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OCC EXHIBIT NO. _____

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Aqua)
Ohio, Inc. for Authority to Increase Its) Case No. 09-560-WW-AIR
Rates and Charges in Its Masury Division.)

**DIRECT TESTIMONY
of
DANIEL J. DUANN, PhD.**

**ON BEHALF OF THE
OFFICE OF THE OHIO CONSUMERS' COUNSEL**
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February 22, 2010

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DJD-1 SELECTED PUBLICATIONS OF DANIEL J. DUANN, PH.D.

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1 **I. INTRODUCTION**

2

3 **Q1. PLEASE STATE YOUR NAME, ADDRESS AND POSITION.**

4 **A1.** My name is Daniel J. Duann. My business address is 10 West Broad Street, Suite
5 1800, Columbus, Ohio, 43215-3485. I am a Senior Regulatory Analyst with the
6 Office of the Ohio Consumers' Counsel ("OCC").

7

8 **Q2. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
9 **PROFESSIONAL QUALIFICATIONS.**

10 **A2.** I received my Ph.D. degree in Public Policy Analysis from the Wharton School,
11 University of Pennsylvania. I also have a M.S. degree in Energy Management
12 and Policy from the University of Pennsylvania and a M.A. degree in Economics
13 from the University of Kansas. I completed my undergraduate study in Business
14 Administration at the National Taiwan University, Taiwan, Republic of China.

15

16 I was a Utility Examiner II with the Forecasting Section of the Ohio Division of
17 Energy ("ODOE"), Ohio Department of Development from 1983 to 1985. From
18 1985 to 1986, I was an Economist with the Center of Health Policy Research at
19 the American Medical Association in Chicago. At the end of 1986, I joined the
20 Illinois Commerce Commission ("ICC") as a Senior Economist in its Policy
21 Analysis and Research Division.

22

*Direct Testimony of Daniel J. Duann, Ph.D.
On Behalf of the Office of the Ohio Consumers' Counsel
PUCO Case No. 09-560-WW-AIR*

1 I started working as a Senior Institute Economist at the National Regulatory
2 Research Institute ("NRRI") of the Ohio State University in August 1987. At
3 NRRI, I worked in many areas of utility regulation and energy policy, including
4 competitive bidding for electricity, least-cost energy planning, unbundling and
5 deregulation of gas distribution service, incentive regulation in fuel procurement,
6 and regulatory initiatives in promoting natural gas vehicle and gas storage.

7
8 I was an independent business consultant from 1996 to 2007. I joined the OCC in
9 January 2008, and have been a Senior Regulatory Analyst there for approximately
10 two years. Altogether, I have more than fifteen years of experience in utility
11 regulation and energy policy. A list of my professional publications is attached as
12 DJD Attachment - 1.

13
14 At the OCC, my principal duties relate to OCC's participation in regulatory
15 proceedings involving rate cases and cost recovery filings by electric, gas and
16 water utilities. Specifically, I have reviewed rate of return testimony and have
17 assisted in the preparation of cross examinations of witnesses in several rate case
18 and ESP (Electric Security Plan) proceedings.¹ I have also led the OCC's
19 participation in the SEET (Significantly Excessive Earnings Test) Workshop by
20 preparing, coordinating and reviewing filed comments.²

21

¹ PUCO Case Nos. 07-551-EL-AIR, 07-829-GA-AIR, 07-1112-WS-AIR, 08-72-GA-AIR, 08-227-WS-AIR, 08-917-EL-SSO, 08-1094-EL-SSO and 09-391-WS-AIR.

² PUCO Case No. 09-786-EL-UNC.

1 **Q3. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE THE**
2 **PUBLIC UTILITIES COMMISSION OF OHIO?**

3 **A3.** Yes. I have submitted testimony before the Public Utilities Commission of Ohio
4 ("PUCO" or "Commission") in *In the Matter of Application of The Dayton Power*
5 *and Light Company for Approval of Its Electric Security Plan*, Case No. 08-1094-
6 EL-SSO. I also submitted testimony before the PUCO and was cross-examined in
7 *In the Matter of the Application of Ohio American Water Company to Increase Its*
8 *Rates for Water and Sewer Service Provided to Its Entire Service Area*, Case No.
9 09-391-WS-AIR.

10

11 **Q4. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE OTHER**
12 **ADMINISTRATIVE, REGULATORY, OR LEGISLATIVE AGENCIES?**

13 **A4.** Yes. I submitted testimony before the Ohio Division of Energy on behalf of the
14 ODOE Staff regarding the Long-Term Forecast Reports of the Cleveland Electric
15 Illuminating Company (Case No. CEI-83-E) and The Toledo Edison Company
16 (Case No. TEC-84-E) in 1984 and 1985. I also testified before the Illinois
17 Commerce Commission in 1987 on behalf of the ICC Staff regarding the
18 divestiture of three nuclear power plants by the Commonwealth Edison Company
19 and related matters (Case Nos. 87-0043, 87-0044, 87-0057, 87-0096). In 1989, I
20 testified as an expert analyst before the California Legislature, Senate Committee
21 on Energy and Public Utilities regarding pending legislation (California SB 769)
22 that would have prohibited an electric utility from purchasing electricity from a

1 private energy producer fully or partially owned by a subsidiary or affiliate of the
2 utility.

3
4 **Q5. WHAT DOCUMENTS HAVE YOU REVIEWED IN THE PREPARATION OF**
5 **YOUR TESTIMONY?**

6 **A5.** I have reviewed Aqua Ohio, Inc.'s ("the Company" or "Aqua Ohio") Application
7 for Authority to Increase Its Rates and Charges in Its Masury Division
8 ("Application") and supporting testimonies. I also reviewed *A report by the Staff*
9 *of the Public Utilities Commission of Ohio* ("Staff Report") in this proceeding and
10 related Commission opinions, orders, and entries.³ In addition, I have reviewed
11 relevant Aqua Ohio responses to the Interrogatories and Data Requests and
12 Requests for Production of Documents by the OCC, the PUCO Staff, and other
13 parties. I have reviewed financial information in trade and general publications
14 related to Aqua Ohio, the group of comparable water utilities, and other
15 companies used in my analysis.

16
17 **II. PURPOSE OF TESTIMONY**

18
19 **Q6. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

20 **A6.** My testimony focuses on the determination of a just and reasonable cost rate of
21 common equity (or return on equity, "ROE") and an overall cost of capital (or rate

³ The Application and testimonies were filed on August 7, 2009, and the Staff Report was filed on January 21, 2010. The Case Number of the Aqua Ohio's rate case Application is 09-560-WW-AIR.

