(87,224,358)	(36.0)
Current Federal Income Taxes	Schedule HW-33			35.6
Current State Income Taxes	Schedule HW-34			35.6
Total Interest Expenses	Schedule HW-35	41,265,127	3,556,800,954	86.2
Interest On Long-Term Debt	Schedule HW-36	38,928,056	3,552,228,688	91.3
Interest On Short-Term Debt	Schedule HW-37	352,011	5,158,001	14.7
Preferred Stock	Schedule HW-38	5,738	269,663	47.0

MISSOURI-AMERICAN WATER COMPANY  
OPERATING EXPENSES & TAXES SAMPLE SIZES USED IN THE  
LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Description (1)	Per Books (2)	Sample Size (3)	Percentage Sampled (4)=(3)/(2)
<u>Expenses &amp; Taxes</u>			
1. Chemicals Expense	\$10,093,050	\$1,996,537	20%
2. Customer Accounting Expense	823,283	483,008	59%
3. Fuel and Power Expense	12,013,174	7,203,244	60%
4. Insurance Other Than Group Expense	4,942,799	7,482,756	151% (1)
5. Salaries and Wages Expense	34,385,972	30,290,539	88%
6. Purchased Water Expense	1,286,477	1,038,672	81%
7. Support Services Expense	39,149,678	48,417,041	124% (1)
8. Waste Disposal Expense	3,758,040	1,377,196	37%
9. Group Insurance Expense	726,201	13,767,365	1896% (1)
10. Pensions Expense	250,209	4,739,790	1894% (1)
11. 401k Expense	1,853,024	3,267,791	176% (1)
12. ESPP Expense	202,613	202,613	100%
13. VEBA Expense	259,218	256,200	99%
14. Other Benefits Expense	706,779	117,336	17%
15. Rents Expense	248,004	58,210	23%
16. Miscellaneous	13,504,751	3,312,285	25% (2)
17. Contracted Services Expense	4,888,120	1,501,316	31%
18. Building Maintenance and Services Expense	1,407,356	359,957	26%
19. Telecommunications Expense	1,326,888	310,344	23%
20. Postage, Printing, and Stationary Expense	29,857	7,841	26%
21. Office Supplies and Services Expense	961,691	277,477	29%
22. Employee Related Expenses	274,131	106,604	39%
23. Transportation Expense	2,257,196	400,023	18%
24. Miscellaneous Expenses	2,359,512	348,722	15%
25. Maintenance Supplies Expense	8,007,677	1,070,910	13%
26. Payroll Taxes	4,512,006	4,512,006	100%
27. Property Taxes	31,009,173	28,342,715	91%
28. PSC Fees	2,423,192	2,423,192	100%
29. Current Federal Income Taxes	(26,302,404)	(26,302,404)	100%
30. Current State Income Taxes	(674)	(674)	100%
31. Total Interest Expenses	41,265,127	39,280,067	95% (3)
32. Interest On Long-Term Debt	39,271,652	38,928,056	99%
33. Interest On Short-Term Debt	333,308	352,011	106% (4)
34. Preferred Stock	1,913	5,738	300% (4)
	<u>\$185,119,282</u>	<u>\$142,585,476</u>	<u>77%</u>

Notes: (1) Sample amount is greater than 100% of expense because it includes the capital portion, employee contributions, or deferred amounts.

(2) Based on the sampling for line items 17-24.

(3) Based on the sampling for line items 32-33.

(4) Sampling based on cash basis while per books reported on accrual basis.