1 of return, "ROR") for Aqua Ohio. I conclude that Aqua Ohio's requested ROE of
2 11.00% and overall ROR of 8.69% in its Application are unreasonable and unfair
3 to its customers. Aqua Ohio has provided no support for its proposed cost rate of
4 common equity except a statement that the 11.00% return on equity was selected
5 based on its Regional Controller's knowledge of recent requests made by
6 similarly-situated water utilities. See DJD Attachment - 2. I also discuss OCC's
7 objections regarding the cost of common equity and the rate of return
8 recommended in the Staff Report.
9

10 **III. OCC'S RECOMMENDATIONS FOR A JUST AND REASONABLE RATE**
11 **OF RETURN.**
12

13 ***Q7. WHAT ARE YOUR RECOMMENDATIONS?***

14 ***A7.*** Based on my analysis of the cost of equity for comparable water utilities and the
15 effects of the recession on U.S. utilities in the last two years, I recommend that the
16 Commission approve a cost of equity of 8.12% and a rate of return of 7.24% for
17 Aqua Ohio in this proceeding.
18

19 ***Q8. PLEASE SUMMARIZE YOUR METHODOLOGY REGARDING THE***
20 ***ESTIMATION OF AQUA OHIO'S COST OF COMMON EQUITY AND***
21 ***COST OF CAPITAL.***

22 ***A8.*** I accepted the Company's proposed capital structure and embedded cost of long-
23 term debt. I applied two commonly-used financial models, the Capital Asset

Pricing Model (CAPM) and the Discounted Cash Flow Model (DCF), to estimate Aqua Ohio's cost of common equity. The average of the ROEs derived from the two financial models is 8.12%. Based on Aqua Ohio's stand-alone capital structure and the cost rates of its two capital components, I calculated the overall cost of capital to be 7.24%. A summary of the capital structure, cost rates, and the overall cost of capital proposed by Aqua Ohio, the Staff, and OCC is shown in Table 1.

**TABLE 1: A SUMMARY OF PROPOSED CAPITAL STRUCTURE,
COST RATES, AND OVERALL COST OF CAPITAL**

	<u>% of Total</u>	<u>Costs (%)</u>			<u>Weighted Cost (%)</u>		
		OCC	Staff	Aqua Ohio	OCC	Staff	Aqua Ohio
Long Term Debt	49.55%	6.34%	6.33%	6.34%	3.14%	3.14%	3.14%
Common Equity	50.45%	8.12%	8.73% - 9.74%	11.00%	4.10%	4.40% - 4.91%	5.55%
Total Capital	100.00%				7.24%	7.54% - 8.05%	8.69%

Q9. PLEASE EXPLAIN THE CAPITAL STRUCTURE AND THE COST RATE OF LONG-TERM DEBT USED IN YOUR ANALYSIS.

A9. I used the stand-alone capital structure of the Company rather than its parent company's (Aqua America, Inc.) consolidated capital structure. It is my opinion that this stand-alone capital structure, 49.55% long-term debt and 50.45%

1 common equity, adequately reflects the financial condition of Aqua Ohio.⁴ As for
2 the embedded cost of long-term debt, I used a cost rate of 6.34% as proposed by
3 the Company.⁵ The use of the embedded cost of long-term debt to calculate the
4 cost of capital is reasonable in this proceeding. The PUCO Staff has consistently
5 used the embedded cost of long-term debt in estimating the cost of capital in
6 previous water rate cases.

7
8 ***Q10. PLEASE DESCRIBE AND EXPLAIN YOUR SELECTION OF A***
9 ***COMPARABLE GROUP OF COMPANIES THAT HAVE BUSINESS AND***
10 ***FINANCIAL RISKS SIMILAR TO THOSE OF AQUA OHIO.***

11 ***A10.*** The regulatory doctrine of a fair and reasonable cost rate for common equity, or
12 more generally, a fair and reasonable rate of return for invested capital, refers to
13 the provision of a rate of return on investment that allows a utility to have the
14 opportunity to maintain its financial integrity and attract capital. In other words,
15 the approved return on common equity, or an overall rate of return, for a utility
16 must be comparable to the returns on invested capital earned by companies with
17 similar risk. Two U.S. Supreme Court cases, the *Bluefield* and the *Hope*
18 decisions, are commonly cited in defining the legal principles of setting a fair and

⁴ The stand-alone capital structure can be found in the direct testimony of Aqua Ohio's witness Robert A. Kopas at 3-4, and Application, Schedule D-1.

⁵ See direct testimony of Kopas at 4, also at Application, Schedule D-3.

1 reasonable rate of return of a regulated utility.⁶ In this proceeding, a fair and
2 reasonable cost rate of common equity or rate of return for Aqua Ohio should be
3 comparable to the returns earned or expected to be earned by water utilities with
4 similar business and financial risks.

5
6 Currently, there are ten publicly-traded, investor-owned water companies reported
7 in the Value Line Investment Survey.⁷ Another publication, the AUS Utility
8 Report, covers eleven water utilities that include the same ten companies followed
9 by Value Line and Artesian Resources Corporation.⁸ Out of the eleven publicly-
10 traded water utilities, I selected four to be included in the comparable group of
11 companies for the purpose of estimating Aqua Ohio's cost of common equity.

12 The four companies are American Water Works Company Inc. ("AWK"),
13 American States Water Company ("AWR"), California Water Service Group
14 ("CWT") and Aqua America, Inc ("WTR"). The four companies are all traded on
15 the New York Stock Exchange, and each had a market capitalization of more than
16 \$400 million at the end of January 2010. The other seven water companies are
17 excluded from the comparable group largely based on their much smaller market
18 capitalization in comparison to that of companies in the comparable group. The

⁶ See *Bluefield Water Works & Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679, 692-93 (1923), and *Federal Power Commission v. Hope Natural Gas Co.*, 320 US 591 (1944). A more extensive discussion of the origin and generation of regulation in the U.S. can be found in M.A. Crew and P.R. Kleindorfer, *The Economics of Public Utility Regulation*, The MIT Press (1986), 93-119.

⁷ See Value Line Investment Survey of January 22, 2010, for the ten major water utilities covered: American Water Works Company Inc., American States Water Co., Aqua America, Inc., California Water Service Group, SouthWest Water Company, Connecticut Water Service, Inc., Middlesex Water Company, Pennichuck Corporation, SJW Corporation and The York Water Company.

⁸ See AUS Utility Reports, February 2010 at 21-23.

1 use of market capitalization in choosing comparable water utilities for Aqua Ohio
2 is also consistent with the choice of the “equity risk premium” in estimating the
3 cost of common equity.⁹
4

5 In summary, this group of four publicly-traded, investor-owned water utilities
6 selected for the comparable group fairly reflects the business and financial risk
7 facing Aqua Ohio and its parent company, Aqua America, Inc. The selected
8 financial data of the four investor-owned water utilities, as reported in the most
9 recent Value Line Investment Survey and the AUS Utility Report, are shown in
10 Table 2.
11

⁹ In my CAPM analysis, I use the expected equity risk premium based on the difference of total returns between the group of S&P 500 companies and long-term government bonds. The smallest company in the S&P 500 group has a market capitalization of more than \$1 billion as of January 15, 2010. This is a much higher market capitalization than that of each one of the seven excluded water utilities.

**TABLE 2: SELECTED FINANCIAL DATA OF
AQUA OHIO'S COMPARABLE GROUP OF WATER UTILITIES¹⁰**

Company	AWK	AWR	WTR	CWT
Market Capitalization (\$million)*	4,000	650	2,400	775
2009 Sales Revenue (\$million)*	2,445	365	675	448
% of Regulated Revenue**	90	75	93	98
2009 Long-Term Debt Ratio (%)*	56.0	46.0	54.0	47.0
2009 Common Equity Ratio (%)*	43.5	54.0	46.0	53.0
Financial Strength*	B	B++	B+	B++
S&P Bond Rating**	A+	A	AA-	AA-
Moody Bond Rating**	N/A	A2	N/A	N/A
Beta*	N/A	0.80	0.65	0.75

***Q11. PLEASE DESCRIBE THE FINANCIAL MODELS USED IN YOUR
ESTIMATION OF AQUA OHIO'S COST OF COMMON EQUITY.***

A11. I used two financial models, the Capital Asset Pricing Model (CAPM) and the Discounted Cash Flow Model (DCF), to estimate the cost of common equity for Aqua Ohio. After obtaining the results of these two models, I calculated the average of the two equity costs and used it as the baseline cost of common equity

¹⁰ Data with an asterisk (*) are from January 22, 2010 Value Line Investment Survey and data with a double asterisk (**) are from the February 2010 AUS Utility Report.

1 for Aqua Ohio. I did not make any adjustment to the baseline cost of common
2 equity.

3
4 Under the CAPM, the cost rate of common equity for a publicly-traded company
5 is determined by the perceived relative risk of the company to the equity market
6 and the general level of return associated with risk-free investments. In other
7 words, the more risky the common stock of a company is perceived to be relative
8 to the entire equity market (or a large portion of the equity market), the higher
9 return the investors of that particular company will require for the perceived
10 higher risk. The Capital Asset Pricing Model can be expressed in the following
11 form:

$$r = r_f + \beta(r_m - r_f)$$

12
13 where r is the required rate of return

14 β is beta

15 r_m is the market return

16 r_f is the return on risk-free assets
17

18 Under the DCF model, the current stock price of a publicly-traded company is
19 assumed to be equal to the discounted value of future cash flow (typically in the
20 form of dividends) that the investors of that particular company expect to receive.
21 The internal discount rate associated with this stream of expected dividends over
22 the life of the investment is the required rate of return on common equity.

1 Assuming a constant rate of dividend growth, a DCF formula can be expressed as
2 the following:

3
4
$$K = D_1 / P_0 + g$$

5 where K is the required rate of return

6 D_1 is the current dividend

7 P_0 is the current stock price

8 g is the constant growth rate of dividend
9

10 It is my opinion that the results obtained through the proper application of the
11 CAPM and DCF are valid, sufficient and reasonable in setting a reasonable cost
12 of common equity for Aqua Ohio. I have reviewed a number of testimonies on
13 the cost of common equity filed in prior water, gas and electric rate cases before
14 the PUCO in recent years. Of the testimonies that I have reviewed, all the expert
15 analysts, whether representing the utilities, the PUCO Staff or other parties, have
16 used the CAPM and DCF as the primary, if not the exclusive, models in
17 estimating the cost of common equity. For example, since 2001, the Staff has
18 used the DCF model in all eight major water rate cases in which the Staff has
19 provided detailed cost of common equity analysis.¹¹ The Staff has used the
20 CAPM in seven of the eight major water rate cases.¹²

¹¹ The case numbers of these water rate cases are: 01-2924-WW-AIR, 03-2290-WW-AIR, 07-564-WW-AIR, 09-560-WW-AIR, 01-626-WW-AIR, 06-433-WS-AIR, 07-1112-WS-AIR and 09-391-WS-AIR.

¹² In one case, Aqua Ohio Inc., Case No. 03-2290-WW-AIR, the Staff relied only on the result of the DCF analysis for estimating the cost of common equity. The Staff Report in this case did not indicate why the CAPM was not used.

1
2 The results of the DCF and the CAPM are complimentary to each other. The
3 result of the DCF can be considered essentially an “absolute” measurement of the
4 cost (or required return) of common equity in the sense that it depends largely on
5 the expected dividend growth of one specific company. On the other hand, the
6 result obtained through CAPM reflects a “relative” measurement of the cost of
7 common equity that depends largely on the relative risk of the underlying
8 business to the entire equity market. The costs of common equity obtained from
9 these two models can serve as a “reference point” for each other. It is my opinion
10 that the average of the results obtained from these two models has provided a
11 balanced and fair estimate of the cost of common equity for Aqua Ohio.
12

13 ***Q12. PLEASE DESCRIBE AND EXPLAIN YOUR APPLICATION OF THE***
14 ***CAPITAL ASSET PRICING MODEL IN ESTIMATING THE COST OF***
15 ***COMMON EQUITY OF AQUA OHIO, ESPECIALLY THE CHOICE OF***
16 ***THE RETURN ON RISK-FREE ASSETS.***

17 ***A12.*** There are three main components in the application of a Capital Asset Pricing
18 Model: the return on risk-free investments, the beta and the expected risk
19 premium of the entire equity market over risk-free investments. The yields on
20 long-term United States Treasury bonds are generally considered a good proxy of
21 return on risk-free investment.¹³ There are various indices used by analysts in
22 representing the yields on long-term U.S. government bonds. The daily average

¹³ See, for example, Ibbotson SBBI 2009 Valuation Yearbook, Morningstar, Inc. (2009) at 46.

1 over an extended period of time (such as six months to one year) of actual market
2 yield of long-term U.S. Treasury bonds is a fair and reasonable representation of
3 the risk-free return for the purpose of estimating the cost of common equity for
4 utility companies.

5
6 In my opinion, the use of forecasted yields of long-term government bonds is of
7 little value in estimating the cost of common equity of a utility company. In other
8 words, the average market price (alternatively the yield) of a broad range of long-
9 term U.S. Treasury bonds over an extended period of time is a much better
10 reflection of the expectation of average bond investors. Consequently, I accepted
11 the Staff's methodology of calculating the return on risk-free assets and its results
12 in the CAPM analysis. The Staff used the weighted average of 10-year and 30-
13 year daily closing Treasury yields for the period from December 1, 2008 through
14 November 30, 2009, with the weighting done in a manner of emphasizing yields
15 in more recent quarters.¹⁴ The estimated return on risk-free assets proposed by
16 the Staff is 3.76%.