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR CHEMICALS EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	5.8	\$24,215.70	\$141,297.54
November-20	30.4	143,207.97	4,357,439.87
December-20	35.1	181,500.34	6,377,406.83
January-21	29.5	75,359.89	2,221,240.25
February-21	27.7	140,342.32	3,887,640.27
March-21	29.2	138,730.47	4,050,593.68
April-21	34.6	127,511.69	4,412,852.04
May-21	42.2	142,963.36	6,039,873.55
June-21	40.7	189,338.81	7,701,174.11
July-21	44.5	248,545.23	11,062,252.63
August-21	41.4	249,136.10	10,317,144.21
September-21	44.1	335,685.03	14,795,217.27
Total Chemicals Expense	<u>37.7</u>	<u>\$1,996,536.91</u>	<u>\$75,364,132.25</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LEAD DAYS FOR CUSTOMER ACCOUNTING EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
December-20	55.0	\$18,307.38	\$1,006,905.90
January-21	80.7	63,232.42	5,101,356.33
February-21	60.5	22,338.93	1,352,381.32
March-21	71.1	37,182.32	2,642,680.21
April-21	62.3	42,281.93	2,632,816.10
May-21	142.0	18,332.54	2,603,220.68
June-21	67.2	75,595.82	5,077,198.19
July-21	52.9	64,432.55	3,407,503.20
August-21	38.0	5,203.10	197,717.80
September-21	<u>92.9</u>	<u>136,100.75</u>	<u>12,649,384.68</u>
Total Customer Accounting Expense	<u>75.9</u>	<u>\$483,007.74</u>	<u>\$36,671,164.40</u>



MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR FUEL AND POWER EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	20.4	\$536,867.77	\$10,963,812.46
December-20	21.7	468,129.12	10,137,602.92
January-21	24.2	510,765.81	12,359,473.29
February-21	21.2	479,664.33	10,147,376.73
March-21	19.0	532,119.84	10,121,686.77
April-21	22.4	497,253.98	11,123,438.55
May-21	21.4	484,108.35	10,354,920.98
June-21	21.7	544,360.53	11,788,600.69
July-21	22.2	1,090,020.40	24,192,412.52
August-21	20.1	1,025,018.73	20,609,777.27
September-21	<u>22.8</u>	<u>1,034,935.23</u>	<u>23,572,962.94</u>
Total Fuel and Power Expense	<u>21.6</u>	<u>\$7,203,244.09</u>	<u>\$155,372,065.10</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR INSURANCE OTHER THAN GROUP EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	114.4	\$1,315,883.75	\$150,505,167.13
January-21	(156.6)	3,482,531.70	-545,461,900.11
February-21	(147.5)	194,967.31	-28,757,678.23
April-21	(82.1)	1,187,294.05	-97,438,053.76
May-21	(160.5)	114,756.75	-18,415,887.08
July-21	<u>23.1</u>	<u>1,187,322.23</u>	<u>27,477,959.24</u>
Total Insurance Other Than Group Expense	<u>(68.4)</u>	<u>\$7,482,755.79</u>	<u>-\$512,090,392.80</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR SALARIES AND WAGES EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Facts (1)	(Lead)/ Lag Days (2)	Amount (3)	Weighted Amount (4)
All company employees are paid for a two week period (i.e., Days 1 through 14).			
Pay date is five days following the end of the payroll period (i.e., Day 19, where $19 = 14 + 5$ ).			
Non-Union Salaries (5 days)			
LEAD [ $19 - 7.5 = 11.5$ ; where $7.5 = (1 + 14) \div 2 =$	11.5	\$10,560,849.53	\$121,449,769.60
Union Labor (5 days)			
LEAD [ $19 - 7.5 = 11.5$ ; where $7.5 = (1 + 14) \div 2 =$	11.5	19,729,689.10	226,891,424.65
	-----	-----	-----
Total Salaries And Wages Expense	<u>11.5</u>	<u>\$30,290,538.63</u>	<u>\$348,341,194.25</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LEAD DAYS FOR PURCHASED WATER EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
November-20	31.4	\$114,220.32	\$3,581,549.66
December-20	27.9	70,577.84	1,968,397.87
January-21	31.9	73,148.28	2,337,067.57
February-21	23.1	49,947.60	1,152,911.67
March-21	41.9	83,321.79	3,489,046.43
April-21	36.8	90,519.27	3,334,007.91
May-21	30.2	72,865.98	2,200,240.23
June-21	31.4	91,361.14	2,867,503.71
July-21	30.6	105,605.19	3,226,818.69
August-21	31.0	105,691.06	3,274,805.39
September-21	<u>32.2</u>	<u>181,413.44</u>	<u>5,835,444.47</u>
Total Purchased Water Expense	<u>32.0</u>	<u>\$1,038,671.91</u>	<u>\$33,267,793.56</u>

**MISSOURI-AMERICAN WATER COMPANY**  
**CALCULATION OF LEAD DAYS FOR SUPPORT SERVICES EXPENSE**  
**BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021**

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	(2.0)	\$4,542,946.02	-\$9,085,892.04
November-20	0.5	2,773,515.64	1,386,757.82
December-20	(2.0)	3,250,819.88	-6,501,639.76
January-21	(5.0)	6,236,134.20	-31,180,671.00
February-21	(3.5)	3,198,672.21	-11,195,352.74
March-21	(6.0)	3,318,961.63	-19,913,769.78
April-21	3.5	5,430,541.66	19,006,895.81
May-21	(5.0)	3,337,230.42	-16,686,152.10
June-21	(4.5)	3,579,128.53	-16,106,078.39
July-21	7.0	4,596,901.01	32,178,307.07
August-21	(4.0)	3,966,384.19	-15,865,536.76
September-21	(7.5)	4,185,805.93	-31,393,544.48
Total Support Services Expense	<u>(2.2)</u>	<u>\$48,417,041.32</u>	<u>-\$105,356,676.34</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR WASTE DISPOSAL EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	(1.0)	\$6,539.75	-\$6,539.75
November-20	39.0	23,560.90	918,875.10
December-20	31.2	27,646.13	863,707.26
January-21	29.4	21,057.41	619,157.79
February-21	84.9	376,670.02	31,986,839.48
March-21	35.8	42,153.84	1,509,209.07
April-21	47.9	52,622.89	2,522,183.43
May-21	94.7	358,313.14	33,922,618.32
June-21	44.0	25,190.08	1,108,363.52
July-21	41.3	38,584.76	1,594,221.82
August-21	80.4	389,775.38	31,329,857.28
September-21	45.4	15,081.87	683,977.29
Total Waste Disposal Expense	<u>77.7</u>	<u>\$1,377,196.17</u>	<u>\$107,052,470.61</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR GROUP INSURANCE EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment	Lead/ (Lag) Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
October-20	9.5	\$1,043,215.13	\$9,910,543.74
November-20	10.5	1,044,366.50	10,965,848.25
December-20	10.5	1,040,448.12	10,924,705.26
January-21	10.5	1,140,971.14	11,980,196.97
February-21	10.0	1,147,535.39	11,475,959.42
March-21	10.5	1,137,877.36	11,947,712.28
April-21	10.5	1,133,902.44	11,905,975.62
May-21	10.5	1,120,287.07	11,763,014.24
June-21	9.5	1,666,857.50	15,835,146.25
July-21	10.0	1,102,816.61	11,025,146.38
August-21	9.5	1,092,260.70	10,376,476.65
September-21	9.5	1,096,826.87	10,419,855.27
Total Group Insurance Expense	<u>10.1</u>	<u>\$13,767,364.83</u>	<u>\$138,530,580.31</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR OPEB EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Service Period</u>		<u>Payment</u>	<u>(Lead)/</u>	<u>Amount</u>	<u>Weighted</u>
<u>From</u>	<u>To</u>	<u>Date</u>	<u>Lag Days</u>		<u>Amount</u>
(1)	(2)	(3)	(4)	(5)	(6)
NA	NA	NA	45.7	25%	11.4
NA	NA	NA	45.7	25%	11.4
NA	NA	NA	45.7	25%	11.4
NA	NA	NA	<u>45.7</u>	<u>25%</u>	<u>11.4</u>
Total OPEB Expense			<u>45.7</u> *	<u>100%</u>	<u>45.7</u>

\* OPEB is in an overfunded position. There are no scheduled payments for the foreseeable future. Therefore, the lead days are equal to the weighted revenue lag days to result in no cash working capital requirement (overall) for OPEB.