17
18 ***Q13. PLEASE DESCRIBE AND EXPLAIN YOUR CHOICE OF THE BETA IN***
19 ***THE APPLICATION OF THE CAPITAL ASSET PRICING MODEL.***

20 ***A13.*** The second component of CAPM is "beta." It signifies the relative risk of a
21 particular investment (such as the common stock of a water company) to the
22 entire equity market or a large and representative sample of the equity market. By

¹⁴ See Staff Report at 11.

1 definition, the entire equity market, or a large portion of it such as the group of
2 S&P 500 companies, has a beta of 1.0. A stock with a price movement (measured
3 in terms of the change in percentage) that is greater than the price movement of
4 the entire equity market is considered riskier than the market, and thus, has a beta
5 greater than 1.0. On the other hand, the stock price of a regulated utility tends to
6 have a price movement that is smaller than the price movement of the entire
7 equity market. There are a number of sources providing estimated values of the
8 "beta" of publicly traded companies. They include the Value Line Investment
9 Survey, Yahoo Finance and Reuters.

10
11 In my analysis, I use the "beta" published in the most recent Value Line
12 Investment Survey. According to Value Line, "The "Beta Coefficient" is derived
13 from a regression analysis of the relationship between weekly percentage changes
14 in the price of a stock and weekly percentage changes in the NYSE index over a
15 period of five years."¹⁵ It is my understanding that the PUCO Staff has
16 consistently used the "beta" reported in the Value Line Investment Survey in its
17 CAPM analysis contained in the Staff Reports of recent rate cases. Specifically,
18 the Staff used the "Betas" of comparable water utilities reported by the Value
19 Line in all the seven water rate cases since 2001 in which the PUCO Staff has
20 conducted detailed CAPM analysis.

21

¹⁵ See Value Line Investment Survey Glossary of Investment Terms at
http://www.valueline.com/sup_glossb.htm.

1 The values of the "beta" of the three water utilities in the comparable group are:
2 0.80 for AWR, 0.65 for WTR, and 0.75 for CWT.¹⁶ Value Line did not report the
3 "beta" of the American Water Works Company, Inc. ("AWK") as the common
4 stock of AWK has not been publicly traded for five years.¹⁷ The average "beta"
5 of the three water utilities in the comparable group is 0.733.

6
7 ***Q14. PLEASE DESCRIBE AND EXPLAIN YOUR CHOICE OF THE EXPECTED***
8 ***EQUITY RISK PREMIUM IN THE APPLICATION OF THE CAPITAL***
9 ***ASSET PRICING MODEL.***

10 ***A14.*** The third component of CAPM is the expected "equity risk premium." The
11 "equity risk premium" can be defined as the difference between the expected total
12 return (stock price appreciation plus dividends) of investing in common equity
13 versus investing in "risk-free" assets such as long-term U.S. government bonds.
14 It is my opinion that the long-term historical, rather than forecasted, total return of
15 long-term government bonds is appropriate to use in calculating the expected
16 equity risk premium in this proceeding.

17
18 As for the total return on the equity market, the historical total return over an
19 extended period of time of a portfolio of broadly-based stocks is typically chosen
20 for the purpose of calculating the expected equity risk premium. Two commonly-
21 used market benchmarks are the Standard & Poor's 500 Index (S&P 500 Index)

¹⁶ See Value Line Investment Survey of the three water utilities on January 22, 2010.

¹⁷ On April 22, 2008, American Water Works Company Inc. at that time a subsidiary of RWE AG, made its initial public offering of its common stock and raised about \$1.25 billion.

1 and the New York Stock Exchange Index.¹⁸ The PUCO Staff has consistently
2 used the S&P 500 Index (advocated by the Ibbotson SBBI Yearbook),¹⁹ as the
3 equity market benchmark in its CAPM analysis in recent water rate cases.
4 Specifically, in the seven water rate cases since 2001 in which the PUCO Staff
5 has conducted detailed CAPM analysis, the Staff used the total returns of large
6 company stocks reported in the Ibbotson Yearbook in calculating the equity
7 market premium. This is the same approach I adopted in my CAPM analysis in
8 this proceeding.

9
10 Another issue in estimating the expected risk premium is the choice of arithmetic
11 mean versus the geometric mean of historical returns. There is some debate
12 regarding whether an arithmetic mean or a geometric mean of total return provide
13 a more accurate estimate of the total return to the entire equity market, and
14 consequently, a better measure of the expected equity risk premium.²⁰

15
16 However, there is no argument that the geometric mean, by definition, is a better
17 measurement of the compounded and cumulative nature of the growth in total
18 returns. According to the *SBBI 2009 Yearbook*, the Arithmetic Mean Return is “a
19 simple average of a series of returns” and the Geometric Mean Return is “a
20 measure of the *actual* average performance of a portfolio over a given time

¹⁸ See Ibbotson SBBI 2009 Valuation Yearbook, Morningstar, Inc., 2009 at 55.

¹⁹ See Ibbotson SBBI 2009 Valuation Yearbook at 55-57.

²⁰ See, for example, Ibbotson SBBI 2009 Valuation Yearbook at 59-60, and Morin, *New Regulatory Finance* at 133-143.

1 period.” (Emphasis added.)²¹ It is clear to me that the arithmetic mean of total
2 return does overstate the return experienced by investors in most instances. But it
3 has been argued by some that a better measure of the historical total return would
4 not necessarily lead to a better estimation of the cost of capital.²² Nevertheless I
5 have not seen any convincing empirical evidence that suggests that an average
6 investor cannot understand the compounded nature of the value of his or her
7 equity investment over time or an average investor chooses to focus on the
8 average of uncompounded yearly returns.

9
10 Consequently, the issue of which measurement of returns over an extended period
11 of time, arithmetic or geometric, accurately gives the average investors the basis
12 for their investment decisions has not been resolved to date. In addition, it can be
13 safely assumed that investors have both the geometric mean return and the
14 arithmetic mean return available to them when making their investment decisions.
15 While not providing a legal conclusion, it can be argued that a mutual fund that
16 does not publish the historical compounded total return (that is the geometric
17 mean of total return) may expose itself to the risk of not fully disclosing all
18 relevant information. Thus, the question at hand may not be the preference of one
19 measurement of total return over another. I chose to use the average of these two
20 equity risk premia derived from the spread of geometric means as well as

²¹ See Ibbotson SBBI 2009 Valuation Yearbook at 203.

²² See Morin, *New Regulatory Finance* at 133-143. Specifically, Dr. Roger A. Morin indicated that “In capital markets, where returns are a probability distribution, the answer that takes account of uncertainty, the arithmetic mean, is the correct one for estimating discount rates and the cost of capital.”