	<u>Billing Total</u>	<u>% To</u>	<u>Revenue</u>	<u>Wtd.</u>
	<u>(September 2021)</u>	<u>Total</u>	<u>Lag</u>	<u>Days</u>
Total Company	<u>31,823,911</u>	<u>100.0%</u>	<u>45.7</u>	<u>45.7</u>
	<u>31,823,911</u>	<u>100.0%</u>		<u>45.7</u>



MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR PENSIONS EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	0.5	\$1,100,580.00	\$550,290.00
February-21	(3.5)	1,185,810.00	-4,150,335.00
May-21	(2.0)	1,185,810.00	-2,371,620.00
August-21	<u>(6.5)</u>	<u>1,267,590.00</u>	<u>-8,239,335.00</u>
Total Pensions Expense	<u>(3.0)</u>	<u>\$4,739,790.00</u>	<u>-\$14,211,000.00</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR 401K EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	9.5	\$232,411.24	\$2,207,906.78
November-20	8.5	234,887.02	1,996,539.67
December-20	9.0	237,479.57	2,137,830.61
January-21	9.5	247,357.02	2,349,891.69
February-21	9.0	254,908.09	2,293,984.55
March-21	9.2	388,427.47	3,559,711.54
April-21	9.0	262,379.40	2,362,921.32
May-21	9.0	259,366.65	2,334,410.91
June-21	9.5	257,827.46	2,449,360.87
July-21	9.5	256,094.00	2,432,893.00
August-21	9.5	381,146.92	3,621,809.45
September-21	9.0	255,506.16	2,299,778.92
 Total 401k Expense	 <u>9.2</u>	 <u>\$3,267,791.00</u>	 <u>\$30,047,039.29</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR ESPP EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	45.0	\$48,513.24	\$2,183,095.80
December-20	15.0	17,364.64	260,469.60
February-21	29.0	34,729.27	1,007,148.83
May-21	45.5	46,132.10	2,099,010.55
August-21	<u>45.5</u>	<u>55,873.83</u>	<u>2,542,259.27</u>
 Total ESPP Expense	 <u>39.9</u>	 <u>\$202,613.08</u>	 <u>\$8,091,984.05</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR VEBA EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
February-21	<u>214.5</u>	<u>\$256,200.00</u>	<u>\$54,954,900.00</u>
Total VEBA Expense	<u><u>214.5</u></u>	<u><u>\$256,200.00</u></u>	<u><u>\$54,954,900.00</u></u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR OTHER BENEFITS EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	19.0	\$636.18	\$12,057.89
December-20	46.2	14,000.49	646,138.23
January-21	63.9	5,387.95	344,513.17
February-21	(5.9)	21,185.03	-125,369.08
March-21	33.7	12,010.04	404,788.01
April-21	17.3	16,049.74	276,916.88
May-21	47.3	9,170.69	433,905.55
June-21	38.0	4,824.29	183,493.54
July-21	84.7	14,760.50	1,249,508.37
August-21	46.1	5,148.98	237,267.17
September-21	62.4	14,162.02	883,227.29
Total Other Benefits Expense	38.7	\$117,335.91	\$4,546,447.02

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR RENTS EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	10.8	\$2,968.80	\$31,930.45
December-20	(73.4)	7,424.01	-544,864.90
January-21	(9.2)	13,989.98	-128,875.78
February-21	24.3	19,362.14	469,658.39
March-21	25.5	4,239.56	108,317.08
April-21	206.2	3,538.69	729,687.78
May-21	31.5	1,610.76	50,738.94
September-21	5.0	5,075.56	25,604.48
 Total Rents Expense	 <u>12.8</u>	 <u>\$58,209.50</u>	 <u>\$742,196.44</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LAG DAYS FOR MISCELLANEOUS  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