1 arithmetic means as the expected equity risk premium for my CAPM analysis.
2 According to the *SBBI 2009 Yearbook*, the expected equity risk premium based
3 on arithmetic means is 5.6%, and the expected equity risk premium based on
4 geometric means is 3.9%. The expected equity risk premium used in my analysis
5 is an average of the two risk premia, 4.75%.

6
7 ***Q15. PLEASE DESCRIBE THE RESULTS OF THE CAPITAL ASSET PRICING***
8 ***MODEL IN ESTIMATING THE COST OF COMMON EQUITY OF THE***
9 ***COMPANY.***

10 ***A15.*** Based on a “beta” of 0.733, a “risk-free” return of 3.76%, and an “expected equity
11 risk premium” of 4.75%, I calculated Aqua Ohio’s cost of equity to be 7.24%
12 under the CAPM.

13
14 ***Q16. PLEASE DESCRIBE AND EXPLAIN YOUR APPLICATION OF THE***
15 ***DISCOUNTED CASH FLOW MODEL IN ESTIMATING THE COST OF***
16 ***COMMON EQUITY OF AQUA OHIO, ESPECIALLY THE CHOICE OF***
17 ***THE STOCK PRICE AND THE CURRENT DIVIDEND YIELD.***

18 ***A16.*** There are three main components in the application of the Discounted Cash Flow
19 (DCF) Model: the stock price, the current annual dividend and the expected
20 annual growth rate of dividend. The expected growth rate of the dividend seems
21 to be the most critical and difficult element involved in the DCF analysis.

1 The average actual stock price over an extended period of time is appropriate for
2 the DCF analysis in the context of estimating the cost of equity for a utility
3 company. The forecasted stock price is of little value and is not widely used in a
4 regulatory proceeding. The PUCO Staff has consistently used the average daily
5 prices or the average of monthly high and low prices over a twelve-month period
6 in its DCF analysis in recent water rate cases. In this proceeding, the Staff used
7 the average daily closing price of the four water utilities for the period from
8 December 1, 2008 through November 30, 2009.²³ This is a reasonable approach
9 and I used the same price information for my DCF analysis. An adjustment to the
10 average actual price used in the DCF analysis may be necessary if a clear pricing
11 trend that diverges from the historical price level can be reasonably identified.
12 There does not appear to be any new pricing trend that is distinct from the trend in
13 the equity market in general for the four water utilities during the last twelve
14 months.

15
16 As for the calculation of current dividend yield, the sum of the most recent four
17 quarterly dividends declared is typically used. The dividend information of a
18 publicly traded company has been fully disclosed and can be easily verified in
19 most instances. One possible adjustment to the current dividend yield is related to
20 the timing of the dividend increase, considering that the amount of annual

²³ See Staff Report at 11.

dividend growth is usually paid in equal quarterly installments.²⁴ I made a slight adjustment to the current annual dividend yield to better recognize the timing of dividend payment and expected dividend increase during the year. The Adjusted Yield was calculated based on the following formula:

$$\text{Yield} = D_0 * (1 + 0.5 * g) / P_0$$

where D_0 is the amount of current dividend

g is the constant annual growth rate of dividend

P_0 is the current stock price

Q17. PLEASE DESCRIBE AND EXPLAIN THE ESTIMATION OF ANNUAL GROWTH RATE OF DIVIDENDS OF THE COMPARABLE COMPANIES IN THE DCF ANALYSIS.

A17. In my DCF analysis, I chose a constant dividend growth model. A constant rate of dividend growth is a reasonable assumption for a regulated water company. The demand for water is relatively inelastic and there is really no substitute for water. For example, even in the last two years with the most severe economic downturn since the Great Depression of the 1930s, only one water utility, the Southwest Water Company, experienced a decline in sales revenue out of the eleven water utilities covered in the Value Line Investment Survey and the AUS

²⁴ See Ibbotson SBBI 2009 Valuation Yearbook at 51, and Morin, *New Regulatory Finance* at 343-358 for a discussion on the adjustment of dividend yields to better reflect the timing of dividend payment.

1 Utility Report.²⁵ In contrast, almost all major investor-owned electric and gas
2 utilities have experienced some level of decline in sales revenue, some
3 significantly, in the last two years. On the other hand, a water utility is usually
4 considered a business with low or no business growth unless the water utility can
5 add many new customers. In any event, it is my opinion that unless a strong case
6 can be made that the future growth rate of earning or dividend of a company will
7 change significantly, the application of a constant DCF Model is preferred. The
8 only additional advantage in applying a multi-stage (or non-constant growth) DCF
9 model is if the model can be applied to account for different expectation of future
10 economic growth.

11
12 I considered the following two types of earnings and dividend indicators in
13 estimating the future annual growth rate of dividends for the four water utilities in
14 the comparable group. These two indicators are reported in the Value Line
15 Investment Survey, January 22, 2010:

- 16 1. Five-year (2004-2008) average annual rate of growth in earnings
17 per share, dividend per share and book value per share;
- 18 2. Value Line projections (from estimates in 2006-2008 to estimates
19 in 2012-2014) of average annual rate of growth in per share
20 earnings, dividend and book value.

21

²⁵ It is unclear about the decline in sales revenue. It is likely that the decline in sales revenue of Southwest Water Company can be attributed to inflated sales revenues in prior years.

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1 It is my opinion that the historical and projected data provided by Value Line, in
2 aggregate, provides an adequate description of the factors that can influence the
3 growth of future annual dividends. It is reasonable to use these data in the DCF
4 Model to estimate the cost of common equity of Aqua Ohio. I have reviewed and
5 considered other sources of earning and dividend growth estimation, such as
6 Yahoo, Bloomberg, Reuters and MSN Money, and decided not to incorporate
7 them in the DCF analysis. The selected annual growth rates of various dividend-
8 related indicators are summarized in Table 3. Because the historical and
9 projected five-year growth rates for American Water Works Company, Inc. are
10 not available from Value Line, I instead used the constant growth rate, 5.70%,
11 which is the average of the other three water utilities in the comparable group. In
12 other words, I assume that the per share earnings, dividends and book value of
13 American Water Works Company, Inc. will grow in a rate similar to the average
14 rate of the other three water utilities in the comparable group.
15

**TABLE 3: SELECTED ANNUAL RATE OF GROWTH
OF PER SHARE EARNINGS, DIVIDEND, AND BOOK VALUE OF
COMPARABLE ATER UTILITIES**

Company Ticket	AWK	AWR	WTR	CWT
<hr/>				
Five-Year Historical Growth Rate				
Annual Per Share Earnings	N/A	5.5%	5.5%	7.0%
Annual Per Share Dividend	N/A	2.0%	8.0%	0.5%
Annual Per Share Book Value	N/A	5.0%	10.0%	6.5%
Average of Historical Growth Rate		4.17%	7.83%	4.67%
<hr/>				
Five-Year Projected Growth Rate				
Annual Per Share Earnings	N/A	9.5%	10.0%	8.5%
Annual Per Share Dividend	N/A	4.5%	6.5%	1.5%
Annual Per Share Book Value	N/A	4.0%	6.0%	2.0%
Average of Projected Growth Rate		6.0%	7.5%	4.0%
<hr/>				
Estimated Constant Dividend Growth Rate	5.70%	5.09%	7.67%	4.34%

As for the other two components of the DCF Model, I accepted the average stock price and the current annual dividend proposed in the Staff Report. I will make adjustments to the stock price and current annual dividend if there are some clear upward or downward trends of stock price and dividend.

Then, I calculated the cost of common equity based on my estimated constant dividend growth rate, adjusted dividend yield rate and the average stock price proposed by the Staff. These estimates are summarized in Table 4. My estimated cost of common equity for Aqua Ohio, 9.10%, is the average of the costs of common equity of the four comparable water utilities. Even though this estimated cost of common equity, 9.10%, is higher than the DCF cost of common equity, 8.13%, calculated directly from the financial information and estimated growth rate of Aqua American Inc., the estimated cost common equity based on the comparable group of water utilities is appropriate in a regulatory proceeding where the main objective is to derive the expected cost of common equity for companies with similar business and financial risk.

**TABLE 4: DCF-BASED ESTIMATES OF COST OF COMMON EQUITY
OF FOUR COMPARABLE WATER UTILITIES**

Company Ticket	AWK	AWR	WTR	CWT
Average Current Price	\$19.40	\$34.02	\$17.98	\$38.83
Current Annual Dividend	\$0.82	\$1.01	\$0.54	\$1.1775
Current Yield	4.23%	2.97%	3.00%	3.03%
Constant Rate of Growth	5.70%	5.09%	7.67%	4.34%
Adjusted Yield	4.35%	3.04%	3.12%	3.10%
DCF-based Cost of Equity	10.05%	8.13%	10.79%	7.44%

**Q18. PLEASE EXPLAIN YOUR CONCLUSION OF AQUA OHIO'S COST OF
COMMON EQUITY AND OVERALL RATE OF RETURN BASED ON THE
RESULTS OF THE CAPM AND DCF MODELS.**

A18. I estimated Aqua Ohio's cost of common equity to be 7.24% under the CAPM and 9.10% under the DCF Model. The baseline cost of common equity for Aqua Ohio is the average of the above two estimates. I gave no preference to either one of these two financial models. It is my opinion that the average of the estimated costs of common equity from these two complimentary models fairly and reasonably represents the cost of common equity of Aqua Ohio. There is no need for any additional adjustment to this baseline cost of common equity. My recommended cost of common equity for Aqua Ohio is 8.12%.

I accepted Aqua Ohio's proposed capital structure and the cost rates of its long-term debt. Then I calculated the weighted cost of capital, or the overall rate of return, based on my estimated cost of common equity and other financial data (such as the cost rate of long-term debt and the capital structure) proposed by Aqua Ohio and Staff. My recommended rate of return for Aqua Ohio is 7.24%.

IV. EVALUATION OF AQUA OHIO'S PROPOSED RATE OF RETURN

**Q19. PLEASE DESCRIBE AQUA OHIO'S PROPOSED METHODOLOGY, IF
ANY, FOR DETERMINING ITS COST OF EQUITY AND RATE OF
RETURN IN THIS PROCEEDING.**

1 **A19.** Aqua Ohio proposed using its actual capital structure as of June 30, 2008, which
2 consists of 49.55% long-term debt and 50.45% common equity in this proceeding.
3 The amounts and cost rates for each capital component are summarized in
4 Schedule D-1 of Aqua Ohio's Application. The Company has calculated its
5 embedded cost of long-term debt at 6.34% as of June 30, 2008. Aqua Ohio
6 proposed a cost of common equity of 11.00% and a weighted cost of capital of
7 8.69% in Schedule D-1 of its Application. No additional explanations on the
8 choice of these specific cost of common equity and overall rate of return were
9 provided in the Application and accompanying testimony. In a response to OCC
10 Interrogatory, Mr. Kopas responded that he, as the Regional Controller of Aqua
11 Ohio, has determined the cost of common equity to be 11.00% based on his
12 knowledge of filings by similarly-situated water utilities. See DJD Attachment -
13 2. Aqua Ohio provided no information about when these filing were made, in
14 which jurisdictions they were filed, and which water utilities were involved in his
15 review.

16
17 **Q20. DO YOU HAVE ANY CONCERNS REGARDING THE PROPOSED**
18 **METHODOLOGY, IF ANY, USED BY THE COMPANY IN ESTIMATING**
19 **ITS COST OF COMMON EQUITY?**

20 **A20.** Yes.
21

1 **Q21. WHAT CONCERNS DO YOU HAVE REGARDING THE PROPOSED**
2 **METHODOLOGY USED BY THE COMPANY IN ESTIMATING ITS COST**
3 **OF COMMON EQUITY?**

4 **A21.** It is quite clear that the proposed cost of common equity and rate of return of
5 Aqua Ohio are unsubstantiated and without proper support. They are derived
6 essentially from one person's subjective judgment without any explanation.
7 There is no evidence that Aqua Ohio's proposed cost of common equity and rate
8 of return are based on any analysis of the business and financial risk of the
9 Company or comparable water utilities. These proposed rates are not consistent
10 with my understanding of the regulatory principles set in the *Hope* and *Bluefield*
11 decisions. It is my opinion that Aqua Ohio's proposed baseline cost of common
12 equity is flawed and unreasonable.

13
14 **V. EVALUATION OF STAFF'S PROPOSED RATE OF RETURN**
15

16 **Q22. PLEASE BRIEFLY DESCRIBE STAFF'S PROPOSED METHODOLOGY**
17 **AND RESULTS IN ESTIMATING AQUA OHIO'S COST OF EQUITY AND**
18 **THE OVERALL RATE OF RETURN.**

19 **A22.** The rate of return methodology used by the PUCO staff in this proceeding is
20 similar to the methodology employed by the Staff in previous water rate cases. In
21 the Staff Report, Staff accepted the capital structure and cost rate of long-term
22 debt proposed by the Company. Staff selected a comparable group consisting of
23 publicly-traded water utilities listed as "Water Utilities" by Yahoo Stock Screener

1 with a market capitalization more than \$500 million. Those companies were also
2 included in the Value Line Investment Survey.²⁶ The Staff's cost of common
3 equity estimate is the average of the results of the CAMP and DCF model applied
4 to the four comparable water utilities. The Staff's estimated cost of equity under
5 the CAPM is 7.86%. The Staff's estimated cost of common equity under the DCF
6 Model is 10.43%.