G/L Account	Per Books Amount	(Lead)/ Lag Days	Schedule Ref. For (Lead)/ Lag Days	Weighted Amount
(1)	(2)	(3)	(4)	(5)
Contracted Services Expense	\$4,888,120.30	48.8	21	\$238,540,270.64
Building Maintenance and Services Expense	1,407,355.68	52.7	22	74,167,644.34
Telecommunications Expense	1,326,887.98	32.2	23	42,725,792.96
Postage, Printing, and Stationary Expense	29,857.45	34.9	24	1,042,025.01
Office Supplies and Services Expense	961,690.68	(20.5)	25	-19,714,658.94
Employee Related Expenses	274,131.07	48.5	26	13,295,356.90
Transportation Expense	2,257,195.86	49.3	27	111,279,755.90
Miscellaneous Expenses	2,359,512.47	34.1	28	80,459,375.23
 Total Miscellaneous	 <u>\$13,504,751.49</u>	 <u>40.1</u>		 <u>\$541,795,562.04</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR CONTRACTED SERVICES EXPENSE  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	6.0	\$70,029.70	\$420,178.20
November-20	6.0	102,351.10	614,106.60
December-20	14.4	94,161.57	1,359,625.00
January-21	36.6	19,861.19	727,299.80
February-21	20.0	7,127.00	142,540.00
March-21	60.0	68,308.98	4,099,070.72
April-21	57.5	10,781.31	619,925.33
May-21	46.8	217,504.34	10,174,344.49
June-21	61.6	210,920.43	13,000,427.90
July-21	63.7	180,630.75	11,497,663.58
August-21	59.6	418,479.51	24,929,378.48
September-21	<u>55.6</u>	<u>101,160.12</u>	<u>5,624,988.40</u>
Total Contracted Services Expense	<u>48.8</u>	<u>\$1,501,316.00</u>	<u>\$73,209,548.49</u>



MISSOURI-AMERICAN WATER COMPANYCALCULATION OF LEAD DAYS FOR BUILDING MAINTENANCE AND SERVICES EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	64.0	\$5,700.00	\$364,800.00
November-20	64.0	37,938.00	2,427,756.00
December-20	61.4	15,244.30	936,400.90
January-21	66.1	82,079.00	5,426,569.50
February-21	23.0	10,168.00	233,864.00
March-21	39.0	2,712.75	105,797.25
April-21	38.4	10,521.36	403,549.08
May-21	25.3	21,254.00	536,982.00
June-21	41.9	38,710.00	1,621,030.00
July-21	53.9	49,281.47	2,657,498.65
August-21	39.9	65,991.50	2,635,020.40
September-21	<u>79.8</u>	<u>20,357.05</u>	<u>1,624,939.05</u>
 Total Building Maintenance and Services Expense	 <u>52.7</u>	 <u>\$359,957.43</u>	 <u>\$18,974,206.83</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LEAD DAYS FOR TELECOMMUNICATIONS EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	28.1	\$17,815.36	\$500,002.73
December-20	33.7	23,753.66	799,759.90
January-21	30.6	29,690.29	909,973.41
February-21	33.9	33,504.48	1,137,120.98
March-21	37.9	44,108.10	1,670,735.99
April-21	42.5	16,194.97	688,429.46
May-21	32.8	30,575.01	1,003,018.88
June-21	15.9	21,934.35	349,202.88
July-21	18.1	18,637.05	337,743.18
August-21	39.3	29,847.46	1,174,048.05
September-21	32.3	44,283.37	1,431,194.24
 Total Telecommunicatio ns Expense	 <u>32.2</u>	 <u>\$310,344.10</u>	 <u>\$10,001,229.68</u>