7
8 The Staff's baseline cost of common equity is the average of the costs of common
9 equity derived from the CAPM and the DCF model. The Staff proposed a
10 baseline cost of common equity of 9.15%. The Staff then proposed a range for
11 Aqua Ohio's cost of equity, 8.65% to 9.65%, assuming a 100 basis-point range of
12 uncertainty.²⁷ In setting the range of the proposed cost of common equity, the
13 Staff also made an allowance for equity issuance and other unspecified costs,
14 resulting in an adjustment factor of 1.00985. The Staff's final recommended
15 range of cost of equity is 8.73% to 9.74%. Staff's recommended range for the
16 overall rate of return (cost of capital) for Aqua Ohio is 7.54% to 8.05%.

17
18 ***Q23. DO YOU HAVE ANY CONCERNS REGARDING THE STAFF'S***
19 ***PROPOSED COST OF EQUITY AND OVERALL RATE OF RETURN IN***
20 ***THIS PROCEEDING?***

21 ***A23.*** Yes.

²⁶ See Staff Report at 10.

²⁷ Id. at 12.

1 **Q24. PLEASE IDENTIFY THE CONCERNS YOU HAVE REGARDING THE**
2 **STAFF'S PROPOSED COST OF EQUITY AND OVERALL RATE OF**
3 **RETURN IN THIS PROCEEDING.**

4 **A24.** My first concern is the Staff's proposed adjustment factor of 1.00985 for equity
5 issuance and other unspecified costs.²⁸ This adjustment is considerably less than
6 the issuance cost adjustment in previous water rate cases and probably reflects the
7 very high percentage of retained earnings in relation to the total common equity
8 of Aqua Ohio.²⁹ However, this adjustment may be unnecessary. It increased the
9 proposed cost of common equity by about 0.085%, and thus, would increase the
10 costs of water and wastewater services to the customers of Aqua Ohio. In its
11 Application and testimony, Aqua Ohio did not ask for an adjustment to its cost of
12 common equity for equity issuance or other costs. Aqua Ohio did not provide
13 proof that the Company indeed incurred any equity issuance or other related costs.
14 There is also no indication in the Application and the supporting testimony that
15 the Company would incur such costs in the reasonably near future.

16
17 My second concern is the expected equity risk premium used by the Staff in its
18 Capital Asset Pricing Model. The Staff's proposed equity risk premium of 5.6%
19 was overstated because it was based exclusively on the difference of arithmetic
20 mean total returns between large companies' stocks and long-term government

²⁸ Ibid. at 29.

²⁹ See Staff Report at 69.

1 bonds. As discussed above, the geometric mean is a more accurate measurement
2 of the annual total returns on equity and risk-free investments. Average investors
3 are likely to have access to more readily available information on the
4 compounded and cumulative total returns, in other words, the geometric mean of
5 total return. The exclusive use of arithmetic mean of annual returns tends to
6 inflate the historical annual rate of return, and consequently, inflate the estimated
7 cost of equity.

8
9 My third concern is related to the long-term growth rate of earnings and dividends
10 chosen by the Staff in its DCF analysis. In its DCF analysis, the Staff
11 incorporated a dividend growth rate from the twenty-fifth year forward based on
12 the average annual change in nominal Gross National Product ("GNP"), 6.70%,
13 for the years 1929 to 2008.³⁰ In my opinion, this long-term growth rate of
14 nominal GNP is not likely to continue in the future. For example, there has not
15 been a single year since 1990 in which the annual change in nominal GNP has
16 exceeded a long-term growth rate of 6.7%.³¹ In only eight of the last thirty years
17 have we seen the annual growth rate of nominal GNP exceed this long-term
18 growth rate of 6.7%, and those eight years were in the 1980s, which had a very
19 high rate of inflation. In addition, an economy-wide indicator such as the annual
20 growth rate of nominal GNP may not necessarily reflect investors' expectations of
21 long-term dividend growth for a particular company. Only under exceptional

³⁰ See Staff Report at 29, and Schedule D-1.10.

³¹ See Staff Report, D-1.10.

1 circumstances where the growth rates of earnings and dividends are not readily
2 available can the annual growth rate of nominal GNP be considered to represent
3 the "average" expectation of future earnings and dividend growth of a particular
4 company. But this substitution should be the exception, not a common practice.

5
6 ***Q25. PLEASE EXPLAIN YOUR OVERALL ASSESSMENT OF THE STAFF'S***
7 ***RECOMMENDED COST OF EQUITY AND RATE OF RETURN FOR AQUA***
8 ***OHIO.***

9 ***A25.*** It is my opinion that the financial input data used by the Staff in its Capital Asset
10 Pricing Model have reflected the general decline in the cost of long-term debt and
11 equity risk premium in the U.S. economy, as well as the relatively stable
12 performance in the stock price of water utilities over the last two years.
13 Nevertheless, Staff's recommended cost of common equity and overall rate of
14 return should be adjusted downward to reflect my recommended adjustments
15 discussed above.

16
17 **VI. CONCLUSION**

18
19 ***Q26. DOES THIS CONCLUDE YOUR TESTIMONY?***

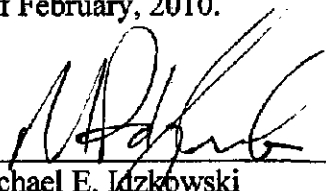
20 ***A26.*** Yes. However, I reserve the right to supplement my testimony in the event that
21 the Company submits additional testimonies or additional new information or
22 other data in connection with this proceeding. I also reserve the right to
23 supplement my testimony in the event that the PUCO Staff fails to support the

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- 1 recommendations made in the Staff Report and/or change any of its positions
- 2 made in the Staff Report regarding cost of equity and rate of return.

CERTIFICATE OF SERVICE

I hereby certify that a copy of Direct Testimony of Daniel J. Duann, Ph.D. of the Office of the Ohio Consumers' Counsel was provided to the persons listed below via first class U.S. Mail, postage prepaid, this 22nd day of February, 2010.



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DJD ATTACHMENT -1

Selected Publications of Daniel J. Duann, Ph.D.

Journal Articles

Regulation, The Cato Review of Business & Government, "Turning up the Heat in the Natural Gas Industry," Vol. 19, 1996, (with Kenneth W. Costello).

Managerial And Decision Economics, "Designing a Preferred Bidding Procedure for Securing Electric Generating Capacity," Vol. 12, 1991.

The Journal of Energy and Development, "Direct Gas Purchases by Local Distribution Companies: Supply Reliability and Cost Implications," Vol. 14, 1989.

Public Utilities Fortnightly, "Alternative Searching and Maximum Benefit in Electric Least-cost Planning," December 21, 1989.

Research Reports and Presentations

The National Regulatory Research Institute, *Pricing Local Distribution Services in A Competitive Market*, 1995.