MISSOURI-AMERICAN WATER COMPANYCALCULATION OF LEAD DAYS FOR POSTAGE, PRINTING, AND STATIONARY EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	8.0	\$316.91	\$2,535.28
November-20	22.2	538.46	11,973.85
December-20	26.6	1,297.61	34,561.77
January-21	3.0	118.74	356.22
February-21	17.0	102.84	1,748.28
April-21	39.6	1,372.78	54,364.15
May-21	22.5	1,236.22	27,759.34
June-21	41.9	1,260.43	52,870.88
July-21	119.1	385.16	45,861.71
August-21	35.6	800.99	28,504.41
September-21	32.4	410.97	13,332.87
Total Postage, Printing, and Stationary Expense	<u>34.9</u>	<u>\$7,841.11</u>	<u>\$273,868.76</u>

MISSOURI-AMERICAN WATER COMPANY

CALCULATION OF LEAD DAYS FOR OFFICE SUPPLIES AND SERVICES EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	14.0	\$8,821.63	\$123,502.82
November-20	14.5	2,649.39	38,416.16
December-20	15.0	48,236.06	723,540.90
January-21	13.0	3,549.46	46,142.98
February-21	(149.7)	47,434.77	-7,102,938.14
March-21	15.0	34,560.62	518,409.30
April-21	14.5	4,446.44	64,473.38
May-21	(54.3)	34,323.81	-1,864,388.28
June-21	14.5	31,986.03	463,797.44
July-21	34.6	20,518.32	709,541.07
August-21	15.0	4,753.05	71,295.75
September-21	14.5	36,197.64	524,865.78
Total Office Supplies and Services Expense	<u>(20.5)</u>	<u>\$277,477.22</u>	<u>-\$5,683,340.85</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR EMPLOYEE RELATED EXPENSES  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
November-20	12.8	\$16,024.26	\$204,341.96
December-20	76.0	59,065.72	4,488,994.72
March-21	9.0	1,739.43	15,654.87
May-21	24.2	7,812.80	189,243.20
June-21	35.0	1,500.00	52,500.00
July-21	11.1	18,847.72	210,014.46
September-21	9.0	1,614.27	14,528.43
 Total Employee Related Expenses	 <u>48.5</u>	 <u>\$106,604.20</u>	 <u>\$5,175,277.64</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR TRANSPORTATION EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	28.0	\$97,373.87	\$2,726,817.33
February-21	98.5	8,062.44	794,150.34
April-21	83.2	79,787.62	6,637,827.72
May-21	40.2	75,977.45	3,052,802.17
July-21	<u>46.9</u>	<u>138,821.88</u>	<u>6,511,933.05</u>
 Total Transportation Expense	 <u>49.3</u>	 <u>\$400,023.26</u>	 <u>\$19,723,530.61</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LEAD DAYS FOR MISCELLANEOUS EXPENSES  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	15.0	\$1,459.32	\$21,889.80
November-20	30.6	19,207.45	587,506.37
December-20	34.6	40,858.87	1,412,553.00
January-21	36.0	28,702.85	1,034,402.11
February-21	30.6	23,125.03	707,580.68
March-21	25.7	31,424.89	806,364.96
April-21	29.1	36,563.15	1,065,694.02
May-21	56.9	41,108.08	2,338,327.98
June-21	45.3	42,143.46	1,908,736.47
July-21	(9.8)	36,760.74	-362,019.49
August-21	56.1	24,820.05	1,393,357.16
September-21	44.0	22,547.80	992,988.18
 Total Miscellaneous Expenses	 <u>34.1</u>	 <u>\$348,721.69</u>	 <u>\$11,907,381.23</u>