Ninth NARUC Biennial Regulatory Information Conference, Ohio State University, *The Unbundling and Restructuring of Local Distribution Services in the Post-636 Gas Market*, 1994.

The National Regulatory Research Institute, *A Survey of Recent State Initiatives on EPACT and FERC Order 636*, 1994 (with Belle Chen).

The National Regulatory Research Institute, *Restructuring Local Distribution Services: Possibilities and Limitations*, 1994.

The National Regulatory Research Institute, *The FERC Restructuring Rule: Implications for Local Distribution Companies and State Public Utilities Commissions*, 1993.

The National Regulatory Research Institute, *A Synopsis of the Energy Policy Act of 1992: New Tasks for State Public Utility Commissions*, 1993.

International Symposium on Energy, Environment & Information Management, Argonne National Laboratory, *Natural Gas Vehicles: Barriers, Potentials, and Government Policies*, 1992.

The National Regulatory Research Institute, *Natural Gas Vehicles and the Role of State Public Service Commissions*, 1992 (with Youssef Hegazy).

The National Regulatory Research Institute, *Incentive Regulation for Local Gas Distribution Companies under Changing Industry Structure*, 1991 (with Mohammad Harunuzzaman, Kenneth W. Costello, and Sung-Bong Cho).

The National Regulatory Research Institute, *Discussion Papers on Competitive Bidding and Transmission Access and Pricing issues in the Context of Integrated Resource Planning*, 1990 (with Robert E. Burns, Kenneth Rose, Kevin Kelly, and Narayan Rau).

The National Regulatory Research Institute, *Gas Storage: Strategy, Regulation, and Some Competitive Implications*, 1990 (with Peter A. Nagler, Mohammad Harunuzzaman, and Govindarajan Iyyuni).

The National Regulatory Research Institute, *State Gas Transportation Policies: An Evaluation of Approaches*, 1989 (with Robert E. Burns and Peter A. Nagler).

The National Regulatory Research Institute, *Direct Gas Purchases by Gas Distribution Companies: Supply Reliability and Cost Implications*, 1989, (with Robert E. Burns and Peter A. Nagler).

The National Regulatory Research Institute, *Competitive Bidding for Electric Generating Capacity: Application and Implementation*, 1988 (with Robert E. Burns, Douglas N. Jones, and Mark Eifert).

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of)
Aqua Ohio, Inc. for Authority to Increase)
Its Rates and Charges in Its Masury) Case No. 09-560-WW-AIR
Division.)

**AQUA OHIO INC.'S RESPONSES TO THE OFFICE OF THE OHIO
CONSUMERS' COUNSEL'S SECOND SET OF
INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS
PROPOUNDED UPON AQUA OHIO, INC.**

(February 3, 2010)

Now comes Aqua Ohio, Inc. (“Aqua”), by and through counsel, and hereby submits its Objections and Responses to the Office of the Ohio Consumers’ Counsel’s (hereinafter, “OCC”) Second Set of Interrogatories and Request for Production of Documents (collectively “data requests”) in the above-captioned proceeding.

Aqua's responses to these data requests are being provided subject to, and without waiver of, the general objections stated below and any specific objections posed in response to an individual interrogatory or data request. The general objections are hereby incorporated by reference, as if fully set forth, into the individual response made to each data request. Aqua's responses to these data requests are submitted without prejudice to, and without in any respect waiving, any general objections not expressly set forth herein.

The provision of any response below shall not waive Aqua's objections. The responses below, while based on diligent investigation and reasonable inquiry by Aqua and its counsel, reflect only the current state of Aqua's knowledge, understanding and belief with respect to the matters about which the data requests seek information, based upon the investigation and discovery to date. Aqua's discovery and investigation are not yet complete and are continuing as of the date of the responses below. Aqua anticipates the possibility that it may discover additional information and/or documents, and without

INTERROGATORIES¹

INT-56. Please confirm that the cost rate of common equity of 11.00%, as filed in Application Schedule D-1, was used by the Company in developing its proposed rate of return?

RESPONSE: That is correct

Robert A. Kopas

INT-57. Please explain how the cost rate of common equity of 11.00%, as filed in Application Schedule D-1, was developed and selected by the Company?

RESPONSE: The 11% was selected based on the Regional Controller's knowledge of recent requests made by similarly situated water utilities.

Robert A. Kopas

INT-58. Was the cost rate of common equity of 11.00%, referred in OCC Interrogatory No. 56, based on the recommendation and input of an outside consultant?

RESPONSE: The Company did not employ an outside consultant for the 11% recommendation (see response to INT-57).

Robert A. Kopas

¹ In accordance with Ohio Adm. Code 4901-1-16(D)(5) the OCC is specifically requesting that all responses be supplemented with subsequently acquired information at the time such information is available-(Aqua acknowledges that this request has been made, without in any way waiving any objection it may have to this request.)

INT-59. If the response to OCC Interrogatory No. 58 is affirmative, what is the name and affiliation of the outside consultant?

RESPONSE: Not Applicable

Robert A. Kopas

INT-60. If the response to OCC Interrogatory No. 58 is negative, please identify the person or persons of Aqua Ohio., Aqua America Inc., or Aqua American Inc.'s subsidiaries and affiliates who are responsible for developing, recommending, and selecting this cost rate of common equity of 11.00%.

RESPONSE: See response to INT-57. The Regional Controller is Robert Kopas who provided testimony in this proceeding.

Robert A. Kopas

INT-61. Referring to OCC Request to Produce Nos. 19, 20, 21 and 22, are there any Employee Stock and Incentive Plan costs in the amounts responded to by the Company?

RESPONSE: Yes

Stephen J. Saluga

INT-62. If the response to OCC Interrogatory No. 61 is affirmative, what is the amount of Employee Stock and Incentive Plan cost included in each of the four accounts mentioned in OCC Request to Produce Nos. 19, 20, 21 and 22?

RESPONSE: \$1,898 in account 930-20.

Stephen J. Saluga

REQUESTS FOR PRODUCTION OF DOCUMENTS

RPD-29. Referring to OCC Interrogatory No. 56, please provide the reports, studies, memoranda, and any other documents related to the development, recommendation and selection of the cost rate of common equity used by the Company in this proceeding.

RESPONSE: None.

RPD-30. Referring to OCC Interrogatory No. 58, please provide the reports, studies, memoranda, and any other documents produced by an outside consultant or consultants or produced in consultation with the outside consultants related to the development, recommendation and selection of the cost rate of common equity used by the Company in this proceeding.

RESPONSE: None.

RPD-31. Referring to OCC Request to Produce Nos. 19, 20, 21 and 22, if there are any labor or labor-related costs in the amounts responded to by the Company, please break down the labor-related costs, by account, into type of cost (i.e. pension, payroll tax, etc.).

RESPONSE: See ITEM #17