MISSOURI-AMERICAN WATER COMPANY  
CALCULATION OF LEAD DAYS FOR MAINTENANCE SUPPLIES EXPENSE  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Month of Payment <u>(1)</u>	Lead/ (Lag) Days <u>(2)</u>	Amount <u>(3)</u>	Weighted Amount <u>(4)</u>
October-20	6.0	\$102,351.10	\$614,106.60
November-20	15.0	76,641.40	1,147,329.80
December-20	14.4	292,121.82	4,192,905.87
January-21	32.8	15,012.25	492,685.75
February-21	56.3	38,094.65	2,146,236.65
March-21	42.4	107,798.15	4,573,284.76
April-21	59.3	106,950.71	6,339,064.51
May-21	45.8	67,948.98	3,111,273.32
June-21	48.2	38,195.40	1,840,781.05
July-21	55.7	22,457.00	1,250,536.00
August-21	45.0	15,220.03	684,901.35
September-21	<u>32.4</u>	<u>188,118.09</u>	<u>6,097,062.55</u>
 Total Maintenance Supplies Expense	 <u>30.3</u>	 <u>\$1,070,909.58</u>	 <u>\$32,490,168.21</u>



MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR PAYROLL TAXES  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

Facts (1)	(Lead)/ Lag Days (2)	Amount (3)	Weighted Amount (4)
All company employees are paid for a two week period (i.e., Days 1 through 14).			
Pay date is five days following the end of the payroll period (i.e., Day 19, where $19 = 14 + 5$ ).			
FUTA (5 days) LAG [ $19 - 7.5 = 11.5$ ; where $7.5 = (1 + 14) \div 2 =$	11.5	\$32,561.43	\$374,456.45
FICA (5 days) LAG [ $19 - 7.5 = 11.5$ ; where $7.5 = (1 + 14) \div 2 =$	11.5	4,453,627.46	51,216,715.79
STUTA (5 days) LAG [ $19 - 7.5 = 11.5$ ; where $7.5 = (1 + 14) \div 2 =$	11.5	\$25,817.49	\$296,901.14
Total Payroll Taxes	11.5	\$4,512,006.38	\$51,888,073.37

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR PROPERTY TAXES  
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
December-20	<u>157.9</u>	<u>\$28,342,715.39</u>	<u>\$4,474,103,964.95</u>
Total Property Taxes	<u><u>157.9</u></u>	<u><u>\$28,342,715.39</u></u>	<u><u>\$4,474,103,964.95</u></u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR PSC FEES  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	(37.5)	\$532,435.42	-\$19,966,328.25
January-21	(33.5)	532,435.42	-17,836,586.57
April-21	(30.0)	532,435.42	-15,973,062.60
July-21	(40.5)	825,885.95	-33,448,380.98
Total PSC Fees	(36.0)	\$2,423,192.21	-\$87,224,358.40

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LAG DAYS FOR CURRENT FEDERAL INCOME TAXES  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Service Period</u>		<u>Payment</u>	<u>(Lead)/</u>	<u>Amount</u>	<u>Weighted</u>
<u>From</u>	<u>To</u>	<u>Date</u>	<u>Lag Days</u>		<u>Amount</u>
(1)	(2)	(3)	(4)	(5)	(6)
<u>Federal Income Taxes (Current)</u>					
1/1/20	12/31/20	12/14/20 (1)	165.5	25%	41.4
1/1/21	12/31/21	4/14/21 (1)	(79.0)	25%	(19.8)
1/1/21	12/31/21	6/14/21 (1)	(18.0)	25%	(4.5)
1/1/21	12/31/21	9/14/21 (1)	74.0	25%	18.5
Total Current Federal Income Taxes			<u>35.6</u>	<u>100%</u>	<u>35.6</u>

Notes: (1) Payment date assumed to be 1.0 day prior to due date.

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LAG DAYS FOR CURRENT STATE INCOME TAXES  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Service Period</u>		<u>Payment</u>	<u>(Lead)/</u>	<u>Amount</u>	<u>Weighted</u>
<u>From</u>	<u>To</u>	<u>Date</u>	<u>Lag Days</u>		<u>Amount</u>
(1)	(2)	(3)	(4)	(5)	(6)
<u>Federal Income Taxes (Current)</u>					
1/1/20	12/31/20	12/14/20 (1)	165.5	25%	41.4
1/1/21	12/31/21	4/14/21 (1)	(79.0)	25%	(19.8)
1/1/21	12/31/21	6/14/21 (1)	(18.0)	25%	(4.5)
1/1/21	12/31/21	9/14/21 (1)	<u>74.0</u>	<u>25%</u>	<u>18.5</u>
Total Current State Income Taxes			<u>35.6</u>	<u>100%</u>	<u>35.6</u>

Notes: (1) Payment date assumed to be 1.0 day prior to due date.

**MISSOURI-AMERICAN WATER COMPANY**  
**CALCULATION OF LAG DAYS FOR TOTAL INTEREST EXPENSES**  
**BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021**

<u>G/L Account</u>	<u>Per Books Amount</u>	<u>(Lead)/ Lag Days</u>	<u>Schedule Ref. For (Lead)/ Lag Days</u>	<u>Weighted Amount</u>
(1)	(2)	(3)	(4)	(5)
Interest LTD	\$2,226,874.12	91.3	36	\$203,313,607.16
Interest LTD Interco	36,676,754.85	91.3	36	3,348,587,717.81
Int exp-debt dis-ins	108,436.24	0.0		0.00
EarlyDbtRetirLoss-IC	259,586.36	0.0		0.00
Interest STD Interco	333,308.11	14.7	37	4,899,629.22
Amort Debt Disc&Exp	347,986.89	0.0		0.00
Amort Dbt Dsc&Ex I/C	385,975.42	0.0		0.00
Amort Dbt E-Insde CL	80,604.60	0.0		0.00
Amort P/S Exp w/ MRR	15,516.94	0.0		0.00
Amortization of debt	<u>830,083.85</u>	<u>0.0</u>		<u>0.00</u>
Total Interest Expenses	<u><u>\$41,265,127.38</u></u>	<u><u>86.2</u></u>		<u><u>\$3,556,800,954.19</u></u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR INTEREST ON LONG-TERM DEBT  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	91.5	\$5,934,537.50	\$543,010,181.25
November-20	92.0	4,369,208.33	401,967,166.36
December-20	91.5	4,492,950.00	411,104,925.00
March-21	90.5	4,575,237.84	414,059,024.52
April-21	91.0	5,934,537.50	540,042,912.50
May-21	90.5	4,190,000.00	379,195,000.00
June-21	91.0	4,856,347.22	441,927,597.02
September-21	92.0	4,575,237.84	420,921,881.28
 Total Interest On Long-Term Debt	 <u>91.3</u>	 <u>\$38,928,056.23</u>	 <u>\$3,552,228,687.93</u>

MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR INTEREST ON SHORT-TERM DEBT  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
October-20	15.0	\$56,108.94	\$841,634.10
November-20	14.5	60,889.16	882,892.82
January-21	15.0	120,278.38	1,804,175.70
February-21	13.5	58,561.56	790,581.06
March-21	15.0	44,056.38	660,845.70
April-21	14.5	6,756.09	97,963.31
May-21	15.0	3,874.73	58,120.95
August-21	15.0	485.45	7,281.75
September-21	14.5	1,000.40	14,505.80
Total Interest On Short-Term Debt	<u>14.7</u>	<u>\$352,011.09</u>	<u>\$5,158,001.19</u>



MISSOURI-AMERICAN WATER COMPANY  
 CALCULATION OF LEAD DAYS FOR PREFERRED STOCK  
 BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2021

<u>Month of Payment</u> (1)	<u>Lead/ (Lag) Days</u> (2)	<u>Amount</u> (3)	<u>Weighted Amount</u> (4)
November-20	<u>47.0</u>	<u>\$5,737.50</u>	<u>\$269,662.50</u>
Total Preferred Stock	<u><u>47.0</u></u>	<u><u>\$5,737.50</u></u>	<u><u>\$269,662.50</u></u>